

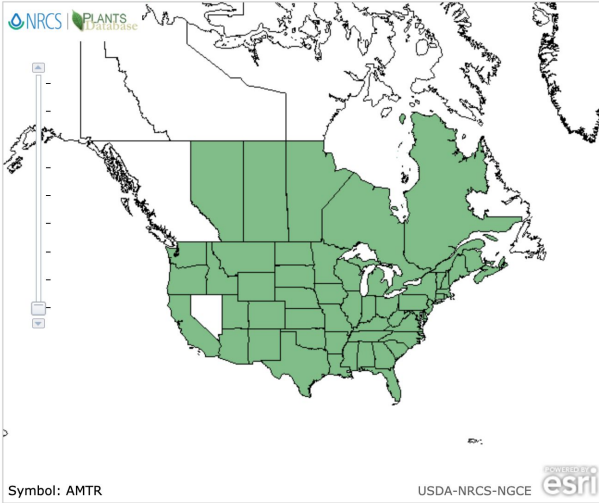
**Plant Propagation Protocol for *Ambrosia trifida***

ESRM 412 - Native Plant Production

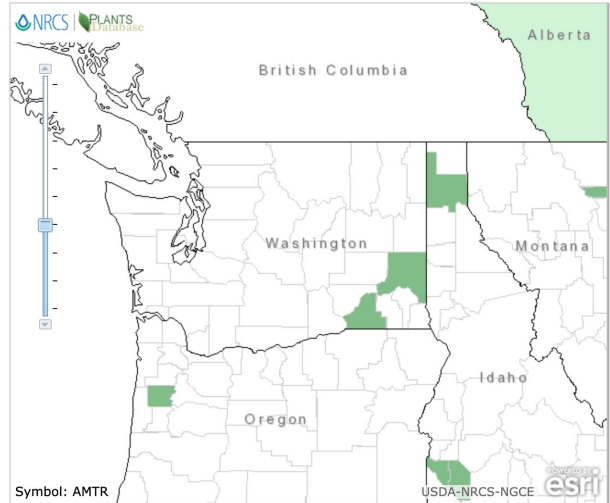
Spring 2020



Figure 1 Photo by Louis-M. Landry from CalPhotos. Web. 27 May 2020.



North American Distribution



Washington Distribution

<b>TAXONOMY</b>	
Plant Family	
Scientific Name	Asteraceae / Compositae <sup>1</sup>
Common Name	Aster family <sup>1</sup>
Species Scientific Name	
Scientific Name	<i>Ambrosia trifida</i> L. (author is L.) <sup>1</sup>
Varieties	<i>Ambrosia trifida</i> var. <i>Trifida</i> <i>Ambrosia trifida</i> var. <i>Texana</i> (Scheele) (Does not grow in WA) <sup>12</sup> <i>Ambrosia trifida</i> var. <i>integrifolia</i> (Muhl. ex Willd.) Torr. & A. Gray <i>Ambrosia trifida</i> var. <i>aptera</i> (DC.) Kuntze <sup>2</sup>
Sub-species	No information found.
Cultivar	No information found.
Common Synonym(s)	<i>Ambrosia aptera</i> DC. <sup>2</sup>
Common Names	Ragweed in Cherokee: ოოოოოოოო/ugwasdaluhyda/ugwasdaluhyda <sup>14</sup> canhlōgan paṅspanjela which means “bulky weed” and another Lakota phrase used to describe this plant is yamnūmnuḡa iyécéca

	<p>which means “it is like making a noise by crunching your teeth”. They say this because this plant’s seeds are very hard.<sup>8</sup></p> <p>great ragweed, giant ragweed, horseweed<sup>1,2</sup>  bursage, Texan great ragweed, tall ragweed,  blood ragweed, perennial ragweed<sup>2</sup>  Bitterweed, Bloodweed, Buffalo Weed, Horse Cane, crown-weed<sup>3</sup></p>
Species Code (as per USDA Plants database)	AMTR <sup>1</sup>
<b>GENERAL INFORMATION</b>	
Geographical range	<p>Located in two counties in Eastern WA. Also prominent in Eastern N. America - Quebec to Florida, west to Manitoba, Colorado and Mexico.<sup>3</sup></p>
Ecological distribution	<p>Suitable for: light (sandy), medium (loamy) and heavy (clay) soils. Suitable pH: acid, neutral and basic (alkaline) soils. It can grow in semi-shade (light woodland) or no shade. It prefers moist soil.<sup>3</sup></p> <p>It can be found in disturbed areas of moist to mesic black soil prairies, especially along the margins near woodlands or fields. Other native habitats include disturbed areas of moist clay prairies, meadows in woodland areas or near rivers, thickets, and woodland borders. In more developed areas, it occurs in vacant lots, cropland, abandoned fields, poorly drained waste areas, areas along roadsides and railroads, and fence rows.<sup>6</sup></p>
Climate and elevation range	<p>No elevation range could be found for <i>Ambrosia trifida</i>, so below is the elevation range for <i>Ambrosia elatior</i>:</p> <p>Up to 4,000 feet, the common ragweed (<i>Ambrosia elatior</i>) is as common as on the plains. At an altitude over 6,000 feet, however, the ragweed does not thrive, and such localities afford relief to those sensitive to pollen.<sup>13</sup></p> <p>The wetland status of <i>Ambrosia trifida</i> is FAC or facultative which means it can occur wetlands but not always.<sup>1</sup></p>

<p>Local habitat and abundance; may include commonly associated species</p>	<p>Alluvial waste places, sometimes forming vast pure stands<sup>3</sup> Waste places, fields, and roadsides.<sup>5</sup></p>
<p>Plant strategy type / successional stage</p>	<p>Weedy colonizer<sup>1</sup> A. trifida is an annual herb native to temperate North America which is now present in a number of countries in Europe and Asia. The primary means of spread of A. trifida occurs accidentally as a contaminant of seed or agricultural equipment. This species readily colonises disturbed areas and is often one of the first plants to emerge in early spring. As a result it has an initial competitive advantage and can therefore behave as a dominant species throughout the entire growing season. A. trifida is a particular problem for cultivated agricultural and horticultural crops where it can significantly decrease yields. Like many species of Ambrosia, A. trifida produces pollen which is allergenic and can induce allergic rhinitis, fever, or dermatitis. A. trifida is extremely competitive and can also decrease native biodiversity. A. trifida is a declared noxious weed in its native range in California, Delaware, Illinois and New Jersey, USA and is also a quarantine weed in Poland and Russia.<sup>7</sup></p>
<p>Plant characteristics</p>	<p><i>Ambrosia trifida</i> is a ANNUAL growing to 2 m (6ft 7in) at a medium rate. It is in flower from August to October. The species is monoecious (individual flowers are either male or female, but both sexes can be found on the same plant) and is pollinated by Wind.<sup>3</sup> A tall, rough, hairy plant with elongated, terminal clusters of nodding male flower heads above few clusters of female flower heads; some plants with hundreds of heads. This is the giant among the ragweeds, reaching towering heights and possessing long flower spikes. The pollen of ragweeds is spread by wind rather than by insects.<sup>5</sup> <i>A. trifida</i> can be easily distinguished from the other annual species belonging to the genus <i>Ambrosia</i> by the leaves which are palmate,</p>

	<p>while in the other related taxa (<i>A. bidentata</i>, <i>A. acanthicarpa</i>, and <i>A. artemisiifolia</i>) the blades are pinnate. The flowering heads and fruit of <i>A. artemisiifolia</i> are similar but smaller than those of <i>A. trifida</i>. The leaves of <i>A. artemisiifolia</i> are usually twice divided and not 3-5 lobed, and the overall plant size is generally much smaller. When a large number of the leaves of <i>A. trifida</i> are unlobed, it can appear similar to <i>Xanthium strumarium</i> or <i>Helianthus annuus</i>; however, the leaves of these species are mostly alternate, whereas those of <i>A. trifida</i> are opposite.<sup>7</sup></p>
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**PROPAGATION DETAILS**

**No Propagation protocols for my species were found. This is likely due to the fact that many authorities on plants consider *Ambrosia trifida* to be an invasive species. So for the most part it appears that very few are looking to propagate this species and/or it is so easy to propagate that the protocols appear somewhat excessive. The following protocols are for similar species under the same genus (*Ambrosia*) with *Ambrosia dumosa* most similar in habitat to *Ambrosia trifida*.**

**Propagation protocol for production of Container (plug) *Ambrosia dumosa* (A. Gray) Payne Plants by Madena Asbell<sup>10</sup>**

Ecotype	Joshua Tree, CA
Propagation Goal	Plants
Propagation Method	Seed <sup>9</sup>
Product Type	Container (plug)
Stock Type	4"x 10" Anderson plant bands
Time to Grow	6 months
Target Specifications	No information provided in this protocol.
Propagule Collection Instructions	Seed was hand collected in May of previous year.
Propagule Processing / Propagule Characteristics	Seeds are dried in paper bags and cleaned to remove male flowers and weed seeds. Seed is

	stored in air tight containers at 3 degrees C.
Pre-Planting Propagule Treatments	Seeds were not treated prior to sowing. Seeds were sown directly into 17" x 17" x 2" seed flats with a media consisting of 3 parts coarse horticultural perlite, 1 part coarse vermiculite, and a small amount of Osmocote 14-14-14. Seeds were sown at a depth of approximately 1/4 inch. Flats were hand watered. There was 37% germination.
Growing Area Preparation / Annual Practices for Perennial Crops	Seeds were started in a greenhouse in April. Greenhouse temperatures did not exceed 90F (high) and 50F (low). Maximum germination was reached within 3 weeks. At 6 weeks, seedlings were pricked out and transplanted directly into 4x10 Anderson plant bands and moved outdoors into a shade house with 63% shade cover. Containers were hand watered.
Establishment Phase Details	No information provided in this protocol.
Length of Establishment Phase	No information provided in this protocol.
Active Growth Phase	No information provided in this protocol.
Length of Active Growth Phase	No information provided in this protocol.
Hardening Phase	No information provided in this protocol.
Length of Hardening Phase	No information provided in this protocol.
Harvesting, Storage and Shipping	No information provided in this protocol.
Length of Storage	No information provided in this protocol.
Guidelines for Outplanting / Performance on Typical Sites	No information provided in this protocol.
Other Comments	No information provided in this protocol.
<b>Propagation protocol for production of Propagules (for all of the following: seeds, cuttings, poles, etc.) <i>Ambrosia eriocentra</i> (A. Gray) Payne seeds - No author<sup>11</sup></b>	
Ecotype	BLM, Seeds of Success, Tonto National Forest, Horseshoe Dam area, 2.5 miles on Forest Service Road 19, Maricopa County, Arizona;

	2636 ft. elevation
Propagation Goal	seeds
Propagation Method	seed <sup>9</sup>
Product Type	Propagules (seeds, cuttings, poles, etc.)
Stock Type	No information provided in this protocol.
Time to Grow	0
Target Specifications	No information provided in this protocol.
Propagule Collection Instructions	Very small lot, 1.5 pounds, hand collected into paper bags.
Propagule Processing / Propagule Characteristics	METHOD OF CLEANING: Seed cleaned using a Westrup Model LA-H laboratory brush machine, with a #40 mantel, at medium speed. Lot was then air-screened using a office Clipper, with a top screen: 18 round and a bottom screen: 5 1/2 round, medium speed, medium air. Number of Seeds per Pound: 58,900, Purity: 97%, X-Ray 100 Seeds: 83% Filled
Pre-Planting Propagule Treatments	No information provided in this protocol.
Growing Area Preparation / Annual Practices for Perennial Crops	No information provided in this protocol.
Establishment Phase Details	No information provided in this protocol.
Length of Establishment Phase	No information provided in this protocol.
Active Growth Phase	No information provided in this protocol.
Length of Active Growth Phase	No information provided in this protocol.
Hardening Phase	No information provided in this protocol.
Length of Hardening Phase	No information provided in this protocol.
Harvesting, Storage and Shipping	Storage: Cold Storage, 33-38 Degrees Fahrenheit

Length of Storage	No information provided in this protocol.
Guidelines for Outplanting / Performance on Typical Sites	No information provided in this protocol.
Other Comments	No information provided in this protocol.
<b>Propagation protocol for production of Container (plug) <i>Ambrosia dumosa</i> (Gray) Payne plants 2 gallon PVC pipe containers by Jean Graham<sup>12</sup></b>	
Ecotype	Joshua Tree National Park, California
Propagation Goal	plants
Propagation Method	seed <sup>9</sup>
Product Type	Container (plug)
Stock Type	2 gallon PVC pipe containers *Unclear as to whether this refers to diameter or depth
Time to Grow	0 Weeks
Target Specifications	Height: N/A Caliper: N/A Root System: Firm Root Plug in container.
Propagule Collection Instructions	Seeds are hand collected when achenes have fully matured.
Propagule Processing / Propagule Characteristics	Seeds are allowed to dry for 4 to 6 weeks in paper bags in a warm, dry room. After seeds have been cleaned, they are stored under refrigeration in air tight containers at 7C.
Pre-Planting Propagule Treatments	Seeds are soaked/leached in water for 10 to 24 hrs to remove any inhibitors and to allow full imbibition of seeds prior to sowing. br>Seeds are directly sown in open flats using a growing medium of 2 parts sand, 1 part mulch and 2 parts perlite (v:v:v) br> We have had 30% average germination on our ecotypes.
Growing Area Preparation / Annual Practices for Perennial Crops	The Joshua Tree Native Plant Nursery is located in the Mojave Desert of southern



	<p>California and has an average of 250 frost free days per year and annual rainfall of 5 to 10 cm (2 to 4 in.)</p> <p>The facility consisted of three greenhouses, mist propagation beds and a shaded outdoor growing compound. All propagation environments are utilized at different stages of seedling growth to provide for the variance in temperature and shading requirements during the growing season.</p>
Establishment Phase Details	<p>Seedlings are germinated in a germinations chamber or under mist. After seedlings are well established and have at least 2 true leaves, they are transplanted into newspaper cylinders wrapped with polyvinyl food wrap. The newspaper container is 29 cm (11.5 in) tall and 7.5 cm (3 in) in diameter. The newspaper pots are filled with a growing medium of 2:1:1 (v:v:v) sand, mulch, and perlite.</p>
Length of Establishment Phase	4 weeks
Active Growth Phase	<p>Seedlings are ready for transplanting into larger containers at 8 to 12 weeks. The entire newspaper pot minus the plastic wrap is transplanted into the PVC tall containers using the same medium described for the newspaper containers. Osmocote time release fertilizer (9 mo release rate) (13 N:13P2O5:13K2O) is incorporated into the medium at the approximate rate of 22 g per 6l ( 2 gal) PVC containers. PVC containers are 37.5 cm tall(15 in) and are 15 cm (6 in)in diameter. Following transplanting, they are moved to the open growing compound that is covered with a 55% shade cloth during the summer months. During the months of intense summer heat, containers are irrigated by an automated drip system.</p>
Length of Active Growth Phase	4 months
Hardening Phase	<p>Irrigation frequency and duration is gradually reduced for 4 to 8 weeks prior to out-planting. The shade cloth is removed from the open</p>

	growing compound in October when daytime temperatures begin to cool.
Length of Hardening Phase	4 weeks
Harvesting, Storage and Shipping	Containerized seedlings are over wintered directly in the open growing compound.
Length of Storage	variable; depends on outplanting date
Guidelines for Outplanting / Performance on Typical Sites	No information provided in this protocol.
Other Comments	<p>The pollen of this plant is a major cause of hayfever in N. America[222]. Ingesting or touching the plant can cause allergic reactions in some people[222]...This plant was cultivated by the pre-Columbian N. American Indians, seeds found in pre-historic sites are 4 - 5 times larger than those of the present-day wild plant, which seems to indicate selective breeding by the Indians[207]. The following report is for <i>A. artemesifolia</i>, it quite possibly also applies to this species[K]. An oil is obtained from the seed. It has been suggested for edible purposes because it contains little linolenic acid[61, 183]. The seed contains up to 19% oil[61], it has slightly better drying properties than soya bean oil[183]. The leaves are very astringent, emetic and febrifuge[222, 257]. They are applied externally to insect bites and various skin complaints, internally they are used as a tea in the treatment of pneumonia, fevers, nausea, intestinal cramps, diarrhoea and mucous discharges[222]. The juice of wilted leaves is disinfectant and is applied to infected toes[257]. A tea made from the roots is used in the treatment of menstrual disorders and stroke[222]. The pollen is harvested commercially and manufactured into pharmaceutical preparations for the treatment of allergies to the plant[222].<sup>3</sup></p> <p><i>Ambrosia trifida</i> was used as an ingredient in green corn medicine, crushed leaves were rubbed on insect sting, infusion of leaves rubbed</p>

	on hives, juice of wilted leaves applied to infected toes, infusion of leaf taken for fever, and infusion taken for pneumonia in the Cherokee community. It was a compound decoction of plants taken for diarrhea with bleeding and used in a blood medicine in the Iroquois community. It was also used in the Lakota community medicinally and the Meskwaki people believed chewing the root would drive away fear at night. <sup>4</sup>
<b>INFORMATION SOURCES</b>	
References	See Below
Other Sources Consulted	See Below
Protocol Author	Sierra Red Bow
Date Protocol Created or Updated	05/27/20

## References

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- <sup>2</sup>ITIS Report. 2020. *Ambrosia trifida*, [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=36521#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=36521#null) (accessed May 27, 2020).
- <sup>3</sup>Plants for a Future. 2010-2020. *Ambrosia trifida*, <https://pfaf.org/user/Plant.aspx?LatinName=Ambrosia+trifida> (accessed May 27, 2020).
- <sup>4</sup>Native American Ethnobotany DB. N.d. *Ambrosia trifida*, <http://naeb.brit.org/uses/search/?string=Ambrosia+trifida+> (accessed May 27, 2020).
- <sup>5</sup>Lady Bird Johnson Wildflower Center Native Plant Information Network (AMTR). 2016. *Ambrosia trifida*, [https://www.wildflower.org/plants/result.php?id\\_plant=AMTR](https://www.wildflower.org/plants/result.php?id_plant=AMTR) (accessed May 27, 2020).
- <sup>6</sup>Illinois Wildflowers. N.d. *Ambrosia trifida*, [https://www.illinoiswildflowers.info/weeds/plants/giant\\_ragweed.htm](https://www.illinoiswildflowers.info/weeds/plants/giant_ragweed.htm) (accessed May 27, 2020).
- <sup>7</sup>Invasive Species Compendium. 2019. *Ambrosia trifida*, <https://www.cabi.org/isc/datasheet/4693> (accessed May 27, 2020).
- <sup>8</sup>Tree of Life Web Project. 1995-2004. *Ambrosia trifida*, [http://tolweb.org/treehouses/?treehouse\\_id=4680](http://tolweb.org/treehouses/?treehouse_id=4680) (accessed May 27, 2020).

<sup>9</sup>Oklahoma State University Department of Plant and Soil Sciences. 2020. *Ambrosia trifida* (giant ragweed), <http://plantid.okstate.edu/weeds/ambrosia-trifida-giant-ragweed/> (accessed May 27, 2020).

<sup>10</sup>Asbell, Madena. 2017. Propagation protocol for production of Container (plug) *Ambrosia dumosa* (A. Gray) Payne Plants 4"x 10" Anderson plant bands; Mojave Desert Land Trust JOSHUA TREE, California. In: Native Plant Network. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Retrieved from: <https://nnp.rngr.net/npn/propagation/protocols/ambrosia-dumosa-ambrosia/?searchterm=Ambrosia> (accessed May 27, 2020).

<sup>11</sup>N.a. 2009. Propagation protocol for production of Propagules (seeds, cuttings, poles, etc.) *Ambrosia eriocentra* (A. Gray) Payne seeds USDA FS - R6 Bend Seed Extractory Bend, Oregon. In: Native Plant Network. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Retrieved from <https://nnp.rngr.net/npn/propagation/protocols/asteraceae-ambrosia-3706/?searchterm=Ambrosia> (accessed May 27, 2020).

<sup>12</sup>Graham, Jean. 2004. Propagation protocol for production of Container (plug) *Ambrosia dumosa* (Gray) Payne plants 2 gallon PVC pipe containers; USDI NPS - Joshua Tree National Park Native Plant Nursery Twentynine Palms, California. In: Native Plant Network. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Retrieved from <https://nnp.rngr.net/npn/propagation/protocols/asteraceae-ambrosia-2544/?searchterm=Ambrosia> (accessed May 27, 2020).

<sup>13</sup>Scheppegrell, William. N.d. Hay-Fever Resorts in the United States and Canada. *Journal of American Medical Association*, Volume 71, pp. 524. Retrieved from <https://books.google.com/books?id=TsAhAQAAMAAJ&pg=PA524&lpg=PA524&dq=elevation+range+of+great+ragweed&source=bl&ots=FM3DUsl1n8&sig=ACfU3U1zFCb-JWBmWXoQHSMHX3pMyW9etg&hl=en&sa=X&ved=2ahUKewiv9ZKX4NPpAhWZAp0JHahfBH8Q6AEwD3oECAsQAQ#v=onepage&q=elevation%20range%20of%20great%20ragweed&f=false> (accessed May 27, 2020).

<sup>14</sup>Cherokee Dictionary. 2014-2019. ᎠᎹᎻᎠᎵᎠᎵ. <https://www.cherokeedictionary.net/newSearch/dictionary/newSearchForm> (accessed May 27, 2020).

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