St. John's Herb (*Eupatorium cannabinum*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, February 2011
Revised, November 2016, August 2019
Web Version, 8/7/2019

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1 Native Range and Status in the United States

Native Range

From Flora of North America (2011):

"*E. cannabinum* is natively found in Europe."

From GISD (2016):

"Native Range: Ireland, United Kingdom"

Status in the United States

From Flora of North America (2011):

"*E. cannabinum* has been introduced to areas of […] New York, Pennsylvania and Virginia."

Means of Introductions in the United States

From Flora of North America (2011):

"*E. cannabinum* is a garden escapee."

Remarks

No additional remarks.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2014):

"Kingdom Plantae
Subkingdom Viridaeplantae
Infrakingdom Streptophyta
Division Tracheophyta
Subdivision Spermatophytina
Infradivision Angiospermae
Class Magnoliopsida
Superorder Asteranae
Order Asterales
Family Asteraceae
Genus *Eupatorium* L.
Species *Eupatorium cannabinum* L.

Taxonomic Status: Current Standing: accepted"

Size, Weight, and Age Range

From ARKive (2011):

"Leaf length: 5 – 10 cm (Clapham et al. 1987), Stem length: 30 – 120 cm (Clapham et al. 1987)."

Environment
No information specific to the environmental requirements of *Eupatorium cannabinum* was found.

Climate/Range
No information specific to the climate or range of *Eupatorium cannabinum* was found.

Distribution Outside the United States
Native
From Flora of North America (2011):

"*E. cannabinum* is natively found in Europe."

Introduced
From Flora of North America (2011):

"*E. cannabinum* has been introduced to areas of British Columbia, […]."

GISD (2016) lists *Eupatorium cannabinum* as alien, invasive, and established in Albania, Algerian, Armenia, Austria, Azerbaijan, the Bavarian Alps, Belarus, Belgium, Luxembourg, Bulgaria, China, Cyprus, Czech Republic, Denmark, Estonia, Finland, Corsica, France, Georgia, Germany, Hungary, India, Iran, Iraq, Israel, Italy, Sardinia, Sicilia, Latvia, Lebanon, Lithuania, Moldova, Morocco, Nepal, Netherlands, New Zealand, Norway, Pakistan, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Spain, Sweden, Switzerland, Syria, Turkey, and Turkmenistan.

Means of Introduction Outside the United States
From Flora of North America (2011):

"*E. cannabinum* is a garden escapee."

Short Description
From ARKive (2011):

"Hemp-agrimony is a tall and bushy plant which is in no way related to the plants hemp or agrimony (Mabey 1996). It has a woody rootstock and downy shoots that may have short branches with toothed segments, but the leaves on stem braches are lance or egg-shaped (Clapham et al. 1987). The flat flower heads are pinkish-purple or, more rarely, whitish (Stace 1991) and have earned the plant the local name of 'raspberries and cream' in some areas (Grigson 1996)."

From Flora of North America (2011):

"Perennials, 30–150 cm. Stems (from short rhizomes) single, branched distally, puberulent. Leaves opposite; subsessile or petiolate; blades palmately 3(–5)-lobed (at least larger proximal, lobes relatively broad), blades (or lobes) lanceolate to lance-ovate, 50–100 × 20–40 mm, margins serrate, apices rounded to acute, faces puberulent, gland-dotted. Heads in dense, corymbiform arrays. Phyllaries 8–10 in 2–3 series, oblong, 4.5–6 × 1.5–2 mm, apices rounded, abaxial faces puberulent, gland-dotted. Florets (4–)5(–6); corollas (usually pinkish) 2–2.5 mm. Cypselae 2–3 mm; pappi of 20–30 bristles 3–5 mm. 2n = 20."

Biology

From ARKive (2011):

"Hemp-agrimony is a perennial herb (Preston et al. 2002) that flowers in late summer and early autumn (Grigson 1996). The flowers are pollinated mainly by butterflies and moths, and to a lesser extent by bees and flies. Cross-pollination with flowers in the same flower head can also occur (Grigson 1996)."

"Found in a broad range of wet and damp habitats, such as marshes, wet heath, wet woodland, fen-meadows, dune slacks and beside water. It is not as common in dry habitats, but it may occur in dry woodlands, waste ground and on hedge banks (Preston et al. 2002)."

From GISD (2016):

"Plants For A Future Database (2000) states that, "The scented flowers of *E. cannabinum* are hermaphrodite (have both male and female organs) and are pollinated by bees, flies, beetles and Lepidoptera (moths & butterflies). The plant is self-fertile." Clarkson et al. (2003) report that *E. cannabinum* produces thousands of tiny wind dispersed seeds. If these seeds are viable because there are suitable pollinators then seed dispersal will lead to range expansion."

Human Uses

From Fu et al. (2002):

"*Eupatorium cannabinum* contains tumorigenic pyrrolizidine alkaloids."

From GISD (2016):

"Sharma et al. (1998) state that, "Extracts of *Eeupatorium cannabinum* have been used for spleen, liver and biliary diseases, diarrhoea, snakebites, ulcers, wound healing, fever, as a diuretic, anthelmintic and as a repellent against poisonous animals (Woerdenbag, 1993; Madaus, 1938). Extracts of leaves and roots have choleretic, laxative and appetising actions (Woerdenbag, 1993; Hoppe, 1975; Woerdenbag et al. 1991). Aqueous extracts of *E. cannabinum* had choleretic and hepatoprotective activity in mice against carbon tetrachloride induced hepatotoxicity (Lexa et al. 1989, 1990). The aerial parts of *E. cannabinum* are used as immunostimulating agents in cases of influenza infection, as a remedy against obstipation, for decreasing the level of cholesterol and as a diuretic (Roeder, 1995). The plant is currently used as an ingredient in

immunostimulatory drugs (Siebertz et al. 1989). Due to its content of alkaloids, the plant should only be used under professional supervision."

Plants For A Future Database (2000) reports that, "the leaves and flowering tops are alterative, cholagogue [biliary purge], depurative [purifying and detoxifying], diuretic, emetic, expectorant, febrifuge [fever reducer], purgative and tonic. The plant has a long history of use as a gentle laxative that does not provoke irritation, though excessive doses cause purging and vomiting. A tea made from the dried leaves will give prompt relief if taken at the onset of influenza. Recent research has shown that the plant might have anti-tumour activity, though the plant also contains pyrrolizidine alkaloids that can cause damage or cancer to the liver. The plant is harvested in the summer and dried for later use. The roots are diaphoretic, laxative and tonic. They are harvested in the autumn and dried for later use. Recently the plant has been found of use as an immune system stimulant, helping to maintain resistance to acute viral and other infections. A homeopathic remedy is made from the leaves. It is used in the treatment of influenza and feverish chills and also for disorders of the liver, spleen and gall bladder. The leaves have been laid on bread in order to prevent it from becoming moldy. The leaf juice has been rubbed onto the coats of animals as an insect repellent.""

Diseases

From CABI (2016):

"Host Plants/Plants Affected [by *Ralstonia solanacearum* (bacertial wilt of potato)]
[…] Asteraceae, *Eupatorium cannabinum*"

From den Breeÿen et al. (2006):

"*Mycosphaerella eupatoriicola* Höhn. on *Eupatorium cannabinum* from Austria,
Mycosphaerella eupatoriicola Petr. on *Eupatorium cannabinum* from the Czech Republic"

From Sakthivel et al. (2012):

"Host range of *Paracoccus marginatus* with its infestation levels
[…] *Eupatorium cannabinum* L. Hemp-agrimony"

Threat to Humans

No threats to humans from *Eupatorium cannabinum* were found.

3 Impacts of Introductions

From GISD (2016):

"*Eupatorium cannabinum* has the potential to out compete and crowd out native species. It is also able to alter soil nutrients and hydrology potentially reducing the suitability of the area to native flora. This species will form monotypic stands reducing local diversity (Clarkson et al. 2003)."

“Ihupuku swamp [New Zealand] is inhabitated [sic] by 94 species of indigenous plants, some of which are endangered. Some of these species are potentially threatened by the invasion of *E. cannabinum*. (Clarkson et al 2003).”

“During the 1990s *E. cannabinum* has rapidly and aggressively colonized a large swath of wetland habitat between Hawera and Wanganui [New Zealand]. At one site, near Waverley Beach Road, between Waverley and Lake Herengawe, *E. cannabinum* occurs in approximately 60 ha of a 90-ha wetland (J . Campbell pers. comm.) .”

4 Global Distribution

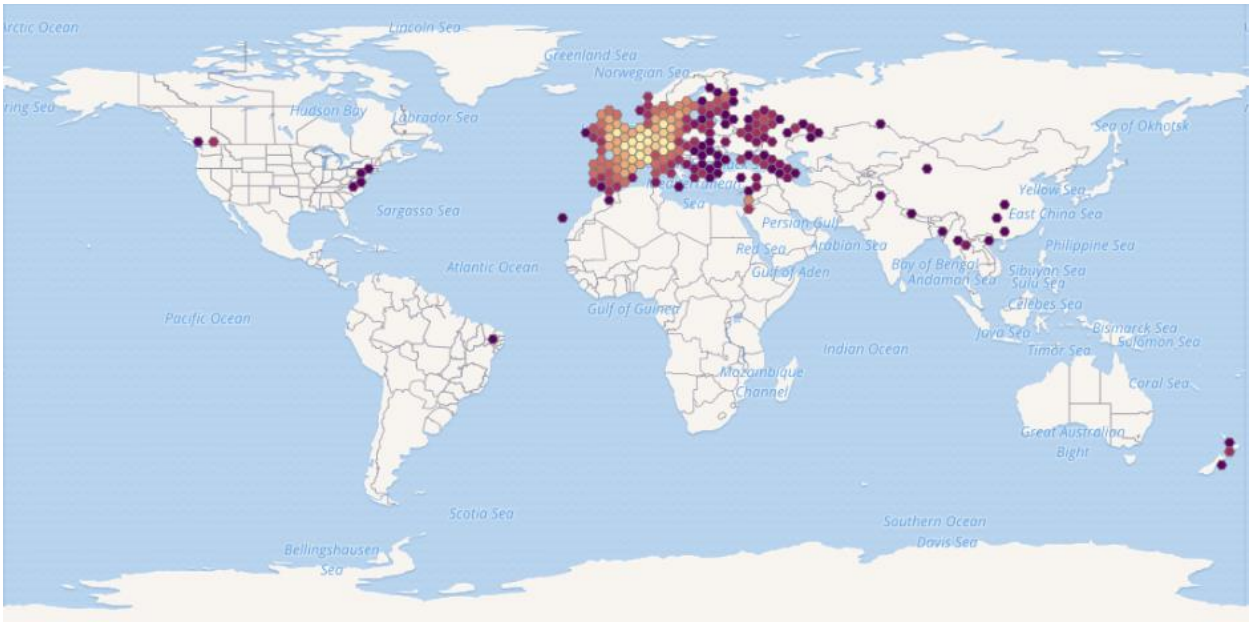

Figure 1. Known global distribution of *E. cannabinum* as reported by GBIF Secretariat (2019). The location in South America was not used to select source points for the climate match, no other source corroborated an established population in that location.

5 Distribution Within the United States

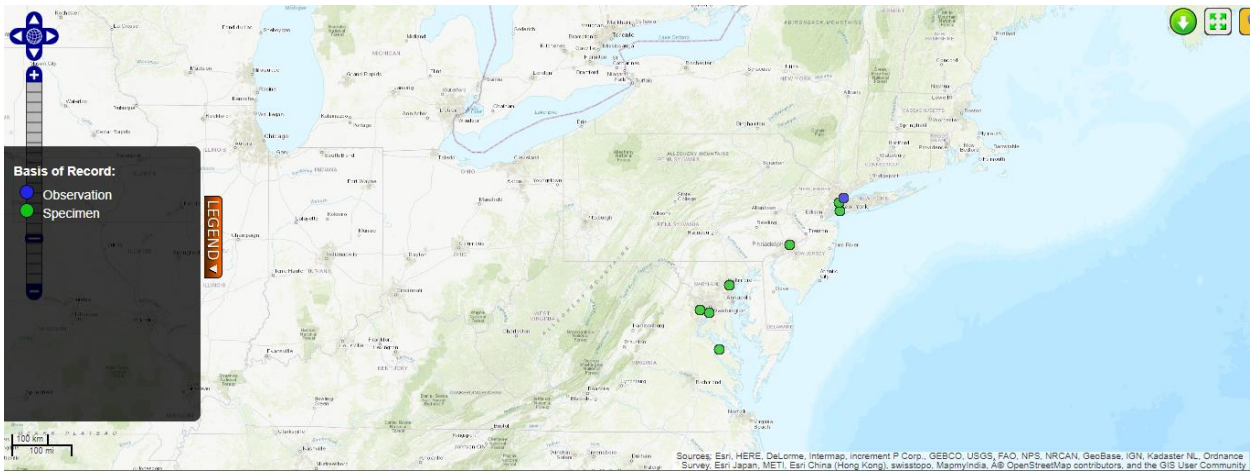

Figure 2. Known distribution of *Eupatorium cannabinum* in the United States. Map from BISON (2019).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Eupatorium cannabinum* was mainly medium to high for the contiguous United States. There were small pockets of low match in Maine, along the southern Atlantic Coast, along the Gulf Coast, in the southwest, and the Pacific Northwest. Everywhere else was medium to high. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.783, high (scores 0.103 and greater are classified as high). All States had high individual Climate 6 scores except for Alabama, Louisiana, and Mississippi which had medium scores, and Florida which had a low score.

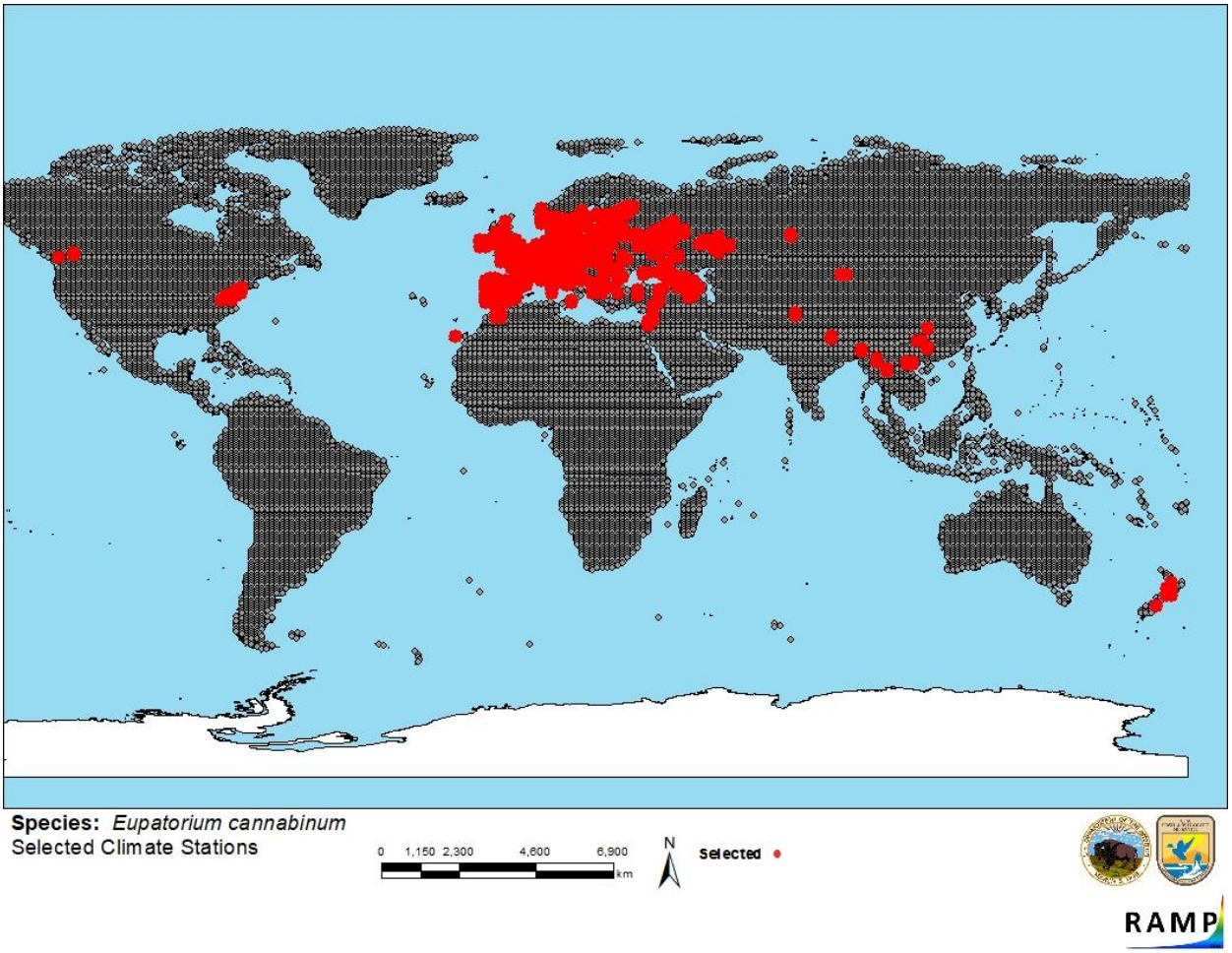

Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red) and non-source locations (grey) for *Eupatorium cannabinum* climate matching. Source locations from GBIF Secretariat (2019) and BISON (2019). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

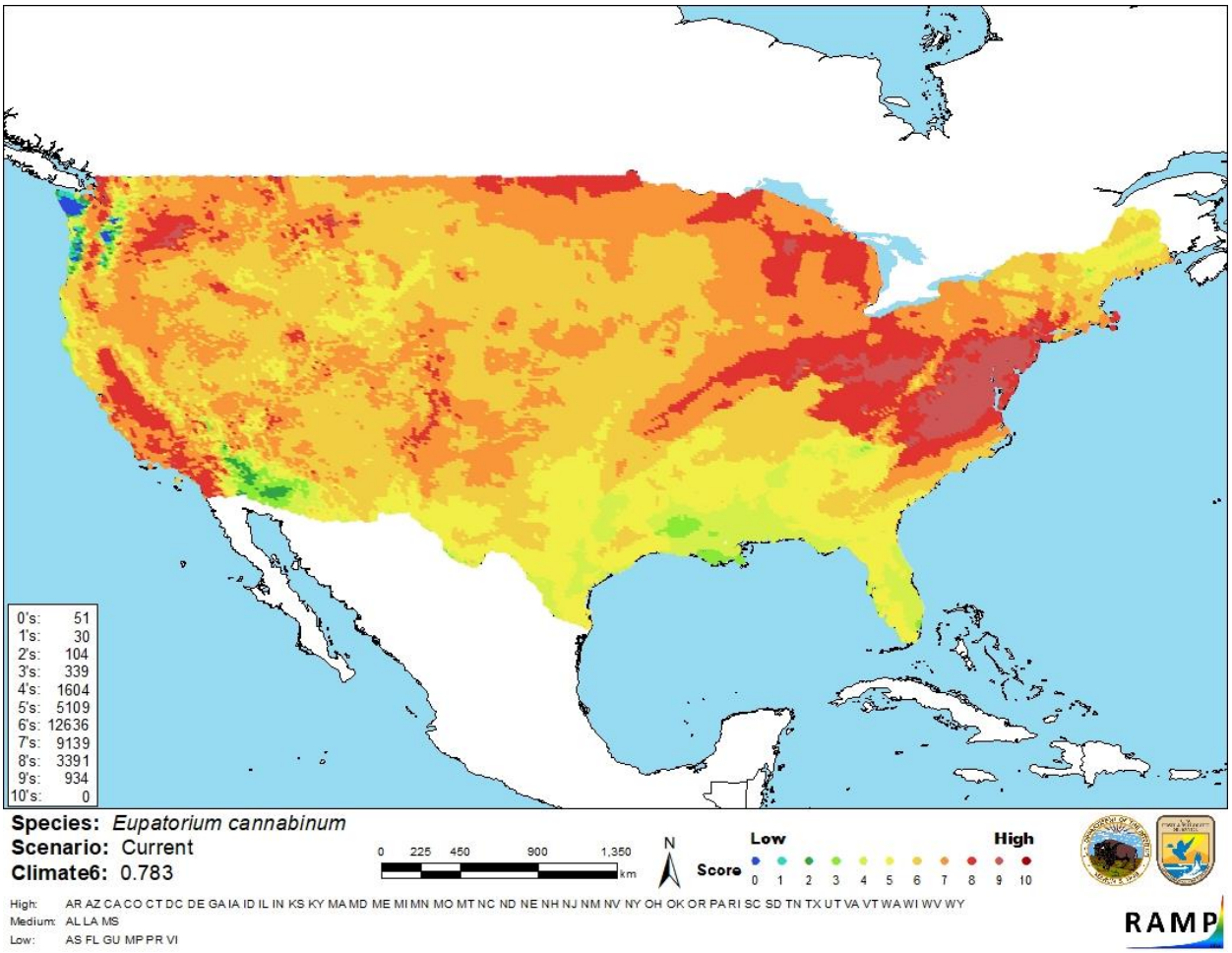

Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *Eupatorium cannabinum* in the contiguous United States based on source locations reported by GBIF Secretariat (2019) and BISON (2019). Counts of climate match scores are tabulated on the left. 0 = Lowest match, 10 = Highest match.

The High, Medium, and Low Climate match Categories are based on the following table:

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
0.000≤X≤0.005	Low
0.005<X<0.103	Medium
X≥0.103	High

7 Certainty of Assessment

The certainty of this assessment is medium. There is adequate quality information on the ecology and biology of *Eupatorium cannabinum*. The distribution of this species is well documented. There are many records of introductions of this species but there was little evidence of realized impacts of those introductions.

8 Risk Assessment

Summary of Risk to the Contiguous United States

St. John's Herb (*Eupatorium cannabinum*) is an herbaceous plant that is native to the islands of the United Kingdom and Ireland. This plant has been in use and traded by humans for centuries. It has primarily been used for medicinal purposes. The history of invasiveness is None Documented. *E. cannabinum* has been introduced and become established around the world. There are few studies on the impacts of *Eupatorium cannabinum* but those published indicate only potential and not demonstrated negative ecological or economic impacts. The climate match is high for the contiguous United States. The certainty of assessment is medium. The overall risk assessment category is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **Climate Match (Sec. 6): High**
- **Certainty of Assessment (Sec. 7): Medium**
- **Remarks/Important additional information** No additional remarks.
- **Overall Risk Assessment Category: Uncertain**

9 References

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.

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10 References Quoted But Not Accessed

Note: The following references are cited within quoted text within this ERSS, but were not accessed for its preparation. They are included here to provide the reader with more information.

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