

Part IV. Plant Assessment Form

For use with “Criteria for Categorizing Invasive Non-Native Plants that Threaten Colorado’s Wildlands and Agriculture”
By the Colorado Noxious Weed Advisory Committee

Electronic version: December 4, 2008

Table 1. Species and Evaluator Information

Species name (Latin binomial):	Bryonia alba L.
Synonyms:	enter text here
Common names:	white bryony, wild hops, devil's turnip, English Mandrake
Evaluation date (mm/dd/yy):	4/22/2010
Evaluator #1 Name/Title:	Nicholas Krick/Graduate research assistant
Affiliation:	Colorado State University - BSPM (Weed Science)
Phone numbers:	970.379.3206
Email address:	nicholas.krick@gmail.com
Address:	300 West Pitkin, Fort Collins, CO 80523
Evaluator #2 Name/Title:	enter text here
Affiliation:	enter text here
Phone numbers:	enter text here
Email address:	enter text here
Address:	enter text here

Section below for list committee use—please leave blank

List committee members:	enter text here
Committee review date:	enter text here
List date:	enter text here
Re-evaluation date(s):	enter text here

General comments on this assessment:

Bryonia alba (white bryony) is a perennial vine that exhibits an aggressive growth habit. It is capable of forming dense vegetative blankets as it climbs on established vegetation. Its dominating growth habit has earned it the nickname: 'Kudzu of the Pacific Northwest'. It is most common in shelterbelts, windbreaks, and riparian buffers. These habitats provide cover and nesting for birds and small mammals. The vegetative growth of *B. alba* is capable of shading out all understory vegetation including trees taller than 10 meters. The mass of these mats is capable of causing physical damage to supporting vegetation.

B. alba is present in Idaho, Montana, Utah, and Washington. The ecotypes and environmental conditions of Colorado overlap with these invaded regions. This species is a candidate for the A-list.

Table 2. Criteria, Section, and Overall Scores

1.1	Impact on abiotic ecosystem processes	B	Other Pub. Mat'l	<p>Impact</p> <p><i>Enter four characters from Q1.1-1.4 below:</i></p> <p>BAAU</p> <p><i>Using matrix, determine score and enter below:</i></p> <p>A</p>	<p>Wildlands Plant Score</p> <p><i>Using matrix, determine Overall Score and Alert Status from the first, second, and third section scores and enter below:</i></p> <p>High Red Alert</p>
1.2	Impact on plant community	A	Other Pub. Mat'l		
1.3	Impact on higher trophic levels	A	Other Pub. Mat'l		
1.4	Impact on genetic integrity	U	Rev'd, Sci. Pub'n		
2.1	Role of anthropogenic and natural disturbance	A (3 pts)	Anecdotal	<p>Invasiveness</p> <p><i>Enter the sum total of all points for Q2.1-2.7 below:</i></p> <p>16</p> <p><i>Use matrix to determine score and enter below:</i></p> <p>B</p>	
2.2	Local rate of spread with no management	A (3 pts)	Other Pub. Mat'l		
2.3	Recent trend in total area infested within state	U (0 pts)	Other Pub. Mat'l		
2.4	Innate reproductive potential Wksht A	A (3 pts)	Other Pub. Mat'l		
2.5	Potential for human-caused dispersal	C (1 pt)	Anecdotal		
2.6	Potential for natural long-distance dispersal	A (3 pts)	Other Pub. Mat'l		
2.7	Other regions invaded	A (3 pts)	Other Pub. Mat'l		
3.1	Ecological amplitude/Range	U	Doc'n level	<p>Distribution</p> <p><i>Using matrix, determine score and enter below:</i></p> <p>U</p>	
3.2	Distribution/Peak frequency Wrksht B	U	Doc'n level		

4.1	Poisonous to livestock	C (1pts)	Other Pub. Mat'l
4.2	Detrimental to economic crops	A (3 pts)	Anecdotal
4.3	Detrimental to management of agricultural system, rangeland and pasture	A (3 pts)	Other Pub. Mat'l
4.4	Human impacts Wrksht C	A (3 pts)	Other Pub. Mat'l

Agricultural / Human Impact

Enter the sum total of all points for Q4.1-4.4 below:

10

Use matrix to determine score and enter below:

A

Agricultural Plant Score

Using matrix, determine Overall Score and Alert Status from the second, third and fourth section scores and enter below:

Moderate

Red Alert

Table 3. Documentation

<p>Question 1.1 Impact on abiotic ecosystem processes</p>	<p>B Other Pub. Mat'l back</p>
<p>Identify ecosystem processes impacted: Growth habit can create a shade canopy, preventing light from reaching under stories.</p>	
<p>Rationale: B. alba exhibits a climbing vine growth habit that can be very aggressive.</p>	
<p>Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]</p>	
<p>Question 1.2 Impact on plant community composition, structure, and interactions</p>	<p>A Other Pub. Mat'l back</p>
<p>Identify type of impact or alteration: Can quickly dominate an area and displace or physically damage desired vegetation.</p>	
<p>Rationale: B. alba is a climbing vine that can engulf supporting vegetation and shade out understory vegetation.</p>	
<p>Sources of information: Novak, S. and Mack, R. 1995. Allozyme Diversity in the Apomictic Vine Bryonia alba (Cucurbitaceae): Potential Consequences of Multiple Introductions. American Journal of Botany, Vol. 82, No. 9 pp. 1153-1162 Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]</p>	
<p>Question 1.3 Impact on higher trophic levels</p>	<p>A Other Pub. Mat'l back</p>
<p>Identify type of impact or alteration: Can endanger established plant communities; therefore, altering the patterns of animals that utilize and rely on established vegetation.</p>	
<p>Rationale: B. alba is capable of forming mats that completely blanket supporting vegetation. The weight of these mats may cause physical damage to supporting plants, providing the opportunity for pathogens to infest hosts. This can happen in winter when snow accumulates on the mats.</p>	
<p>Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]</p>	

Question 1.4 Impact on genetic integrity	U Other Pub. Mat'l back
Identify impacts: Successful hybridization has been done with Bryonia dioica. Backcrossing these plants results in monoecious parents, but they are highly sterile.	
Rationale: No bryonia species have been recorded in Colorado; therefore, there is no chance of polluting the genetics of a native species.	
Sources of information: Peter v. Sengbusch. 2003. A closer scrutiny on Mendel's laws - Sex Determination. [http://www.biologie.uni-hamburg.de/b-online/e10/10b.htm] translated.	
Question 2.1 Role of anthropogenic and natural disturbance in establishment	A Anecdotal back
Describe role of disturbance: Disturbance is not required for establishment.	
Rationale: B. alba successfully invades natural areas and areas of high plant densities. It is regularly dispersed by bird droppings.	
Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]	
Question 2.2 Local rate of spread with no management	A Other Pub. Mat'l back
Describe rate of spread: If unmanaged, B. alba can spread very rapidly. Vines are capable of growing several yards in length during one growing season.	
Rationale: B. alba is a fast growing species that will spread rapidly with vegetative growth and seed dispersal through birds.	
Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]	
Question 2.3 Recent trend in total area infested within state	U Other Pub. Mat'l back
Describe trend: Not documented in Colorado	

Rationale: enter text here	
Sources of information: USDA-NRCS PLANTS Database. Plant profile for Bryonia alba (white bryony). [http://plants.usda.gov/java/profile?symbol=BRAL4] Graham and Ackerfield, CSU Herbarium. 2008. [http://wsprod.colostate.edu/cwis440/herbarium/index.asp] The Biota of North America Program - County-Level Atlas of the Vascular Flora of North America. 2010. [http://bonap.org/dist%20maps%202009/Bryonia.html]. Generated 4/2010.	
Question 2.4 Innate reproductive potential	A Other Pub. Mat'l back
Describe key reproductive characteristics: Perennial, dioecious plant that reproduces by seed.	
Rationale: Vegetative expansion is aggressive with a large perennial rootstock; however, reproduction is through seeds which are dispersed by animals that consume the berries.	
Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]	
Question 2.5 Potential for human-caused dispersal	C Anecdotal back
Identify dispersal mechanisms: Human caused dispersal is not likely to occur.	
Rationale: B. alba is more of a problem in natural areas as opposed to cropping systems where seed or vegetative structures could be easily transported.	
Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]	
Question 2.6 Potential for natural long-distance dispersal	A Other Pub. Mat'l back
Identify dispersal mechanisms: Birds and small animals can disperse seeds long distances.	
Rationale: Infestations are common around shelterbelts and wildlife plantings. Birds and small animals use these structures for shelter and nesting. As these animals travel from one location to another, they may disperse seed in droppings.	

Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]	
Question 2.7 Other regions invaded	A Other Pub. Mat'l back
Identify other regions: Outside its native range, it has been found in Washington, Utah, Montana, and Idaho.	
Rationale: B. alba is commonly found in windbreaks, shelter breaks, wildlife plantings, and riparian buffers. The environmental conditions in Colorado are similar to parts of Montana, Idaho, Utah, and Washington. It is likely that these conditions will be suitable for the establishment of B. alba.	
Sources of information: The Biota of North America Program - County-Level Atlas of the Vascular Flora of North America. 2010. [http://bonap.org/dist%20maps%202009/Bryonia.html]. Generated 4/2010. USDA-NRCS PLANTS Database. Plant profile for Bryonia alba (white bryony). [http://plants.usda.gov/java/profile?symbol=BRAL4]	
Question 3.1 Ecological amplitude/Range	U Other Pub. Mat'l back
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: No records indicate that this plant is in Colorado.	
Rationale: Most current sources do not have records of this species in Colorado.	
Sources of information: USDA-NRCS PLANTS Database. Plant profile for Bryonia alba (white bryony). [http://plants.usda.gov/java/profile?symbol=BRAL4] Graham and Ackerfield, CSU Herbarium. 2008. [http://wsprod.colostate.edu/cwis440/herbarium/index.asp] The Biota of North America Program - County-Level Atlas of the Vascular Flora of North America. 2010. [http://bonap.org/dist%20maps%202009/Bryonia.html]. Generated 4/2010.	
Question 3.2 Distribution/Peak frequency	U Other Pub. Mat'l back
Describe distribution: Not currently in Colorado	
Rationale: There is a wide range of suitable habitat for B. alba in Colorado; however, this plant has yet to be documented in the state.	
Sources of information: USDA-NRCS PLANTS Database. Plant profile for Bryonia alba (white bryony).	

<p>[http://plants.usda.gov/java/profile?symbol=BRAL4 Graham and Ackerfield, CSU Herbarium. 2008. [http://wsprod.colostate.edu/cwis440/herbarium/index.asp] The Biota of North America Program - County-Level Atlas of the Vascular Flora of North America. 2010. [http://bonap.org/dist%20maps%202009/Bryonia.html]. Generated 4/2010.</p>	
Question 4.1 Poisonous to Livestock	C Other Pub. Mat'l back
<p>Describe impacts in terms of high probability of death, long-term health impacts, or short-term health impacts: Parts of <i>B. alba</i> can be poisonous to livestock, but extracts have been used historically in veterinary medicine.</p>	
<p>Rationale: Only goats have been known to eat <i>B. alba</i>.</p>	
<p>Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/] Grieve, M. 2010. A modern herbal. White bryony (<i>bryonia alba</i>). [http://www.botanical.com/botanical/mgmh/b/brywhi77.html]</p>	
Question 4.2 Detrimental to Economic Crops	A Anecdotal back
<p>Describe impacts to all aspects of cropping systems (see guidelines): If conditions are suitable for establishment, <i>B. alba</i> can be detrimental to economic crops.</p>	
<p>Rationale: <i>B. alba</i> can form dense mats of vegetation, shading out understory plants. If infestations become established in crops, competition and shading will result in yield losses.</p>	
<p>Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]</p>	
Question 4.3 Detrimental to Mgmt of Agricultural System, Rangeland and Pasture	A Other Pub. Mat'l back
<p>Describe impacts to water diversion systems, increased water use, reduced forage for livestock: Large infestations of <i>B. alba</i> can be detrimental to the management of agricultural systems.</p>	
<p>Rationale: Expansive vegetative mats may develop, which can shade out forage and cause physical damage to crops, orchards, fences, and other structures.</p>	

Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]	
Question 4.4 Human Health Impacts	A Other Pub. Mat'l back
Describe key human impacts such as; irritants, property values, recreational values, and industry impacts: Berries are poisonous to humans. Property values and recreational values can be greatly decreased by large infestations of B. alba.	
Rationale: B. alba can quickly become dominant in areas, completely engulfing desired vegetation. Infestations of this magnitude will lower property values. The berries are emetic to humans. If an adult human consumes 40 berries or more, it may be fatal.	
Sources of information: Vleet, Steve. 2007. White Bryony. Washington State University Extension. [http://www.whitman.wsu.edu/weeds/whitebryony.html]. Hall, David. 2004. Bryonia alba (white bryony, wild hops, devil's turnip) on the Palouse. [http://www.palouseprairie.org/bryonia_alba/]	

Worksheet A

[back](#)

Reaches reproductive maturity in 2 years or less	Yes: 1 pt
Dense infestations produce >1,000 viable seed per square meter	Unknown: 0 pts
Populations of this species produce seeds every year.	Yes: 1 pt
Seed production sustained over 3 or more months within a population annually	Yes: 1 pt
Seeds remain viable in soil for three or more years	Yes: 2 pts
Viable seed produced with <i>both</i> self-pollination and cross-pollination	No: 0 pt
Has quickly spreading vegetative structures (rhizomes, roots, etc.) that may root at nodes	Yes: 1 pt
Fragments easily and fragments can become established elsewhere	No: 0 pts
Resprouts readily when cut, grazed, or burned	Yes: 1 pt
	6 pts 1 unknown
	A (6+ pts)
Note any related traits: enter text here	

Worksheet B - Colorado Ecological Types and Land Use

[back](#)

Major Ecological and Land Use Types	Minor Ecological and Land Use Types	Code*
Freshwater and Aquatic Systems	lakes, ponds, reservoirs	score
	rivers, streams, canals	score
Riparian and wetlands	Riparian forest	Unknown
	Riparian shrublands	Unknown
	Wet meadows	score
Grasslands	Shortgrass prairie	score
	Tallgrass prairie	score
	Sandsage prairie	score
	Montane meadows	score
Irrigated Agriculture	Hay meadows	score
	Irrigated crops (alfalfa, corn, sugar beets)	score
Dryland Agriculture	Dryland crops (wheat, corn, millet, dryland grass hay, sunflowers, mustard for biodiesel)	score
Developed Lands	Urban, exurban, industrial	Unknown
Arid Shrublands	Sagebrush shrublands	score
	Foothills shrublands	score
	Gambel oak shrublands	score
Woodlands	Pinyon - juniper	score
	Ponderosa pine	Unknown
	Limber pine	Unknown
Forest	Lodgepole pine	score
	Spruce-fir	score
Alpine	Boulder and rock fields	score
	Dwarf shrublands	score
	Tundra	score
Barrens (lower elevation)	Dunes	score
	Rock outcrops	score
	Canyonlands	score

* A. means >50% of type occurrences are invaded; B means >20% to 50%; C. means >5% to 20%; D. means present but ≤5%; U. means unknown (unable to estimate percentage of occurrences invaded).

Worksheet C – Human Impacts

Human health impacts; irritants (sap), spines, poisonous, and/or smoke impacts	Yes: 1 pt
Property values are decreased due to increased risk of fire	No: 0 pts
Decreased property value due to moderate to heavy infestations	Yes: 2 pts
Decreased land value for recreational use; boating, fishing, camping, etc.	Yes: 1 pt
Impact of listing detrimental to industry; agriculture, horticulture, nursery, and/or seed	Yes: 2 pt
	6 pts Total Unknowns
	A (4+ pts)
Note any related traits: enter text here	