WEED RISK ASSESSMENT FORM

Botanical name: *Mycelis muralis (L.) Dumort.*

Common name: wall lettuce

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Outcome score:

A.	**Climatic Comparison**		
	This species is present or may potentially establish in the following eco-geographic regions:		
1	South Coastal	Yes	
2	Interior-Boreal		No
3	Arctic-Alpine		No

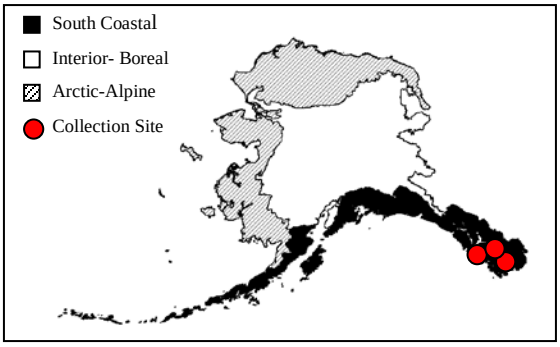
B.	**Invasiveness Ranking**	Total (Total Answered*) Possible	Total
1	Ecological impact	40 (40)	7
2	Biological characteristic and dispersal ability	25 (23)	11
3	Ecological amplitude and distribution	25 (25)	8
4	Feasibility of control	10 (10)	4
	Outcome score	100 (98)[b]	30[a]
	Relative maximum score†		0.31

* For questions answered "unknown" do not include point value for the question in parentheses for "Total Answered Points Possible."

† Calculated as [a]/[b].

A. CLIMATIC COMPARISON:

	1.1. Has this species ever been collected or documented in Alaska?
Yes	Yes – continue to 1.2
	No – continue to 2.1
	1.2. Which eco-geographic region has it been collected or documented (see inset map)? *Proceed to Section B. Invasiveness Ranking.*
Yes	South Coastal
	Interior-Boreal
	Arctic-Alpine



Documentation: *Mycelis muralis* has been reported from Ketchikan, Wrangell, and Kuiu Island in South Coastal Alaska (AK Weeds Database 2004).
Sources of information:
AK Weeds Database. 2004. Database of exotic vegetation collected in Alaska. University of Alaska, Alaska Natural Heritage Program – US Forest Service – National Park Service Database. Available: http://akweeds.uaa.alaska.edu/

2.1. Is there a 40% or higher similarity (based on CLIMEX climate matching) between climates any where the species currently occurs and

a. Juneau (South Coastal Region)?

Yes – *record locations and similarity; proceed to Section B. Invasiveness Ranking*

No

b. Fairbanks (Interior-Boreal)?

Yes

Yes – *record locations and similarity; proceed to Section B. Invasiveness Ranking*

No

c. Nome (Arctic-Alpine)?

Yes

Yes – *record locations and similarity; proceed to Section B. Invasiveness Ranking*

No

– *If "No" is answered for all regions, reject species from consideration*

Documentation: The species' range includes Røros and Dombås, Norway (Lid and Lid 1994), which has a 76% and 63% climatic match with Nome, and 55% and 52% climatic match with Fairbanks, respectively using CLIMEX matching program. However, its northern limit in Europe follows approximately the 19.4° F mean January isotherm (Clabby and Osborne 1958). These conditions are not typical for Arctic-Alpine and Interior-Boreal ecogeographic regions. This suggests that establishment of *Mycelis muralis* in Interior-Boreal and Arctic-Alpine ecogeographic regions is unlikely.
Sources of information: CLIMEX for Windows, Version 1.1a. 1999. CISRO Publishing, Australia.
Lid, J. and D. T. Lid. 1994. Flora of Norway. The Norske Samlaget, Oslo. Pp. 1014.
National Climatic Data Center. 2004. Climatological data. Alaska. January 2004. Volume number 90. Asheville, NC: National Oceanic and Atmospheric Administration, National Environmental Satellite, Data and Information Service, National Climatic Data Center. Report nr ISSN 0364-5762. 54 p.

B. INVASIVENESS RANKING

1. ECOLOGICAL IMPACT

1.1. Impact on Natural Ecosystem Processes

A.	No perceivable impact on ecosystem processes	0
B.	Influences ecosystem processes to a minor degree (e.g., has a perceivable but mild influence on soil nutrient availability)	3
C.	Significant alteration of ecosystem processes (e.g., increases sedimentation rates along streams or coastlines, reduces open water that are important to waterfowl)	7
D.	Major, possibly irreversible, alteration or disruption of ecosystem processes (e.g., the	10

species alters geomorphology; hydrology; or affects fire frequency, altering community composition; species fixes substantial levels of nitrogen in the soil making soil unlikely to support certain native plants or more likely to favor non-native species)

U. Unknown

Score 1

Documentation:

Identify ecosystem processes impacted:

Wall lettuce is an early successional species with minimal cover (Clabby and Osborne 1999) that likely has low impacts on ecosystem processes.

Rational:

Sources of information:

Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

1.2. Impact on Natural Community Structure

A.	No perceived impact; establishes in an existing layer without influencing its structure	0
B.	Influences structure in one layer (e.g., changes the density of one layer)	3
C.	Significant impact in at least one layer (e.g., creation of a new layer or elimination of an existing layer)	7
D.	Major alteration of structure (e.g., covers canopy, eradicating most or all layers below)	10
U.	Unknown	

Score 2

Documentation:

Identify type of impact or alteration:

Wall lettuce percent cover in vegetation is low, often less then 10%, but can approach 40%. The numbers of plants ranged from 1 to 16 per m² in Irish woodland (Clabby and Osborn 1999).

Rational:

Sources of information:

Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

1.3. Impact on Natural Community Composition

A.	No perceived impact; causes no apparent change in native populations	0
B.	Influences community composition (e.g., reduces the number of individuals in one or more native species in the community)	3
C.	Significantly alters community composition (e.g., produces a significant reduction in the population size of one or more native species in the community)	7
D.	Causes major alteration in community composition (e.g., results in the extirpation of one or several native species, reducing biodiversity or change the community composition towards species exotic to the natural community)	10
U.	Unknown	

Score 1

Documentation:

Identify type of impact or alteration:

There are no records concerning the alteration of community composition.

Rational:

Sources of information:

1.4. Impact on higher trophic levels (cumulative impact of this species on the animals, fungi, microbes, and other organisms in the community it invades)

A.	Negligible perceived impact	0
B.	Minor alteration	3
C.	Moderate alteration (minor reduction in nesting/foraging sites, reduction in habitat	7

connectivity, interference with native pollinators, injurious components such as spines, toxins)

D. Severe alteration of higher trophic populations (extirpation or endangerment of an existing native species/population, or significant reduction in nesting or foraging sites) 10

U. Unknown

Score 3

Documentation:

Identify type of impact or alteration:

A number of insects and parasites have been observed for wall lettuce. Mycorrhizal relationships are known to occur on wall lettuce. Latex production may act as an anti-herbivory device (Clabby and Osborn 1999).

Rational:

Sources of information:

Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

Total Possible 40

Total 7

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2. BIOLOGICAL CHARACTERISTICS AND DISPERSAL ABILITY

2.1. Mode of reproduction

A. Not aggressive reproduction (few [0-10] seeds per plant and no vegetative reproduction) 0

B. Somewhat aggressive (reproduces only by seeds (11-1,000/m^2) 1

C. Moderately aggressive (reproduces vegetatively and/or by a moderate amount of seed, <1,000/m^2) 2

D. Highly aggressive reproduction (extensive vegetative spread and/or many seeded, >1,000/m^2) 3

U. Unknown

Score 3

Documentation:

Describe key reproductive characteristics (including seeds per plant):

Wall lettuce reproduces exclusively by seed. A plant may produce up to 500 seeds in shaded sites and up to 11,500 seeds in more open sites (Clabby and Osborne 1999).

Rational:

Sources of information:

Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

2.2. Innate potential for long-distance dispersal (bird dispersal, sticks to animal hair, buoyant fruits, wind-dispersal)

A. Does not occur (no long-distance dispersal mechanisms) 0

B. Infrequent or inefficient long-distance dispersal (occurs occasionally despite lack of adaptations) 2

C. Numerous opportunities for long-distance dispersal (species has adaptations such as pappus, hooked fruit-coats, etc.) 3

U. Unknown

Score 3

Documentation:

Identify dispersal mechanisms:

Achenes possess pappus and may by dispersed by wind (Douglas 1955).

Rational:

Sources of information:

Douglas, G. W., G. B. Straley, D. Meidinger, J. Pojar. 1998. Illustrated flora of British

Columbia. V. 2. Ministry of Environment, Lands and Parks Ministry of Forests. British Columbia. 401 pp.

2.3. Potential to be spread by human activities (both directly and indirectly – possible mechanisms include: commercial sales, use as forage/revegetation, spread along highways, transport on boats, contamination, etc.)

A.	Does not occur	0
B.	Low (human dispersal is infrequent or inefficient)	1
C.	Moderate (human dispersal occurs)	2
D.	High (there are numerous opportunities for dispersal to new areas)	3
U.	Unknown	

Score 2

Documentation:
Identify dispersal mechanisms:
Wall lettuce can be dispersed along the transportation corridors (M. Shephard – pers. com.).
Rational:

Sources of information:
Shephard, M. , Vegetation Ecologist, USDA, Forest Service, Forest Health Protection, State and Private Forestry, 3301 C Street, Suite 202, Anchorage, Alaska 99503 Division. Tel: (907) 743-9454 - Pers. com.

2.4. Allelopathic

A.	No	0
B.	Yes	2
U.	Unknown	

Score U

Documentation:
Describe effect on adjacent plants:
There is no data concerning allelopathy.
Rational:

Sources of information:

2.5. Competitive ability

A.	Poor competitor for limiting factors	0
B.	Moderately competitive for limiting factors	1
C.	Highly competitive for limiting factors and/or nitrogen fixing ability	3
U.	Unknown	

Score 1

Documentation:
Evidence of competitive ability:
Wall lettuce almost always occurs as a component of sparse vegetation and is rarely found in closed swards. It may compete with co-occurring species in closed woodland vegetation (Clabby and Osborn 1999).
Rational:

Sources of information:
Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

2.6. Forms dense thickets, climbing or smothering growth habit, or otherwise taller than the surrounding vegetation

A.	No	0
B.	Forms dense thickets	1
C.	Has climbing or smothering growth habit, or otherwise taller than the surrounding	2

vegetation

U. Unknown

Score 0

Documentation:
Describe grow form:
Wall lettuce does not form thickets or patches. It usually occurs in small groups or as scattered individuals (Clabby and Osborne 1999).
Rational:

Sources of information:
Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

2.7. Germination requirements

A. Requires open soil and disturbance to germinate 0
B. Can germinate in vegetated areas but in a narrow range or in special conditions 2
C. Can germinate in existing vegetation in a wide range of conditions 3
U. Unknown

Score 2

Documentation:
Describe germination requirements:
Wall lettuce germinates mainly on barren or sparsely vegetated sites (Clabby and Osborn 1999).
Rational:

Sources of information:
Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

2.8. Other species in the genus invasive in Alaska or elsewhere

A. No 0
B. Yes 3
U. Unknown

Score 0

Documentation:
Species:
The genus *Mycelis* is monotypic (USDA 2002).
Sources of information:
USDA (United States Department of Agriculture), NRCS (Natural Resource Conservation Service). 2002. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

2.9. Aquatic, wetland, or riparian species

A. Not invasive in wetland communities 0
B. Invasive in riparian communities 1
C. Invasive in wetland communities 3
U. Unknown

Score 0

Documentation:
Describe type of habitat:
Wall lettuce is a species of moist to mesic forests in the lowland and montane zones. It is commonly found in open woods, wood margins and woodland clearings, but also occurs in scrub, and on walls and rock outcrops (Clabby and Osborne 1999, Cronquist 1955, Douglas et al. 1998, Gubanov et al. 1995).
Rational:

Sources of information:

Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

Cronquist, A. 1955. *Lactuca* L. Lettuce. In: Hitchcock, C.L., A. Cronquist, M. Ownbey, J.W. Thompson. 1955. Vascular plants of the Pacific Northwest. Part 5: Compositae. Seattle and London: University of Washington Press. 343 p.

Douglas, G.W., G.B. Straley, D. Meidinger and J. Pojar. 1998. Illustrated flora of British Columbia. V. 2. Ministry of Environment, Lands and Parks Ministry of Forests. British Columbia. 401 pp.

Gubanov, I.A., K.B. Kiseleva, B.C. Novikov, B.N. Tihomirov. 1995. Flora of vascular plants of Center European Russia. Moscow. Argus. 558 pp.

Total Possible	23
Total	11

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3. DISTRIBUTION

3.1. Is the species highly domesticated or a weed of agriculture

A.	No	0
B.	Is occasionally an agricultural pest	2
C.	Has been grown deliberately, bred, or is known as a significant agricultural pest	4
U.	Unknown	

Score 0

Documentation:

Identify reason for selection, or evidence of weedy history:

The species is not known as an agricultural weed.

Rational:

Sources of information:

3.2. Known level of impact in natural areas

A.	Not known to cause impact in any other natural area	0
B.	Known to cause impacts in natural areas, but in dissimilar habitats and climate zones than exist in regions of Alaska	1
C.	Known to cause low impact in natural areas in similar habitats and climate zones to those present in Alaska	3
D.	Known to cause moderate impact in natural areas in similar habitat and climate zones	4
E.	Known to cause high impact in natural areas in similar habitat and climate zones	6
U.	Unknown	

Score 1

Documentation:

Identify type of habitat and states or provinces where it occurs:

Though wall lettuce occurs mainly on disturbed sites (Clabby and Osborn 1999), it has been observed to invade forest communities in Oregon (M.L. Carlson – pers. obs.). Wall lettuce has been found along old logging roads in Southeast Alaska (AK Weeds Database 2004).

Sources of information:

AK Weeds Database. 2004. Database of exotic vegetation collected in Alaska. University of Alaska, Alaska Natural Heritage Program – US Forest Service – National Park Service Database. Available: http://akweeds.uaa.alaska.edu/

Carlson, M. L., Assistant Research Professor - Botany, Alaska Natural Heritage Program, University of Alaska Anchorage, 707 A Street, Anchorage, Alaska. Tel: (907) 257-2790.

Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (Lactuca muralis (L.) Gaertner. Journal of Ecology 87: 156-172.

3.3. Role of anthropogenic and natural disturbance in establishment

A.	Requires anthropogenic disturbances to establish	0

B. May occasionally establish in undisturbed areas but can readily establish in areas with natural disturbances 3
C. Can establish independent of any known natural or anthropogenic disturbances 5
U. Unknown

Score 0

Documentation:
Identify type of disturbance:
Wall lettuce habitats are often associated with natural or anthropogenic disturbances such as storms, fires, and clearcuts (Clabby and Osborne 1999).
Rational:

Sources of information:
Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

3.4. Current global distribution

A. Occurs in one or two continents or regions (e.g., Mediterranean region) 0
B. Extends over three or more continents 3
C. Extends over three or more continents, including successful introductions in arctic or subarctic regions 5
U. Unknown

Score 5

Documentation:
Describe distribution:
Wall lettuce is native to most of temperate continental Europe. Its distribution extends eastward to Turkey and the Caucasus Mountains and north in Norway at 68.5° N. Wall lettuce also occurs in North Africa, North America, and New Zealand (Clabby and Osborn 1999).
Rational:

Sources of information:
Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

3.5. Extent of the species U.S. range and/or occurrence of formal state or provincial listing

A. 0-5% of the states 0
B. 6-20% of the states 2
C. 21-50%, and/or state listed as a problem weed (e.g., “Noxious,” or “Invasive”) in 1 state or Canadian province 4
D. Greater than 50%, and/or identified as “Noxious” in 2 or more states or Canadian provinces 5
U. Unknown

Score 2

Documentation:
Identify states invaded:
Wall lettuce has been found in Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New York, Oregon, Vermont, and Washington (USDA 2002). *Mycelis muralis* is exotic to North America but is not noxious (Invaders Database System 2003, USDA 2002).
Rational:

Sources of information:
Invaders Database System. The University of Montana. 2003. Montana Noxious Weed Trust Fund. Department of Agriculture. http://invader.dbs.umt.edu/
USDA (United States Department of Agriculture), NRCS (Natural Resource Conservation Service). 2002. The PLANTS Database, Version 3.5

(http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Total Possible 25
Total 8

4. FEASIBILITY OF CONTROL

4.1. Seed banks

A. Seeds remain viable in the soil for less than 3 years 0
B. Seeds remain viable in the soil for between 3 and 5 years 2
C. Seeds remain viable in the soil for 5 years and more 3
U. Unknown

Score 2

Documentation:
Identify longevity of seed bank:
In laboratory experiments, dry seeds stored in a refrigerator remained viable for at least 3 years. Seeds stored at room temperature lost viability after 2 years (Clabby and Osborne 1999).
Rational:
In Kellman's (1974) study the number of viable seeds declined during the 3 years of monitoring, suggesting a short period of seed viability.
Sources of information:
Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.
Kellman, M. 1974. Preliminary seed budgets for two plant communities in coastal British Columbia. Journal of Biogeography 1(2): 123-133.

4.2. Vegetative regeneration

A. No resprouting following removal of aboveground growth 0
B. Resprouting from ground-level meristems 1
C. Resprouting from extensive underground system 2
D. Any plant part is a viable propagule 3
U. Unknown

Score 0

Documentation:
Describe vegetative response:
Wall lettuce does not regenerate vegetatively (Clabby and Osborn 1999).
Rational:

Sources of information:
Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

4.3. Level of effort required

A. Management is not required (e.g., species does not persist without repeated anthropogenic disturbance) 0
B. Management is relatively easy and inexpensive; requires a minor investment in human and financial resources 2
C. Management requires a major short-term investment of human and financial resources, or a moderate long-term investment 3
D. Management requires a major, long-term investment of human and financial resources 4
U. Unknown

Score 2

Documentation:
Identify types of control methods and time-term required:
Control options have not been investigated. Kellman (1974) suggested that wall lettuce will not persist on sites with established perennials.

Rational:

Sources of information:
Kellman, M. 1974. Preliminary seed budgets for two plant communities in coastal British Columbia. Journal of Biogeography 1(2): 123-133.

Total Possible	10
Total	4

Total for 4 sections Possible	98
Total for 4 sections	30

References:

AK Weeds Database. 2004. Database of exotic vegetation collected in Alaska. University of Alaska, Alaska Natural Heritage Program – US Forest Service – National Park Service Database. Available: http://akweeds.uaa.alaska.edu/

Carlson, M.L., Assistant Research Professor - Botany, Alaska Natural Heritage Program, University of Alaska Anchorage, 707 A Street, Anchorage, Alaska. Tel: (907) 257-2790.

Clabby, G. and B.A. Osborne. 1999. Biological flora of the British Isles. *Mycelis muralis* (L.) Dumort. (*Lactuca muralis* (L.) Gaertner. Journal of Ecology 87: 156-172.

CLIMEX for Windows, Version 1.1a. 1999. CISRO Publishing, Australia.

Cronquist, A. 1955. *Lactuca* L. Lettuce. In: Hitchcock, C.L., A. Cronquist, M. Ownbey, J.W. Thompson. 1955. Vascular plants of the Pacific Northwest. Part 5: Compositae. Seattle and London: University of Washington Press. 343 p.

Douglas, G.W., G.B. Straley, D. Meidinger, J. Pojar. 1998. Illustrated flora of British Columbia. V. 2. Ministry of Environment, Lands and Parks Ministry of Forests. British Columbia. 401 pp.

Gubanov, I.A., K.B. Kiseleva, B.C. Novikov, B.N. Tihomirov. 1995. Flora of vascular plants of Center European Russia. Moscow. Argus. 558 pp.

Invaders Database System. The University of Montana. 2003. Montana Noxious Weed Trust Fund. Department of Agriculture. http://invader.dbs.umt.edu/

Kellman, M. 1974. Preliminary seed budgets for two plant communities in coastal British Columbia. Journal of Biogeography 1(2): 123-133.

Lid, J. and D.T. Lid. 1994. Flora of Norway. The Norske Samlaget, Oslo. Pp. 1014.

Shephard, M., Vegetation Ecologist, USDA, Forest Service, Forest Health Protection, State and Private Forestry, 3301 C Street, Suite 202, Anchorage, Alaska 99503 Division. Tel: (907) 743-9454 - Pers. com.

USDA (United States Department of Agriculture), NRCS (Natural Resource Conservation Service). 2002. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.