

**WEED RISK ASSESSMENT FORM**

|                 |  |  |
|-----------------|--|--|
| Botanical name: | <i>Glechoma hederacea</i> L.   |  |
| Common name:    | ground ivy   |  |
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**Outcome score:**

|   |                 |     |
|---|-----------------|-----|
| <b>A. Climatic Comparison</b>   |                 |     |
| This species is present or may potentially establish in the following eco-geographic regions: |                 |     |
| 1   | South Coastal   | Yes |
| 2   | Interior-Boreal | Yes |
| 3   | Arctic-Alpine   | Yes |

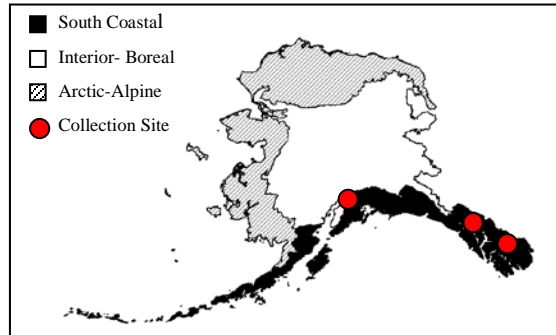
| B. | Invasiveness Ranking                            | Total (Total Answered*)<br>Possible | Total           |
|----|---|-------------------------------------|-----------------|
| 1  | Ecological impact                               | 40 (40)                             | 14              |
| 2  | Biological characteristic and dispersal ability | 25 (25)                             | 12              |
| 3  | Ecological amplitude and distribution           | 25 (25)                             | 14              |
| 4  | Feasibility of control                          | 10 (10)                             | 8               |
|    | Outcome score                                   | 100 (100) <sup>b</sup>              | 48 <sup>a</sup> |
|    | Relative maximum score†                         |                                     | 0.48            |

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

† Calculated as <sup>a</sup>/<sub>b</sub>.

**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)?<br><i>Proceed to Section B. Invasiveness Ranking.</i> |                       |
| Yes   | South Coastal         |
| Yes   | Interior-Boreal       |
|   | Arctic-Alpine         |



Documentation: *Glechoma hederacea* has been collected from Petersburg and Juneau (Hultén 1968, UAM 2004). It has been observed established in Earthquake Park in Anchorage (J. Riley – pers. obs.).  
 Sources of information:  
 Hultén, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford, CA. 1008 p.  
 Riley, J. Horticulture Agent, UAF Cooperative Extension Service, 2221 E. Northern Lights Blvd. #118 Anchorage, AK 99508-4143 tel: (907) 786-6306. Pers. obs.  
 University of Alaska Museum. University of Alaska Fairbanks. 2004.  
<http://hispidamuseum.uaf.edu:8080/home.cfm>

- 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 – record locations and similarity; proceed to Section B.  
Invasiveness Ranking
    - No
  - c. Nome (Arctic-Alpine)?
    - Yes – record locations and similarity; proceed to Section B.  
Invasiveness Ranking
    - No
      - If “No” is answered for all regions, reject species from consideration

Documentation: Using CLIMEX matching program, climatic similarity between Fairbanks and areas where the species is documented is high. Native range of the species includes Sverdlovsk and Zlatoust in Russia, and Regina, Saskatchewan in Canada (Gubanov et al. 1995, Hultén 1968), which has a 66%, 64%, and 53% climatic match with Fairbanks. The range of the species includes Røros, Norway, Vytegra and Kirov, Russia (Hultén 1968, Lid and Lid 1994), which has a 76%, 67%, and 66% climatic match with Nome, respectively. Thus establishment of *Glechoma hederacea* in Interior-Boreal and Arctic-Alpine ecogeographic regions may be possible.  
 Sources of information: CLIMEX for Windows, Version 1.1a. 1999. CISRO Publishing, Australia.  
 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.  
 Hultén, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford, CA. 1008 p.  
 Lid, J. and D.T. Lid. 1994. Flora of Norway. The Norske Samlaget, Oslo. Pp. 1014.

## 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 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) | 10 |
| U. | Unknown   |    |

Score 3

Documentation:

Identify ecosystem processes impacted:

Impact of ground ivy in ecosystem processes is largely unknown. However, this species likely competes with native species for soil nutrients, water, and light in

partially disturbed communities.

Rational:

Sources of information:

### 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 3

Documentation:

Identify type of impact or alteration:

Ground ivy can reach ground cover values as high as 33% in forb communities (Hutchings and Price 1999).

Rational:

Sources of information:

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

### 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 3

Documentation:

Identify type of impact or alteration:

Ground ivy likely reduces the number of grass individuals due to its allelopathic effects (Price and Hutchings 1996).

Rational:

Sources of information:

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

### 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 connectivity, interference with native pollinators, injurious components such as spines, toxins) 7
- 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 5

Documentation:

Identify type of impact or alteration:

Ground ivy is toxic to many vertebrates, although many insects are known to feed on it. Studies suggest strong allelopathic effects of ground ivy on other species. Ground

ivy is insect-pollinated (Hutchings and Price 1999, Southwick et al. 1981).

Rational:

Sources of information:

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

Southwick, E.E., G.M. Loper and S.E. Sadwick. 1981. Nectar production, composition, energetics and pollinator attractiveness in spring flowers of western New York. *American Journal of Botany*. 68(7): 994-1002.

|                |    |
|----------------|----|
| Total Possible | 40 |
| Total          | 14 |

## 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<sup>2</sup>) 1
- C. Moderately aggressive (reproduces vegetatively and/or by a moderate amount of seed, <1,000/m<sup>2</sup>) 2
- D. Highly aggressive reproduction (extensive vegetative spread and/or many seeded, >1,000/m<sup>2</sup>) 3
- U. Unknown

Score 

|   |
|---|
| 3 |
|---|

Documentation:

Describe key reproductive characteristics (including seeds per plant):

Ground ivy spreads primarily vegetatively; establishment from seed is rare in many habitats. Each flower produces up to four seeds (Hutchings and Price 1999).

Rational:

Sources of information:

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

### 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 

|   |
|---|
| 2 |
|---|

Documentation:

Identify dispersal mechanisms:

Seeds are primarily dispersed passively. They may be further dispersed by ants. Nutlets produce the mucilage on contact with water and can be fixed to various substrates (Hutchings and Price 1999).

Rational:

Sources of information:

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

### 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:

Ground ivy has been sold as a horticultural plant for use in hanging baskets. Garden varieties occasionally naturalize (Hessayon 1987 cited in Hutchings and Price 1999).

Rational:

Sources of information:

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

**2.4. Allelopathic**

- A. No 0
- B. Yes 2
- U. Unknown

Score 2

**Documentation:**

Describe effect on adjacent plants:

Studies suggest strong allelopathic effects on co-occurring *Raphanus sativus* and *Bromus tectorum* (Hutchings and Price 1999).

Rational:

Exudates from leaves and root of ground ivy decrease seed germination, but stimulate root and shoot growth (Hutchings and Price 1999).

Sources of information:

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

**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:

Ground ivy does not compete well with grasses and has a limited capacity to persist under tall herbs or tree canopy (Price and Hutchings 1996).

Rational:

Total biomass of plants was significantly reduced by the presence of competing *Lolium perenne* in experimental treatments. Also the number and length of secondary stolons were reduced in grass stands (Price and Hutchings 1996).

Sources of information:

Price, E.A.C. and M.J. Hutchings, 1996. The effects of competition on growth and form in *Glechoma hederacea*. *Oikos*. 75: 279-290.

**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 vegetation 2
- U. Unknown

Score 1

**Documentation:**

Describe grow form:

Ground ivy forms extensive monospecific stands (Hutchings and Price 1999, Mitich

1994), but does not grow taller than the surrounding vegetation.  
 Rational:  
 Sources of information:  
 Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.  
 Mitich, L.W. 1994. Ground ivy. *Weed Technology*. 8:413-415.

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 

|   |
|---|
| 0 |
|---|

Documentation:  
 Describe germination requirements:  
 Ground ivy is unlikely to establish outside of open, disturbed soil (Grime et al. 1981).  
 Rational:  
 This species requires light for germination (Grime et al. 1981).  
 Sources of information:  
 Grime J.P., G. Mason, A.V. Curtis, J. Rodman, S.R. Band. 1981. A comparative study of germination characteristics in a local flora. *The Journal of Ecology*. 69(3): 1017-1059.

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 *Glechoma* 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 

|   |
|---|
| 1 |
|---|

Documentation:  
 Describe type of habitat:  
 Ground ivy is frequent on shaded roadsides, waste areas, edges of pastures and arable fields, grasslands, cleared woodlands and scrubs. Although it is generally absent from aquatic habitats, it is occasional on river banks and floodplains (Hutchings and Price 1999).  
 Rational:  
 Sources of information:  
 Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

|                |    |
|----------------|----|
| Total Possible | 25 |
| Total          | 12 |

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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:

Ground ivy occurs on edges of pastures and arable fields, and it is not an agricultural pest (Hutchings and Price 1999).

Rational:

Sources of information:

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

#### 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:

Ground ivy generally grows in woodlands, grasslands, and pastures edges (Hutchings and Price 1999).

Sources of information:

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

#### 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 3

**Documentation:**

Identify type of disturbance:

The open conditions, created by the death of plants or disturbance caused by grazing animals, probably opportunities for colonization by ground ivy (Hutchings and Price 1999).

Rational:

Sources of information:

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

#### 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:**

Ground ivy is native to Europe and temperate Asia. It is documented from subarctic and alpine regions in Norway. It has been introduced in North America and New Zealand. (Hutchings and Price 1999, Lid and Lid 1994, USDA, ARS 2005).

**Rational:**

**Sources of information:**

Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.  
Lid, J. and D.T. Lid. 1994. *Flora of Norway*. The Norske Samlaget, Oslo. Pp. 1014.  
USDA, ARS, National Genetic Resources Program. *Germplasm Resources Information Network - (GRIN)* [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: <http://www.ars-grin.gov/var/apache/cgi-bin/npgs/html/taxon.pl?300618> [January 27, 2005).

**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 

|   |
|---|
| 5 |
|---|

**Documentation:**

**Identify states invaded:**

Range of ground ivy extends throughout the United States; it is naturalized in Canada and ranges from Newfoundland to British Columbia. This species is listed as a weed in Kentucky, Nebraska, and Wisconsin, though the species is not declared noxious (Invaders Database System 2003, USDA 2002). Ground ivy is on the Invasive Garden Perennials Not to Plant Statewide List of Alaska (Integrated Pest Management Program 2004).

**Rational:**

**Sources of information:**

Integrated Pest Management Program. 2004. Alaska statewide list of invasive garden flowers. University of Alaska Fairbanks, Cooperative Extension Service.  
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 

|    |
|----|
| 14 |
|----|

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**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 

|   |
|---|
| 3 |
|---|

**Documentation:**



Identify longevity of seed bank:  
 Seeds of ground ivy remain viable in the soil more than four years (Chancellor 1985).  
 Small numbers of viable seeds were found in soil samples of nearly 20 to over 40 years old (Hutchings and Price 1999).  
 Rational:

Sources of information:  
 Chancellor, R.J. 1985. Changes in the weed flora of an arable field cultivated fro 20 years. *The Journal of Applied Ecology*. 22(2): 491-501.  
 Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

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 

|   |
|---|
| 2 |
|---|

Documentation:  
 Describe vegetative response:  
 Pieces of stem can root at the nodes (Hutchings and Price 1999).  
 Rational:

Sources of information:  
 Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.

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 

|   |
|---|
| 3 |
|---|

Documentation:  
 Identify types of control methods and time-term required:  
 Once it is establishes ground ivy is difficult to control. Ground ivy is nearly impossible to dig up and remove all roots and stolon fragments (Mitich 1994).  
 Rational:

Sources of information:  
 Mitich, L.W. 1994. Ground ivy. *Weed Technology*. 8:413-415.

Total Possible 

|    |
|----|
| 10 |
|----|

  
 Total 

|   |
|---|
| 8 |
|---|

**Total for 4 sections Possible**

|     |
|-----|
| 100 |
|-----|

  
**Total for 4 sections**

|    |
|----|
| 48 |
|----|

## References:

- Chancellor, R.J. 1985. Changes in the weed flora of an arable field cultivated for 20 years. *The Journal of Applied Ecology*. 22(2): 491-501.
- CLIMEX for Windows, Version 1.1a. 1999. CISRO Publishing, Australia.
- Grime J.P., G. Mason, A.V. Curtis, J. Rodman, S.R. Band. 1981. A comparative study of germination characteristics in a local flora. *The Journal of Ecology*. 69(3): 1017-1059.
- 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.
- Hultén, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford, CA. 1008 pp.
- Hutchings, M.J. and E.A.C. Price. 1999. *Glechoma hederacea* L. (*Nepeta glechoma* Benth., *N. hederacea* (L.) Trev.). *Journal of Ecology*. 87: 347-364.
- Integrated Pest Management Program. 2004. Alaska statewide list of invasive garden flowers. University of Alaska Fairbanks, Cooperative Extension Service.
- Invaders Database System. The University of Montana. 2003. Montana Noxious Weed Trust Fund. Department of Agriculture. <http://invader.dbs.umt.edu/>
- Lid, J. and D.T. Lid. 1994. Flora of Norway. The Norske Samlaget, Oslo. Pp. 1014.
- Mitich, L.W. 1994. Ground ivy. *Weed Technology*. 8:413-415.
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