

**WEED RISK ASSESSMENT FORM**

Botanical name: *Phleum pratense* L.  
 Common name: common timothy  
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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

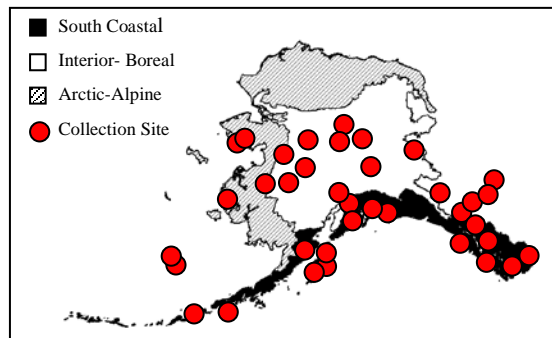
B.	Invasiveness Ranking	Total (Total Answered*) Possible	Total
1	Ecological impact	40 (40)	14
2	Biological characteristic and dispersal ability	25 (25)	14
3	Ecological amplitude and distribution	25 (25)	19
4	Feasibility of control	10 (10)	7
	Outcome score	100 (100) <sup>b</sup>	54 <sup>a</sup>
	Relative maximum score†		0.54

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



Documentation: *Phleum pretense* has been collected in all ecogeographic regions in Alaska (Hultén 1968, UAM 2004, Weeds of Alaska Database 2004).

Sources of information:

Hultén, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford, CA. 1008 p.

University of Alaska Museum. University of Alaska Fairbanks. 2004.

<http://hispidamuseum.uaf.edu:8080/home.cfm>.

Weeds of Alaska Database. 2004. AKEPIC Mapping Project Inventory Field Data. Alaska Natural Heritage Program, University of Alaska – US Forest Service – National Park Service.

Available: <http://akweeds.uaa.alaska.edu/>.

2.1. Is there a 40% or higher similarity (based on CLIMEX climate matching) between climates anywhere 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:

Sources of information:

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## 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
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Documentation:

Identify ecosystem processes impacted:

Timothy has the potential to inhibit secondary succession processes, and may modify native communities (Rutledge and McLendon 1996).

Rational:

Sources of information:

Rutledge, C.R., and T. McLendon. 1996. An Assessment of Exotic Plant Species of Rocky Mountain National Park. Department of Rangeland Ecosystem Science, Colorado State University. 97 pp. Northern Prairie Wildlife Research Center Home Page.

<http://www.npwrc.usgs.gov/resource/othrdata/Explant/explant.htm> (Version 15DEC98).

## 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:

Timothy is capable of creating of new herbaceous layer and it can occur at very high densities (I. Lapina – pers. obs.).

Rational:

Sources of information:

Lapina, I., Botanist, Alaska Natural Heritage Program, University of Alaska Anchorage, 707 A Street, Anchorage, Alaska. Tel: (907) 257-2710 – Pers. obs.

## 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:

Timothy often dominates areas, reducing the abundance and diversity of native graminoid species (Esser 1993, I. Lapina – pers. obs., M. Shephard – pers. obs.).

Rational:

Sources of information:

Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].

Lapina, I., Botanist, Alaska Natural Heritage Program, University of Alaska Anchorage, 707 A Street, Anchorage, Alaska. Tel: (907) 257-2710 – Pers. obs.  
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. obs.

## 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:

Timothy provides habitat and nesting cover for game birds, small mammals, and waterfowl. It is highly palatable and nutritious forage for big game animals, and the seeds are consumed by birds. (Esser 1993, Forage Information System 2004, USDA 2002). Timothy seedlings may hinder conifer seedlings establishment through resource competition, allelopathy, attraction of harmful insects and animals, and increased fire potential (Esser 1993). Pollen of timothy is known as allergen (Ohio State University 2004). Timothy is a host for number of plants diseases and nematodes, which may be a problem for other species (Forage Information System 2004).

Rational:

Sources of information:

Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].

Forage Information System. 2004. Timothy (*Phleum pratense* L.). Available: <http://forages.oregonstate.edu> [November 4, 2004].

Ohio State University. Ohio Perennial & Biennial Weed Guide. Timothy *Phleum pratense*. Available: <http://www.oardc.ohio-state.edu/weedguide/> [November 4, 2004].

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	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 

2
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Documentation:

Describe key reproductive characteristics (including seeds per plant):

Timothy reproduces mainly by seeds, and is a prolific seeder (Esser 1993, USDA 2002)

Rational:

Sources of information:

Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].

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.

### 2.2. 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:**

The small, hard seeds are dispersed by wind and livestock (Esser 1993, Forage Information System 2004). However, there are no particular adaptations for long-distance dispersal.

**Rational:**

**Sources of information:**

Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].  
 Forage Information System. 2004. Timothy (*Phleum pratense* L.). Available: <http://forages.oregonstate.edu> [November 4, 2004].

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 3

**Documentation:**

**Identify dispersal mechanisms:**

Timothy is commonly grown for hay and commonly escapes cultivation, becoming established in grasslands (Esser 1993, Rutledge and McLendon 1996, USDA 2002). It is also recommended for use for reclamation and erosion control (Elliott et al. 1987, USDA 2002).

**Rational:**

**Sources of information:**

Elliott, C.L., J.D. McKendrick, and D. Helm. 1987. Plant biomass, cover, and survival of species used for stripmine reclamation in south-central Alaska, U.S.A. *Arctic and Alpine Research*. 19(4):572-577.  
 Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].  
 Rutledge, C.R., and T. McLendon. 1996. An Assessment of Exotic Plant Species of Rocky Mountain National Park. Department of Rangeland Ecosystem Science, Colorado State University. 97 pp. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/othrdata/Explant/explant.htm> (Version 15DEC98).  
 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.

2.4. Allelopathic

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

Score 2

**Documentation:**

Describe effect on adjacent plants:

Timothy is allelopathic. Allelochemicals in the pollen reduce pollen germination of other wind-pollinated grasses (Murphy and Aarssen 1995).

Rational:

Sources of information:

Murphy, S.D. and L.W. Aarssen. 1995. Allelopathic pollen extract from *Phleum pratense* L. (*Poaceae*) reduces seed set in sympatric species. *International Journal of Plant Sciences*. 156(4): 435-444.

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 2

**Documentation:**

Evidence of competitive ability:

Timothy has intermediate competitive abilities. It can suppress the growth of other grasses and dominate (Gasser 1968).

Rational:

Timothy has excellent cold tolerance and winter hardiness. It will tolerate high shade and thrives in partial shade (Esser 1993). It will tolerate flooding and high soil salinity levels (Forage Information System 2004).

Sources of information:

Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].

Forage Information System. 2004. Timothy (*Phleum pratense* L.). Available: <http://forages.oregonstate.edu> [November 4, 2004].

Gasser, H. 1968. A growth analysis of *Phleum pratense* and of *Dactylis glomerata* grown in pure and mixed stands at two densities. *Botanical Gazette*. 129(4): 351-361.

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:

This large grass can occur at high densities and shade out forbs and grasses (I. Lapina – pers. obs.).

Rational:

Sources of information:

Lapina, I. Botanist, Alaska Natural Heritage Program, University of Alaska Anchorage, 707 A Street, Anchorage, Alaska. Tel: (907) 257-2710 – Pers. obs.

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 

1
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**Documentation:**

Describe germination requirements:

Open soil facilitates germination and establishment of timothy. Competition from other species may prevent seedlings establishment (Forages 2004).

Rational:

Sources of information:

Forages. Topics: Species and Forage Variety Trials. Timothy. 2004. Available: <http://www.forages.psu.edu> [Mart 2, 2004].

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

- A. No 0
- B. Yes 3
- U. Unknown

Score 

0
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**Documentation:**

Species:

Few introduced species of *Phleum* are recorded in North America, but they are not listed as invasive (USDA 2004).

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
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**Documentation:**

Describe type of habitat:

Timothy can be found on roadsides, along waterways, in dry to wet meadows (Gubanov et al. 1995, Rutledge and McLendon 1996).

Rational:

Sources of information:

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.

Rutledge, C.R., and T. McLendon. 1996. An Assessment of Exotic Plant Species of Rocky Mountain National Park. Department of Rangeland Ecosystem Science, Colorado State University. 97 pp. Northern Prairie Wildlife Research Center Home Page.

<http://www.npwrc.usgs.gov/resource/othrdata/Explant/explant.htm> (Version 15DEC98).

Total Possible 

25
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Total 

14
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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 

4
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**Documentation:**

Identify reason for selection, or evidence of weedy history:

Timothy was introduced to North America for use as hay and continues to be widely used today (Rutledge and McLendon 1996, USDA 2002).

Rational:

Sources of information:

Rutledge, C.R., and T. McLendon. 1996. An Assessment of Exotic Plant Species of Rocky Mountain National Park. Department of Rangeland Ecosystem Science, Colorado State University. 97 pp. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/othrdata/Explant/explant.htm> (Version 15DEC98).

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.

**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 

3
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**Documentation:**

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

It is the most widely distributed non-native in Glacier National Park (Montana), reducing graminoid species in native fescue grasslands and moist subalpine forests. It has become established at medium to high elevations in grasslands and aspen and conifer forests (Esser 1993). It can be found in aspen-spruce-fir communities, occasionally in oak-sagebrush, pinyon juniper, and mountain brush communities in Colorado (Rutledge and McLendon 1996).

Sources of information:

Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].

Rutledge, C.R., and T. McLendon. 1996. An Assessment of Exotic Plant Species of Rocky Mountain National Park. Department of Rangeland Ecosystem Science, Colorado State University. 97 pp. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/othrdata/Explant/explant.htm> (Version 15DEC98).

**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 

2
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**Documentation:**

Identify type of disturbance:

Timothy is readily establishes in disturbed areas and may extend to adjacent undisturbed areas. Natural and human induced fires stimulate tillering (Esser 1993).



Rational:

Sources of information:  
 Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].

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
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Documentation:  
 Describe distribution:  
 Timothy is a native of Europe. It is now widespread in North and South America, South Africa, New Zealand, Australia, including subarctic regions (Hultén 1968).  
 Rational:

Sources of information:  
 Hultén, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford, CA. 1008 pp.

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
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Documentation:  
 Identify states invaded:  
 It is found in all 50 states and throughout Canada (Esser 1993). It is a restricted weed seed in New Jersey and Virginia (Invader Database System 2004).  
 Rational:

Sources of information:  
 Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].  
 Invaders Database System. The University of Montana. 2003. Montana Noxious Weed Trust Fund. Department of Agriculture. <http://invader.dbs.umt.edu/>

Total Possible	25
Total	19

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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 

2
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**Documentation:**

Identify longevity of seed bank:

The seeds remain viable for 4 to 5 years in dry, cool places (Esser 1993).

Rational:

**Sources of information:**

Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].

**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:

Vegetative reproduction occurs through tillering. When plants are cut or plowed, rooting stems may develop new plants (Esser 1993).

Rational:

**Sources of information:**

Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].

**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:

Hand pulling can be used for timothy control, and frequent cutting or mowing can weaken overall plant health (Rutledge and McLendon 1996). Timothy stands also become weak under continuous grazing (USDA 2002).

Rational:

**Sources of information:**

Rutledge, C.R., and T. McLendon. 1996. An Assessment of Exotic Plant Species of Rocky Mountain National Park. Department of Rangeland Ecosystem Science, Colorado State University. 97 pp. Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/othrdata/Explant/explant.htm> (Version 15DEC98).  
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 10

Total 

7
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**Total for 4 sections Possible**

100
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**Total for 4 sections**

54
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## References:

- Elliott, C.L., J.D. McKendrick, and D. Helm. 1987. Plant biomass, cover, and survival of species used for stripmine reclamation in south-central Alaska, U.S.A. *Arctic and Alpine Research*. 19(4):572-577.
- Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [November 5, 2004].
- Forages. Topics: Species and Forage Variety Trials. Timothy. 2004. Available: <http://www.forages.psu.edu> [Mart 2, 2004].
- Forage Information System. 2004. Timothy (*Phleum pratense* L.). Available: <http://forages.oregonstate.edu> [November 4, 2004].
- Gasser, H. 1968. A growth analysis of *Phleum pratense* and of *Dactylis glomerata* grown in pure and mixed stands at two densities. *Botanical Gazette*. 129(4): 351-361.
- 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.
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