

WEED RISK ASSESSMENT FORM

Botanical and common name:	<i>Poa pratensis</i> ssp. <i>pratensis</i> L., Kentucky bluegrass <i>Poa pratensis</i> ssp. <i>irrigata</i> (Lindm.) Lindb. f., spreading bluegrass <i>Poa trivialis</i> L., rough bluegrass	
Assessors:	Irina Lapina Botanist, Alaska Natural Heritage Program, University of Alaska Anchorage, 707 A Street, Anchorage, Alaska 99501 tel: (907) 257-2710; fax (907) 257-2789	Matthew L. Carlson, Ph.D. Assistant Professor, Alaska Natural Heritage Program, University of Alaska Anchorage, 707 A Street, Anchorage, Alaska 99501 tel: (907) 257-2790; fax (907) 257-2789
Reviewers:	Michael Shephard Vegetation Ecologist Forest Health Protection State & Private Forestry, 3301 C Street, Suite 202, Anchorage, AK 99503; tel: (907) 743-9454; fax 907 743-9479	Julie Riley Horticulture Agent, UAF Cooperative Extension Service 2221 E. Northern Lights Blvd. #118 Anchorage, AK 99508-4143 tel: (907) 786-6306
	Jeff Conn, Ph.D. Weed Scientist, USDA Agricultural Research Service PO Box 757200 Fairbanks, Alaska 99775 tel: (907) 474-7652; fax (907) 474-6184	Jamie M. Snyder UAF Cooperative Extension Service 2221 E. Northern Lights Blvd. #118 Anchorage, AK 99508-4143 tel: (907) 786-6310 alt.tel: (907) 743-9448
	Roseann Densmore, Ph.D. Research Ecologist, US Geological Survey, Alaska Biological Science Center, 1101 East Tudor Road Anchorage, AK 99503 tel: (907) 786-3916, fax (907) 786-3636	Jeff Heys Exotic Plant Management Program Coordinator, National Park Service, Alaska Region - Biological Resources Team, 240 W. 5th Ave, #114, Anchorage, AK 99501 tel: (907)644-3451, fax: 644-3809
	Erin Uloth Forest Health Protection State and Private Forestry, 3301 C Street Suite 202 Anchorage, AK 99503 tel: (907) 743-9459, fax (907) 743-9479	

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	Yes	
3 Arctic-Alpine	Yes	
This species is unlikely to establish in any region in Alaska		

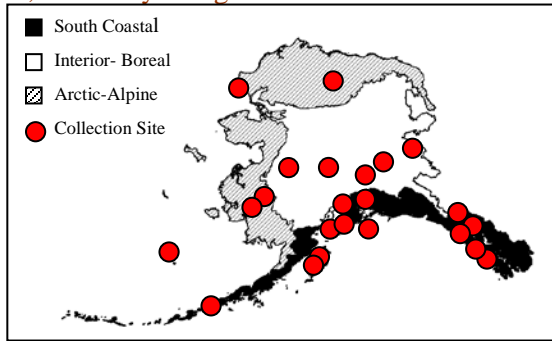
B.	Invasiveness Ranking	Total (Total Answered*) Possible	Total
1	Ecological impact	40 (40)	12
2	Biological characteristic and dispersal ability	25 (25)	14
3	Ecological amplitude and distribution	25 (25)	19
4	Feasibility of control	10 (10)	7
	Outcome score	100 (100) ^b	52
	Relative maximum score [†]		0.52

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

[†] Calculated as ^a/_b.

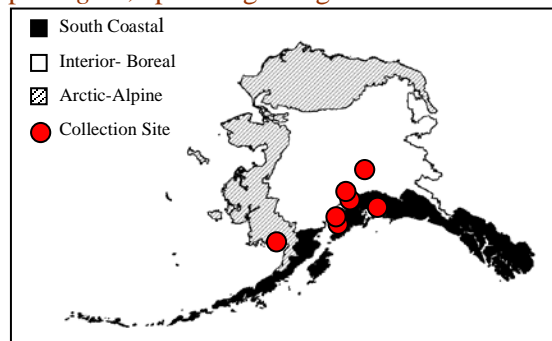
A. CLIMATIC COMPARISON for *Poa pratensis*, Kentucky bluegrass:

	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



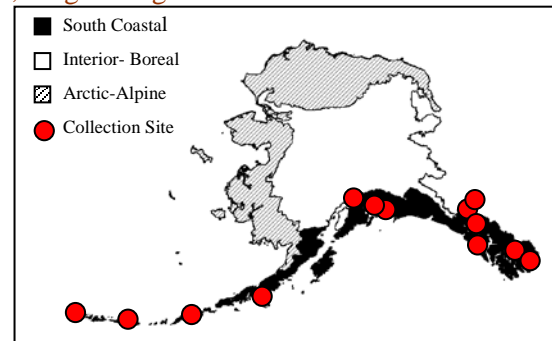
CLIMATE COMPARISON for *Poa pratensis* ssp. *irrigata*, spreading bluegrass:

	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



A. CLIMATIC COMPARISON for *Poa trivialis*, rough bluegrass:

	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
	Interior-Boreal
	Arctic-Alpine



Documentation: *Poa pratensis* ssp. *pratensis* and *P. pratensis* ssp. *irrigata* have been collected from all eco-geographic regions of Alaska. *Poa trivialis* is documented in South Coastal ecogeographic region (Weeds of Alaska Database 2005, UAM 2005, Hultén 1968).

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. Available: <http://arctos.database.museum/home.cfm>

Weeds of Alaska Database. 2005. 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 – 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

Yes

– If “No” is answered for all regions, reject species from consideration

Documentation: The CLIMEX matching program indicates the climatic similarity between Fairbanks and areas where this species is documented is high. Rough bluegrass is well established in Omsk, Tobolsk, and Tomsk, Russia (Malyshev and Peschkova 1990), which has 77%, 70% and 68% climatic matches with Fairbanks, Alaska. *Poa trivialis* is documented in arctic areas as Ust-Tsilma and Arkhangelsk, Russia (Tolmachev et al. 1995), with have 78% and 76% of climate similarity with Nome, Alaska. The establishment of rough bluegrass in Interior Boreal and Arctic Alpine ecogeographic regions of Alaska may be possible.

Sources of information:

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

Malyshev, L.I., Peschkova, G.G, editors. Flora Sibiriae. T. 2. Poaceae (Gramineae). Novosibirsk: Nauka; 1990. 359 p. In Russian.

Tolmachev, A.I., Packer, J.G., Griffiths, G.C.D, editors. Flora of the Russian arctic. Vol. I. Polypodiaceae – Gramineae. Edmonton, Alberta, Canada: The University of Alberta Press; 1995. 330 p. In Russian.

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:

Kentucky, spreading, and rough bluegrasses have the potential for long-term modification or retardation of succession (Butterfield et al. 1996). In Alaska these grasses are restricted to non-native communities (J. Conn – pers. com.). Rough bluegrass likely increases soil water content in sod (Glenn and Welker 1996).

Rational:

Sources of information:

Butterfield, C., J. Stubbendieck and J. Stumpf. 1996. Species abstract of highly disruptive exotic plants. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page.
<http://www.npwr.usgs.gov/resource/othrdata/exoticab/exoticab.htm> (Version 16JUL97).

Conn, J.S., Weed Scientist, USDA Agricultural Research Service PO Box 757200 Fairbanks, Alaska 99775 tel: (907) 474-7652; fax (907) 474-6184. – Pers. com.

Glenn, D.M. and W.V. Welker. 1996. Sod competition in peach production: II. Establishment beneath mature trees. *Journal of the American Society for Horticultural Science*; 121:670-675.

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 | |

Documentation:

Identify type of impact or alteration:

Poa pratensis is capable of creating uniform, dense mats, greatly increasing the density of lower herbaceous layers (Weaver and Darland 1948). *Poa trivialis* rarely occurs in pure stands, but is capable of changing the density of the layer (Uchytel 1993).

Rational:

Sources of information:

Uchytel, R.J. 1993. *Poa pratensis*. 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/> [January 5, 2004].

Weaver, J.E. and R.W. Darland. 1948. Changes in vegetation and production of forage resulting from grazing lowland prairie. *Ecology* 29 (1): 1-29.

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 | |

Documentation:

Identify type of impact or alteration:

Kentucky and rough bluegrass have the ability to dominate community, replace prairie plant species, reducing species diversity and altering the natural floristic composition (Marriott et al. 2003, Wisconsin DNR 2003, Rutledge and McLendon 1996, Sather 1996). However, these species are not observed in undisturbed areas in Alaska, and negative effects are likely minimal (J. Conn – pers. com.).

Rational:

Sources of information:

Conn, J.S., Weed Scientist, USDA Agricultural Research Service PO Box 757200 Fairbanks, Alaska 99775 tel: (907) 474-7652; fax (907) 474-6184. – Pers. comm.

Marriott, C.A., G.R. Bolton and J.M. Fisher. 2003. Changes in species composition of abandoned sown swards after imposing seasonal cutting treatments. *Grass and Forage Science*; 58: 37-49.

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.npwr.usgs.gov/resource/othrdata/Explant/explant.htm> (Version 15DEC98).

Sather, N. 1996. Element Stewardship Abstract for *Poa pratensis*, *Poa compressa* Kentucky Bluegrass, Canada Bluegrass. The Nature Conservancy. Arlington, VA.

Wisconsin Department of Natural Resources. 2003. Non-native plants. Kentucky bluegrass (*Poa pratensis*), Canada bluegrass (*Poa compressa*). <http://www.dnr.state.wi.us> [July 9, 2004].

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

3

Documentation:

Identify type of impact or alteration:

Bluegrasses can be important part of the diets of elk, deer, and sheep (Rutledge and McLendon 1996). The leaves and seeds are eaten by numerous species of small mammals and birds. Kentucky-bluegrass-dominated grassland provide habitat for species of small mammals and birds. It naturally hybridizes with several other native and exotic bluegrasses (Uchytel 1993, Dale et al. 1975). It is a host for number of pest insects and diseases (Butterfield et al. 1996, Uchytel 1993).

Rational:

Sources of information:

Butterfield, C., J. Stubbendieck and J. Stumpf. 1996. Species abstract of highly disruptive exotic plants. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page.

<http://www.npwrc.usgs.gov/resource/othrdata/exoticab/exoticab.htm> (Version 16JUL97).

Dale, M.R., M.K. Ahmed, G. Jelenkovic and C.R. Funk. 1975. Characteristics and performance of interspecific hybrids between Kentucky bluegrass and Canada bluegrass. *Crop Science*; 15: 797-799.

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).

Uchytel, R.J. 1993. *Poa pratensis*. 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/> [January 5, 2004].

Total Possible

40

Total

12

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/m²)) 1
- C. Moderately aggressive (reproduces vegetatively and/or by a moderate amount of seed, <1,000/m²) 2
- D. Highly aggressive reproduction (extensive vegetative spread and/or many seeded, >1,000/m²) 3
- U. Unknown

Score

3

Documentation:

Describe key reproductive characteristics (including seeds per plant):

Kentucky and spreading bluegrass reproduce from both seed and rhizomes. Kentucky bluegrass can produce 100-200 seeds per panicle in the first year, and as many as 800,000 seeds per square meter. Production of 1000 seeds per plant of rough bluegrass has been documented (Froud-Williams and Ferris 1985). Rhizomes expand horizontal growth as much as 2 square meters in 2 years (Rutledge and McLendon 1996, Sather 1996).

Rational:

Sources of information:

Froud-Williams, R.J. and R. Ferris. 1987. Germination of proximal and distal seeds of *Poa trivialis* L. from contrasting habitats. *Weed Research*; 27: 245-250.

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).

Sather, N. 1996. Element Stewardship Abstract for *Poa pratensis*, *Poa compressa* Kentucky Bluegrass, Canada Bluegrass. The Nature Conservancy. Arlington, VA.

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

1

Documentation:

Identify dispersal mechanisms:

Seeds can spread short distances in clumps (Froud-Williams and Ferris 1986), but they lack specific adaptations for long-distance dispersal.

Rational:

Sources of information:

Froud-Williams, R.J. and R. Ferris. 1987. Germination of proximal and distal seeds of *Poa trivialis* L. from contrasting habitats. *Weed Research*; 27: 245-250.

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:

Kentucky, spreading and rough bluegrasses are commonly planted as a lawn and pastures grasses (Butterfield et. al. 1996, Liskey 1999). They are used in Alaska, Colorado, and Wisconsin for soil stabilization along highway roadbanks (Uchytel 1993). They also contaminate commercial seeds (Liskey 1999). Hodkinson and Thompson (1997) found seeds of rough bluegrass spreading on vehicles, with topsoil, and contaminating horticultural stock.

Rational:

Sources of information:

Butterfield, C., J. Stubbendieck and J. Stumpf. 1996. Species abstract of highly disruptive exotic plants. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/othrdata/exoticab/exoticab.htm> (Version 16JUL97).

Hodkinson, D. and K. Thompson. 1997. Plant dispersal: the role of man. *Journal of*

Applied Ecology, 34: 1484-1496.
 Liskey, E. 1999. *Poa trivialis*: friend and foe. Grounds Maintenance; 34: G1, G2, G4, G12.
 Uchytel, R.J. 1993. *Poa pratensis*. 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/> [January 5, 2004].

2.4. Allelopathic

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

Score

Documentation:

Describe effect on adjacent plants:

These species are not listed as allelopathic (USDA 2002).

Rational:

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.

2.5. 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

Documentation:

Evidence of competitive ability:

Bluegrass can out-compete native grasses and forbs and dominate on high nitrogen soils (Wisconsin DNR 2003). These grasses do not appear to be competing with native species in Alaska (J. Conn – pers. com.).

Rational:

Bluegrass is adapted to wide range of environmental conditions, and is marginally flood tolerant (Lenssen et al. 2004, Rutledge and McLendon 1996). It grows early in the season, when most other species are still dormant. However, because it has a shallow root system it is susceptible to high soil temperatures and low soil moisture (Wisconsin DNR 2003). In experimental conditions rough bluegrass appeared to compete strongly with ryegrass (*Lolium perenne*) during first weeks of establishment (Haggar 1979).

Sources of information:

Conn, J.S. Weed Scientist, USDA Agricultural Research Service PO Box 757200 Fairbanks, Alaska 99775 tel: (907) 474-7652; fax (907) 474-6184. – Pers. comm.

Haggar, R.J. 1979. Competition between *Lolium perenne* and *Poa trivialis* during establishment. Grass and Forage Science; 34: 27-36.

Lenssen, J.P.M., van de Steeg, M. Harry and H. de Kroon. 2004. Does disturbance favour weak competitors? Mechanisms of changing plant abundance after flooding. Journal of Vegetation Science; 15: 305-314.

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).

Wisconsin Department of Natural Resources. 2003. Non-native plants. Kentucky bluegrass (*Poa pratensis*), Canada bluegrass (*Poa compressa*).

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

Documentation:

Describe grow form:

Bluegrass is capable of forming dense sod in highly fertile soils (Sather 1996, Uchytel 1993). In Alaska, naturalized populations of bluegrass do not form dense stands (J. Conn – pers. com.).

Rational:

Sources of information:

Conn, J.S., Weed Scientist, USDA Agricultural Research Service PO Box 757200 Fairbanks, Alaska 99775 tel: (907) 474-7652; fax (907) 474-6184. – Pers. comm.

Sather, N. 1996. Element Stewardship Abstract for *Poa pratensis*, *Poa compressa* Kentucky Bluegrass, Canada Bluegrass. The Nature Conservancy. Arlington, VA.

Uchytel, R.J. 1993. *Poa pratensis*. 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/> [January 5, 2004].

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

Documentation:

Describe germination requirements:

Generally, Kentucky and rough bluegrass requires light and open soil for germination establishment (Butterfield et al. 1996, Sather 1996). However, some rough bluegrass cultivars do not require open surface and are recommended for overseeding in established lawns (Liskey 1999).

Rational:

Sources of information:

Butterfield, C., J. Stubbendieck and J. Stumpf. 1996. Species abstract of highly disruptive exotic plants. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwr.usgs.gov/resource/othrdata/exoticab/exoticab.htm> (Version 16JUL97).

Liskey, E. 1999. *Poa trivialis*: friend and foe. Grounds Maintenance; 34: G1, G2, G4, G12.

Sather, N. 1996. Element Stewardship Abstract for *Poa pratensis*, *Poa compressa* Kentucky Bluegrass, Canada Bluegrass. The Nature Conservancy. Arlington, VA.

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

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

Score

Documentation:

Species:

Poa annua L. and *P. compressa* L. (Hultén 1968, Royer and Dickinson 1999, Whitson et al. 2000).

Sources of information:

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

Royer, F. and R. Dickinson. 1999. Weeds of the Northern U.S. and Canada. The University of Alberta press. 434 pp.

Whitson, T.D., L.C. Burrill, S.A. Dewey, D.W. Cudney, B.E. Nelson, R.D. Lee and R. Parker. 2000. Weeds of the West. The Western Society of Weed Science in cooperation with the Western United States Land Grant Universities, Cooperative Extension Services. University of Wyoming. Laramie, Wyoming. 630 pp.

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:

These grasses often invade wetland and riparian habitats in addition to gardens, pastures, roadways, meadows, open woodlands, and prairies (Rutledge and McLendon 1996). In its native range Kentucky and rough bluegrass inhabits swamps and marshes, wet meadows and streambanks (Gubanov et al. 2003, Tolmachev et al. 1995, Malyshev and Peschkova 1990).

Rational:

Sources of information:

Gubanov, I.A., K.V. Kiseleva, V.S. Novikov and V.N. Tihomirov. An illustrated identification book of the plants of Middle Russia, Vol. 1: Vascular cryptograms, gymnosperms, angiosperms (monocots). Moscow: Institute of Technological Researches; 2003. 526 p. In Russian.

Malyshev, L.I., Peschkova, G.G, editors. Flora Sibiriae. T. 2. Poaceae (Gramineae). Novosibirsk: Nauka; 1990. 359 p. In Russian.

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.npwr.usgs.gov/resource/othrdata/Explant/explant.htm> (Version 15DEC98).

Tolmachev, A.I., Packer, J.G., Griffiths, G.C.D, editors. Flora of the Russian arctic. Vol. I. Polypodiaceae – Gramineae. Edmonton, Alberta, Canada: The University of Alberta Press; 1995. 330 p. In Russian.

Total Possible

25

Total

14

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

Documentation:

Identify reason for selection, or evidence of weedy history:

Kentucky bluegrass and spreading bluegrass were introduced as a cultivar and has since undergone selective breeding. Over 100 cultivars of Kentucky bluegrass have been developed. It is commonly planted as a lawn and pastures grass (Butterfield et. al. 1996, Wisconsin DNR 2003).

Rational:

Sources of information:

Butterfield, C., J. Stubbendieck and J. Stumpf. 1996. Species abstract of highly disruptive exotic plants. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/othrdata/exoticab/exoticab.htm> (Version 16JUL97).
 Wisconsin Department of Natural Resources. 2003. Kentucky Bluegrass (*Poa pratensis*) Canada Bluegrass (*Poa compressa*) www.dnr.state.wi.us [2004, July 9].

3.2. Known level of ecological 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 – or high impacts in weakly similar habitats 3
- D. Known to cause moderate impact in natural areas in similar habitat and climate zones – or high impacts in moderately similar habitats 4
- E. Known to cause high impact in natural areas in similar habitat and climate zones 6
- U. Unknown

Score 3

Documentation:

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

Bluegrass has successfully invaded prairies and savannas in Wisconsin and Nebraska (Weaver and Darland 1948, Wisconsin DNR 2003). It is naturalized in dry to moist meadows in Oregon and Washington, and it is a major problem species in aspen communities in central Colorado and South Dakota (Uchytel 1993).

Sources of information:

Uchytel, R.J. 1993. *Poa pratensis*. 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/> [2004, January 5].
 Weaver, J.E. and R.W. Darland. 1948. Changes in vegetation and production of forage resulting from grazing lowland prairie. *Ecology* 29 (1): 1-29.
 Wisconsin Department of Natural Resources. 2003. Non-native plants. Kentucky bluegrass (*Poa pratensis*), Canada bluegrass (*Poa compressa*). <http://www.dnr.state.wi.us> [July 9, 2004].

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

Documentation:

Identify type of disturbance:

Bluegrasses readily establish by seeds on disturbed sites. Kentucky bluegrass increases with grazing and burning (Sather 1996, Weaver and Darland 1948).

Rational:

Sources of information:

Sather, N. 1996. Element Stewardship Abstract for *Poa pratensis*, *Poa compressa* Kentucky Bluegrass, Canada Bluegrass. The Nature Conservancy. Arlington,

VA.
 Weaver, J.E. and R.W. Darland. 1948. Changes in vegetation and production of forage resulting from grazing lowland prairie. *Ecology* 29 (1): 1-29.

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:
 Both species are native to Europe. They have been introduced into North and South America, New Zealand, and Australia (Gubanov et al. 2003, Hultén 1968).
 Rational:

 Sources of information:
 Gubanov, I.A., K.V. Kiseleva, V.S. Novikov and V.N. Tihomirov. An illustrated identification book of the plants of Middle Russia, Vol. 1: Vascular cryptogams, gymnosperms, angiosperms (monocots). Moscow: Institute of Technological Researches; 2003. 526 p. In Russian.
 Hultén, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford, CA. 1008 p.

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:
 Kentucky, spreading, and rough bluegrasses are found naturalized in nearly all American states and in Canada from Labrador to the west coast. *Poa pratensis* listed as an invasive weed in Nebraska and Wisconsin. *Poa trivialis* is restricted weed seed in New Jersey and Virginia (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	19

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:

A maximum of 560 *Poa pratensis* seed/m² in soil samples from a Netherlands pastures was reported. Seeds germinate within the first four years after burial (Sather 1996); however, other studies indicate that the seed is no longer dormant 6 months after harvest (Butterfield et al. 1996). Chippindale and Milton (1934) stated in their study that seeds of *Poa trivialis* may remain dormant in the soil for 24, 40 and even 68 years.

Rational:

Sources of information:

Chippindale, H.G. and W.E.J. Milton. 1934. On the viable seeds present in the soil beneath pasture. *The Journal of Ecology*; 22: 508-531.

Butterfield, C., J. Stubbendieck and J. Stumpf. 1996. Species abstract of highly disruptive exotic plants. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page.
<http://www.npwr.usgs.gov/resource/othrdata/exoticab/exoticab.htm> (Version 16JUL97).

Sather, N. 1996. Element Stewardship Abstract for *Poa pratensis*, *Poa compressa* Kentucky Bluegrass, Canada Bluegrass. The Nature Conservancy. Arlington, VA.

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 **1**

Documentation:

Describe vegetative response:

These grasses can resprout rapidly (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.npwr.usgs.gov/resource/othrdata/Explant/explant.htm> (Version 15DEC98).

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:

Chemical methods and burning might be useful. Practices that will damage bluegrass may often harm the native species more (Butterfield et al. 1996, Sather 1996).

Rational:

Sources of information:

Butterfield, C., J. Stubbendieck and J. Stumpf. 1996. Species abstract of highly disruptive exotic plants. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/othrdata/exoticab/exoticab.htm> (Version 16JUL97).

Sather, N. 1996. Element Stewardship Abstract for *Poa pratensis*, *Poa compressa* Kentucky Bluegrass, Canada Bluegrass. The Nature Conservancy, Arlington, VA.

Total Possible	10
Total	7

Total for 4 sections Possible	100
Total for 4 sections	52

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