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| NAME OF SPECIES: <i>Leymus arenarius</i> (L.) Hochst. | |
| Synonyms: <i>Elymus arenarius</i> L. (1) | |
| Common Name: lyme grass, beach wild rye, European dune grass, European lyme grass, rancheria grass, sand rye grass (2)(3) | |
| A. CURRENT STATUS AND DISTRIBUTION | |
| I. In Wisconsin? | 1. YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| | 2. <u>Abundance</u> : Scattered populations along Lake Michigan shoreline, locally abundant. |
| | 3. <u>Geographic Range</u> : Reported in Door, Kenosha, Kewaunee, Manitowoc, Racine, and Sheboygan Counties (1). |
| | 4. <u>Habitat Invaded</u> : beach zones, sandy areas in lakeshore parks and forests, near river mouths and boat landings (1). Disturbed Areas <input checked="" type="checkbox"/> Undisturbed Areas <input checked="" type="checkbox"/> |
| | 5. <u>Historical Status and Rate of Spread in Wisconsin</u> : First documented in Manitowoc County in 1959 or 1976 (1). Populations have expanded quickly with declining Lake Michigan water levels (4). Populations were documented in Kewaunee (1990, 2004), Sheboygan (2002), and Door (2002, 2004) (1). Also collected in Racine in 1989 or earlier and Kenosha in 1992 (1). |
| | 6. <u>Proportion of potential range occupied</u> : Currently occupies beaches along Lake Michigan, but could spread to shores of Lake Superior (4). |
| II. Invasive in Similar Climate Zones | 1. YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> <u>Where (include trends)</u> : CT, IL, IN, MI, NY (5), Greenland (6). |
| III. Invasive in Similar Habitat Types | 1. Upland <input checked="" type="checkbox"/> Wetland <input type="checkbox"/> Dune <input checked="" type="checkbox"/> Prairie <input type="checkbox"/> Aquatic <input type="checkbox"/> Forest <input checked="" type="checkbox"/> Grassland <input type="checkbox"/> Bog <input type="checkbox"/> Fen <input type="checkbox"/> Swamp <input type="checkbox"/> Marsh <input type="checkbox"/> Lake <input type="checkbox"/> Stream <input type="checkbox"/> Other: Beaches, near water, generally between sand dunes |
| IV. Habitat Affected | 1. <u>Soil types favored or tolerated</u> : Prefers sandy soils, but also grows in loam and clay soils (2)(4). Grows well in alkaline soils but also grows in acidic and neutral soils (2)(3). It requires well-drained dry to moist conditions and can grow in nutrient-poor conditions (2). |
| | 2. <u>Conservation significance of threatened habitats</u> : Point Beach State Forest has large population of the plant that is threatening the state endangered <i>Salix cordata</i> (7). Great Lakes Barrens (G2, S1) (8). |
| V. Native Habitat | 1. <u>List countries and native habitat types</u> : Temperate, Northern Hemisphere climates: Estonia, Finland, Germany, Latvia, Lithuania, Norway, Russian Federation, Sweden (3)(6). |
| VI. Legal Classification | 1. <u>Listed by government entities?</u> None found. |
| | 2. <u>Illegal to sell?</u> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Notes: |
| B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS | |
| I. Life History | 1. <u>Type of plant</u> : Annual <input type="checkbox"/> Biennial <input type="checkbox"/> Monocarpic Perennial <input type="checkbox"/> Herbaceous Perennial <input checked="" type="checkbox"/> |

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| | <p>Vine <input type="checkbox"/> Shrub <input type="checkbox"/> Tree <input type="checkbox"/></p> <p>2. <u>Time to Maturity</u>: Seeds mature in September-October (2).</p> <p>3. <u>Length of Seed Viability</u>:</p> <p>4. <u>Methods of Reproduction</u>: Asexual <input checked="" type="checkbox"/> Sexual <input checked="" type="checkbox"/> <u>Notes</u>: Can form dense clones through vegetative spread (4).</p> <p>5. <u>Hybridization potential</u>: Hybrids have been experimentally produced with <i>Leymus mollis</i>, <i>Triticum aestivum</i>, and <i>Triticum carthlicum</i> (9).</p> |
| II. Climate | <p>1. <u>Climate restrictions</u>: Does not tolerate shade, but very tolerant of saline conditions (2)(10). Reported to be drought tolerant, but one observation by Brockwell-Tillman noted that in one hot, dry year the plant "didn't do as well" (2)(11).</p> <p>2. <u>Effects of potential climate change</u>:</p> |
| III. Dispersal Potential | <p>1. <u>Pathways - Please check all that apply</u>:</p> <p><u>Unintentional</u>: Bird <input type="checkbox"/> Animal <input type="checkbox"/> Vehicles/Human <input type="checkbox"/> Wind <input checked="" type="checkbox"/> Water <input checked="" type="checkbox"/> Other: <input type="checkbox"/></p> <p><u>Intentional</u>: Ornamental <input checked="" type="checkbox"/> Forage/Erosion control <input checked="" type="checkbox"/> Medicine/Food: Grain or flour <input type="checkbox"/> Other: Dune stabilization, ground cover, fodder, fiber for mats, paper, rope (2)(3).</p> <p>2. <u>Distinguishing characteristics that aid in its survival and/or inhibit its control</u>: Extensive root system, clonal growth habit, and fast growth rates allow it to spread quickly and tolerate drought (2)(4).</p> |
| IV. Ability to go Undetected | <p>1. HIGH <input checked="" type="checkbox"/> MEDIUM <input type="checkbox"/> LOW <input type="checkbox"/></p> <p><u>Notes</u>: Often confused with the native American dune-grass (<i>Ammophila breviligulata</i>) (4).</p> |
| C. DAMAGE POTENTIAL | |
| I. Competitive Ability | <p>1. <u>Presence of Natural Enemies</u>: None known.</p> <p>2. <u>Competition with native species</u>: Often grows in the same habitat with American dune-grass (6).</p> <p>2. <u>Rate of Spread</u>:</p> <p>-changes in relative dominance over time: -change in acreage over time: HIGH (1-3 yrs) <input type="checkbox"/> MEDIUM (4-6 yrs) <input type="checkbox"/> LOW (7-10 yrs) <input checked="" type="checkbox"/></p> <p><u>Notes</u>:</p> |
| II. Environmental Effects | <p>1. <u>Alteration of ecosystem/community composition?</u> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> <u>Notes</u>: Outcompetes some native species (4).</p> <p>2. <u>Alteration of ecosystem/community structure?</u> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> <u>Notes</u>: Stabilizes shifting dunes (10).</p> <p>3. <u>Alteration of ecosystem/community functions and processes?</u> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> <u>Notes</u>: Holds sand in place, prevents dune formation (10).</p> |

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| | 4. Allelopathic properties? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Notes: |
| D. SOCIO-ECONOMIC EFFECTS | |
| I. Positive aspects of the species to the economy/society: | Notes: Used for stabilizing soil, erosion control, and ground cover (2)(3). Seeds can be cooked as a grain, used as animal fodder, or ground into flour (2). Plant fibers can be used as fodder, and for making things like paper and rope (2)(3). grown commercially but not in large quantities. |
| II. Potential Socio-Economic Effects of Requiring Controls: | Positive: Negative: |
| III. Direct and indirect Socio-Economic Effects of Plant : | Notes: None known, beyond threats to rare and endangered coastal species and communities. |
| IV. Increased Costs to Sectors Caused by the Plant:: | Notes: None known. |
| V. Effects on human health: | Notes: No negative effects. |
| VI. Potential socio-economic effects of restricting use: | Positive: Negative: May be sold commercially in some areas. |
| E. CONTROL AND PREVENTION | |
| I. Costs of Prevention (please be as specific as possible): | Notes: |
| II. Responsiveness to prevention efforts: | Notes: |
| III. Effective Control tactics: | Mechanical <input type="checkbox"/> Biological <input type="checkbox"/> Chemical <input type="checkbox"/> Times and uses: |
| IV. Minimum Effort: | Notes: |
| V. Costs of Control: | Notes: |
| VI. Cost of prevention or control vs. Cost of allowing invasion to occur: | Notes: |
| VII. Non-Target Effects of Control: | Notes: |
| VIII. Efficacy of monitoring: | Notes: |
| IX. Legal and landowner issues: | Notes: None known. |

F. REFERENCES USED:

- UW Herbarium
- WI DNR
- TNC
- Native Plant Conservation Alliance
- IPANE
- USDA Plants

| Number | Reference |
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| 2 | Plants for a Future. 2004. <i>Leymus arenarius</i> - (L.) Hochst. lyme grass. Plants for a future: Edible, medicinal and useful plants for a healthier world. http://www.ibiblio.org/pfaf/cgi-bin/arr_html?Leymus+arenarius&CAN=COMIND |
| 3 | USDA, ARS, National Genetic Resources Program. 2002. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?102161 <input type="checkbox"/> |
| 4 | Fewless, G. 2007. Invasive plants of Wisconsin: <i>Leymus arenarius</i> , lyme grass. Cofrin Center for Biodiversity Herbarium, University of Wisconsin-Green Bay. http://www.uwgb.edu/biodiversity/herbarium/invasive_species/leyare01.htm . |
| 5 | USDA, NRCS. 2007. The PLANTS Database (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA |
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| 10 | Greipsson, S. and A. J. Davy. 1996. Sand accretion and salinity as constraints on the establishment of <i>Leymus arenarius</i> for land reclamation in Iceland. <i>Annals of Botany</i> 78:611-618. http://aob.oxfordjournals.org/cgi/content/abstract/78/5/611 |
| 11 | Email correspondence from Elizabeth Brockwell-Tillman to Kelly Kearns dated October 13, 2005. |
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Editor and date: Chris Reyes 9-15-07

Reviewer(s) and date reviewed: Jerry Doll, 9-27-07.

Approved and Completed Date: