Minnesota Noxious Weed Risk Assessment

Developed by the Minnesota Noxious Weed Advisory Committee

Assessment information

Common name: Stiltgrass, Japanese stiltgrass, packing grass, Nepalese browntop

Scientific name: *Microstegium vimineum* (Trin.) A. Camus

Synonyms: *Andropogon vimineum* Trin., *Eulalia viminea* (Trin.) Kuntze, *Eulalia viminea* (Trin.) Kuntze var. *variabilis* Kuntze, *Microstegium vimineum* (Trin.) A. Camus var. *imberbe* (Nees) Honda

Family name: Poaceae

Current reviewer name and organizational affiliation: Jennifer Larson, USDA Forest Service
Date of current review: August 1, 2024

Species description

Photos

A close up of several *M. vimineum* plants with characteristic silvery, off-center mid rib. Photo credit: Chris Evans, University of Illinois, bugwood.org.

Microstegium vimineum forms dense mats that can impede forest regeneration. Photo credit: Chris Evans, University of Illinois, bugwood.org.

Why the plant is being assessed

- *Microstegium vimineum* is an annual C_4 grass (warm-season) native to Asia that was first reported in the U.S. in 1919 in eastern Tennessee (Fairbrothers and Gray 1972) and has since been reported in 31 states and Ontario, Canada (EDDMapS 2024). *M. vimineum* invasions can occur in a wide variety of habitats including disturbed areas such as old fields and along roads and streams, riparian areas, interior forests, mixed mesophytic woodlands, oak-hickory forests, wet grasslands, river bluffs, and mesic uplands (Barden 1987, Cole and Weltzin 2004, Flory 2010, Fryer 2011).
- *M. vimineum* has not yet been reported in Minnesota, but there have been five EDDMapS (2024) reports near a parking area and trail at the Coulee Experimental State Forest in neighboring La Crosse County, Wisconsin.
- Ecological Impacts: Flory (2010) states that "*M. vimineum* can create dense monospecific stands that can reduce native plant diversity and productivity and inhibit forest regeneration." *M. vimineum* can also alter fire ecology in fire-dependent ecosystems and has been associated with decreased small tree and sapling survival (Salemme and Fraterrigo 2021).
- Association with other nonnative species: Fryer (2011) notes that *M. vimineum* (they use the common name Nepalese browntop) "is frequently found with garlic mustard (*Alliaria petiolata)* in the East and Southeast. Japanese honeysuckle (*Lonicera japonica*) is often consistently associated with Nepalese browntop in the Great Lakes and eastern regions of the United States."
- *M. vimineum* has been regulated as a Prohibited Invasive Species in Wisconsin since 2009, due in part to its ability to out-compete native plants in low-light conditions and the wide range of habitat suitable for invasion (Wisconsin Department of Natural Resources 2024). They also state that "the large seed bank can be spread by moving water."

Identification, biology, and life cycle

- *M. vimineum* is native to eastern Asia including (but not limited) to India, Nepal, China, and Japan; it is thought to have been introduced in shipments of porcelain as dried packing material (Tu 2000).
- It is an annual C_4 (warm-season) grass that is adapted to low light conditions, and seed production can occur in as little as 5% full sunlight. The coldest reported temperatures at which *M. vimineum* can survive are -5.8 to 9.4 °F (Redman 1995). This is much higher than the average annual extreme minimum temperature in the 2023 USDA Plant Hardiness Zone Map, but localized areas of warmer winter temperatures can occur with the complex topography of the driftless and driftless-like areas in Wisconsin and Minnesota (Bartkowiak 2024). The Future Abundance Habitat Maps tool in EDDMapS (2024) indicates that areas suitable for stiltgrass establishment by 2100 include central and northern Wisconsin and the upper peninsula of Michigan; plant hardiness zones from these areas extend across Minnesota.
- Radford et al. (1968) state that "It is a straggling or decumbent plant, usually 6-10 dm in height, and the reclining stems can grow up to 1.0 m (40 inches) long. Its stems are typically branched, rooting at the lower nodes. The lanceolate leaf blades are 5-8 cm long and 2-15 mm wide, sparsely pubescent on both surfaces, and distinctly tapered at both ends." The lower nodes are where the stilt-like roots project from the plant (J. Larson personal observation 2024). *M. vimineum* has both open, terminal and closed, axillary flowers and can be pollinated by wind or self-pollination (Tu 2000). It also has a characteristic, off-center, silvery mid-rib on each leaf blade (J. Larson personal observation 2024). Nitzsche and Rector (2023) state that identification in the fall can become easier after it develops a "purplish tinge."
- *M. vimineum* can produce up to 1000 seeds per plant, with seeds remaining viable in soil for three to five years (Tu 2000), but most germinate in the year following seed set (Huebner 2011). Local dispersal is limited to less than 25cm annually (Rauschert et al. 2009), but seed can travel farther distances assisted by animals, humans, and water (Tu 2000, PennState Extension 2020).
- *Leersia virginica* (whitegrass) is a native perennial grass that can grow with and be mistaken for *M. vimineum* (Evans et al. 2012). *L. virginica* can be distinguished from *M. vimineum* in that *L. virginica* is a perennial with a well-developed root system, has longer more slender leaves that lack the midrib stripe and a flower/seed head that is more open and spreading (Evans et al. 2012).

Current distribution

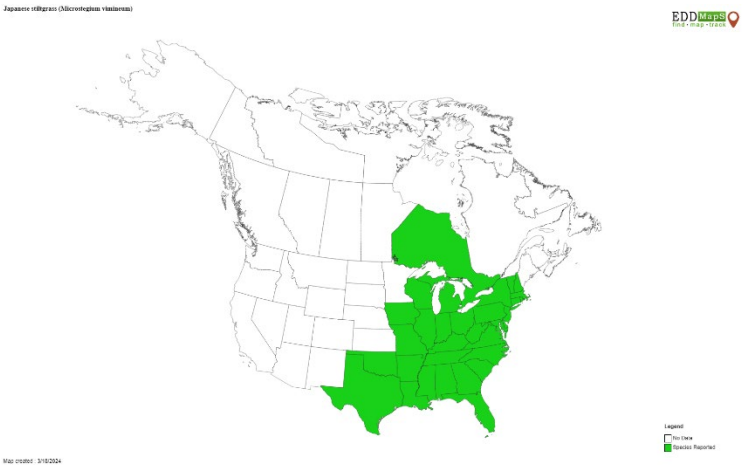

Image caption: National level map from EDDMapS (2024). Map accessed on 18 March 2024.
M. vimineum is reported as introduced in the following states: Wisconsin, Michigan, Iowa, Illinois, Indiana, Missouri, Arkansas, Oklahoma, Texas, Louisiana, Ohio, Pennsylvania, New Jersey, New York, Connecticut, Rhode

Island, Massachusetts, Vermont, New Hampshire, West Virginia, Maryland, Delaware, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, and Florida. The Canadian province where *M. vimineum* has been introduced is Ontario.

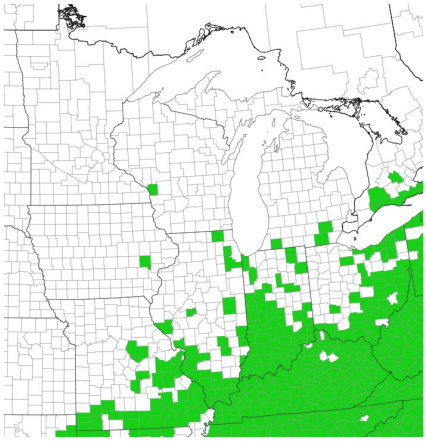

Image caption: County level EDDMapS (2024) distribution map for *M. vimineum*, zoomed in to include Minnesota and neighboring states. Map accessed on 3 May 2024.
Microstegium vimineum has not yet been reported in Minnesota but there are 5 reports in neighboring La Crosse County, Wisconsin.

Current regulation

M. vimineum is not federally regulated, but is regulated in the following states: Alabama, Connecticut, Indiana, Massachusetts, Maine, New Hampshire, Ohio, Wisconsin, West Virginia, New York (National Plant Board 2024, West Virginia Department of Agriculture 2007, New York State 2014).

Risk assessment

Box 1:

Is the plant species or genotype non-native?

Answer: Yes
Outcome: Go to Box 3 (yes)
Kew (2024) states that *M. vimineum* is native to: "Assam, China North-Central, China South-Central, China Southeast, East Himalaya, Inner Mongolia, Japan, Jawa, Korea, Laos, Lesser Sunda Is., Manchuria, Myanmar, Nansei-shoto, Nepal, Philippines, Primorye, Sumatera, Taiwan, Thailand, Vietnam, and West Himalaya." It is introduced into: "Alabama, Arkansas, Cameroon, Congo, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iran, Kentucky, Louisiana, Maryland, Massachusetts, Mississippi, Missouri, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Puerto Rico, South Carolina, Tennessee, Texas, Transcaucasus, Turkey, Virginia, West Virginia, Zaïre."

Box 2:

Does the species pose significant human or livestock concerns or have the potential to significantly harm agricultural production?

Question 2A: Does the plant have toxic qualities that pose a significant risk to livestock, wildlife, or people?

Outcome: Decision tree does not direct to this question.

Question 2B: Does the plant cause significant financial losses associated with decreased yields, reduced quality, or increased production costs?

Outcome: Decision tree does not direct to this question.

Box 3:

Is the species, or a related species, documented as being a problem elsewhere?

Answer: yes

Outcome: Go to Box 6 (yes)

Adams and Engelhardt (2009) found reduced native species richness and percent cover at study sites occupied by *M. vimineum*, compared to uninvaded sites, along the Chesapeake and Ohio Canal National Historical Park, Maryland, in a mesic deciduous forest. This reduction only surfaced later in the growing season when *M. vimineum* had matured. The authors suggest that *M. vimineum* invasions could lead to local extinction of small populations of native plants.

In the fire-dependent central hardwoods region of southern Illinois, Salemme and Fraterrigo (2021) found that plots invaded by *M. vimineum* had both lower post-fire seedling emergence and higher mortality of small trees <3mm stem diameter. Their results suggest that *M. vimineum* invasion can reduce the resilience of tree regeneration to fire.

In a mixed-hardwood forest in Tennessee, Oswalt et al. (2007) found a decline in native woody species stems per hectare with increasing *M. vimineum* cover. Their results suggest also suggest that native woody species regeneration in southern forests may be negatively impacted. Barden (1987) found that *M. vimineum* was able to readily invade floodplain forests in North Carolina following groundcover or canopy disturbance, and out-competed *Lonicera japonica* in this same system.

Box 4:

Are the species' life history and growth requirements understood?

Outcome: Decision tree does not direct to this question.

Box 5:

Gather and evaluate further information

Outcome: Decision tree does not direct to this question.

Box 6:

Does the species have the capacity to establish and survive in Minnesota?

Question 6A: Is the plant, or a close relative, currently established in Minnesota?

Answer: No

Outcome: Question 6B (no)

M. vimineum is not currently established in Minnesota (EDDMapS 2024).

Question 6B: Has the plant become established in areas having a climate and growing conditions similar to those found in Minnesota?

Answer: Yes

Outcome: Go to Box 7 (yes)

There is a small population that is being managed at the edge of a parking lot and along a walking trail at the Coulee Experimental State Forest in La Crosse County, Wisconsin. Evan Chalmers, a graduate student at the University of Wisconsin – La Crosse, took measurements on phenology, soil and air temperature during 2022 and 2023 on a subset of the population, the rest of which has been treated. Preliminary results show that flowers develop late-September – early October. Reproduction by seed is probable since plants have been found along a trail over multiple years (J. Larson personal observation 2024).

In a Wisconsin geological and natural history survey report, Carson et al. (2023) define the location of the current *M. vimineum* infestation as part of the driftless area, with locations bordering in Minnesota with similar "driftless-style topography."

The most recent USDA Plant Hardiness Zone Map (USDA 2023) indicates that the Wisconsin infestation is in zone 5a; neighboring locations in southeastern Minnesota are within the same zone. As mentioned previously, the Future Abundance Habitat Maps tool in EDDMapS (2024) indicates that areas suitable for stiltgrass establishment by 2100 include central and northern Wisconsin and the upper peninsula of Michigan; plant hardiness zones from these areas extend across Minnesota.

Question 6C: Has the plant become established in areas having a climate and growing conditions similar to those projected to be present in Minnesota under future climate projections?

Outcome: Decision tree does not direct to this question.

Box 7:

Does the species have the potential to reproduce and spread in Minnesota?

Question 7A: Are there cultivars of the plant that are known to differ in reproductive properties from the species?

Answer: No

Outcome: Go to Question 7B (no)

No known cultivars exist of *M. vimineum* but based on herbarium records, there is evidence of two separate invasion events with awnless and awned forms (Barrett et al. 2022). Awns are small bristles on grass florets. The first known record is from Tennessee in 1919 of an awnless form of *M. vimineum*. The first awned form was recorded in eastern Pennsylvania in 1938. Barrett et al. (2022) suggests that the awned form may be better adapted to colder climates. Samples collected from the La Crosse County, Wisconsin site are awned (Bartkowiak 2024).

Question 7B: Does the plant reproduce by asexual/vegetative means?

Answer: No

Outcome: Go to Question 7D (no)

Question 7C: Are the asexual propagules - vegetative parts having the capacity to develop into new plants - effectively dispersed to new areas?

Outcome: Decision tree does not direct to this question.

Question 7D: Does the plant produce large amounts of viable, cold hardy seeds? For woody species, document the average age the species produces viable seed.

Answer: Yes
Outcome: Go to Question 7G (yes)
M. vimineum produces both chasmogamous (out-crossed) and cleistogamous (self-pollinated) flowers in its native and non-native range (Barkworth et al. 2003). They can produce 100-1000 seeds per propagule (Tu 2000).

Question 7E: For species that produce low numbers of viable seeds, do they have a high level of seed/seedling vigor or remain viable for an extended period (seed bank)?

Outcome: Decision tree does not direct to this question.

Question 7F: Is the plant self-fertile?

Answer: Yes. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
M. vimineum seed produced from self-pollinated flowers can develop into new plants and be dispersed into new areas, though seeds produced asexually have lower viability than those produced via sexual reproduction (Huebner 2011).

Question 7G: Are sexual propagules – viable seeds – effectively dispersed to new areas? List and consider all vectors.

Answer: Yes
Outcome: Go to Question 7I (yes)
Sexual propagules – viable seeds, can be dispersed to new areas. Cheplick (2010) states that "the key to managing the spread of *M. vimineum* away from source populations lies in minimizing human-assisted dispersal to disturbed areas such as along paths or roadways." In the Appalachian Mountains of central Pennsylvania, Rauschert et al. (2009) also suggests that human-mediated dispersal, including forest road management, contributes to increased spread of *M. vimineum*. Seed can also spread rapidly via moving water (Wisconsin Department of Natural Resources 2024).

Question 7H: Can the species hybridize with native species (or other introduced species) and produce viable seed and fertile offspring in the absence of human intervention?

Answer: No. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
No information was found indicating that *M. vimineum* can hybridize with other species.

Question 7I: Are there natural controls (species native to Minnesota) which have been documented to effectively prevent the spread of the species in question?

Answer: No
Outcome: Go to Box 8 (no)
There are no known natural controls of *M. vimineum*.

Question 7J: Was the answer to Question 7A (Are there cultivars that differ in reproductive properties from the original species) "Yes"?

Answer: No

Outcome: Decision tree does not direct to this question.
There are no known cultivars of *M. vimineum*.

Box 8:

Does the species pose significant human or livestock concerns or have the potential to significantly harm agricultural production, native ecosystems, or managed landscapes?

Question 8A: Does the plant have toxic qualities, or other detrimental qualities, that pose a significant risk to livestock, wildlife, or people?

Answer: No
Outcome: Go to Question 8B (no)
No information was found indicating it is directly toxic to livestock, wildlife, or people.

Question 8B: Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs?

Answer: Yes
Outcome: Go to Box 9 (yes)
In a fire-dependent oak-hickory forest in southern Illinois, Salemme and Fraterrigo (2021) found that tree stands with *M vimineum* reduced the resilience of tree regeneration to fire. Flory and Clay (2010) stated that stiltgrass may be "directly reducing tree regeneration through competition," as evidenced by 400% lower tree regeneration in stands where *M. vimineum* was present.

Question 8C: Can the plant aggressively displace native species through competition (including allelopathic effects)?

Answer: Yes. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

Corbett and Morrison (2012) found that *M. vimineum* root and shoot extracts had negative effects on germination of garden lettuce (allelopathy), but no studies to test possible *M. vimineum* allelopathy toward native species have been performed.

Leicht et al. (2005) found that *M. vimineum* out-competed two co-occurring species in both high- and low-light conditions in a greenhouse study. Culpepper et al. (2018) found that "natural forest regeneration is conducive for the invasion of Japanese stiltgrass." As previously mentioned, Flory and Clay (2010) stated that tree regeneration was 400% greater in control plots versus those invaded by *M. vimineum*, indicating that stiltgrass may be "directly reducing tree regeneration through competition." In the same study, they found that *M. vimineum* thatch biomass may be a physical barrier to seedling establishment; vole damage of tree seedlings was also greater in two years of the study, in plots with *M. vimineum*.

Adams and Engelhardt (2009) found reduced native species richness and percent cover at study sites occupied by *M. vimineum*, compared to uninvaded sites, along the Chesapeake and Ohio Canal National Historical Park, Maryland, in a mesic deciduous forest. This reduction only surfaced later in the growing season when *M. vimineum* had matured. The authors suggest that *M. vimineum* invasions could lead to local extinction of small populations of native plants.

In a mixed-hardwood forest in Tennessee, Oswalt et al. (2007) found a decline in native woody species stems per hectare with increasing *M. vimineum* cover. Their results suggest also suggest that native woody species regeneration in southern forests may be negatively impacted. Barden (1987) found that *M. vimineum* was able to readily invade floodplain forests in North Carolina following groundcover or canopy disturbance, and out-competed *Lonicera japonica* in this same system.

Question 8D: Can the plant hybridize with native species resulting in a modified gene pool and potentially negative impacts on native populations?

Answer: No. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

No information was found indicating that *M. vimineum* can hybridize with native species.

Question 8E: Does the plant have the potential to change native ecosystems (adds a vegetative layer, affects ground or surface water levels, etc.)?

Answer: Yes. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

There are multiple studies indicating that *M. vimineum* has the potential to change native ecosystems. As stated previously (Question 8C), Flory and Clay (2010) found that *M. vimineum* thatch biomass may be a physical barrier to (tree or other) seedling establishment. Flory et al. (2015) and Wagner and Fraterrigo (2015) determined that fires in *M. vimineum* invaded plots were more intense; Wagner and Fraterrigo (2015) also found positive feedback between fire and *M. vimineum* germination and re-establishment, possibly due to increased light and available nitrogen post-burn.

Question 8F: Does the plant have the potential to introduce or harbor another pest or serve as an alternate host?

Answer: ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

Author could find no information on the potential of stiltgrass to harbor another pest or serve as an alternate host.

Box 9:

Does the species have clearly defined benefits that outweigh associated negative impacts?

Question 9A: Is the plant currently being used or produced and/or sold in Minnesota or native to Minnesota?

Answer: No

Outcome: Go to Box 10 (no)

Microstegium vimineum is not native to Minnesota.

As part of the Noxious Weed Advisory Committee (NWAC, Minnesota Department of Agriculture) risk assessment process, the Minnesota Nursery and Landscape Association (MNLA) reached out to wholesale growers in 2023 for the purpose of estimating the wholesale value, and ultimately the combined economic value (wholesale plus value-added retail) to Minnesota nursery growers and retailers and the Minnesota economy for each of the 16 plant species being reviewed during the 2023-2025 review and listing cycle (James Calkins, Minnesota Nursery and Landscape Association; personal communication, August 6, 2023). They found that: Japanese stiltgrass (*Microstegium vimineum*) was “not known to be grown and sold as landscape plants in Minnesota so this possibility does not need to be addressed in the risk assessments.”

Question 9B: Is the plant an introduced species and can its spread be effectively and easily prevented or controlled, or its negative impacts minimized, through carefully designed and executed management practices?
Outcome: Decision tree does not lead to this question.

Question 9C: Is the plant native to Minnesota?
Outcome: Decision tree does not lead to this question.

Question 9D: Is a non-invasive, alternative plant material or cultivar commercially available that could serve the same purpose as the plant of concern?
Outcome: Decision tree does not lead to this question.

Question 9E: Does the plant benefit Minnesota to a greater extent than the negative impacts identified at Box #8?
Outcome: Decision tree does not lead to this question.

Box 10:

Should the species be regulated as Prohibited/Eradicate, Prohibited/Control, or Restricted Noxious Weed?

Question 10A: Is the plant currently established in Minnesota?
Answer: No
Outcome: Go to Question 10B (no)
Based on distribution maps on EDDMapS (2024), *M. vimineum* is not known to be present Minnesota.

Question 10B: Would prohibiting this species in trade prevent the likelihood of introduction and/or establishment?
Answer: No
Outcome: Go to Question 10D (no)
Author could find no evidence of *M. vimineum* for sale in the state of Minnesota, or elsewhere.

Question 10C: Does this risk assessment support this species being a top priority for statewide eradication if found in the state?
Answer: Yes. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***
Because *M. vimineum* is known to outcompete native plants and poses limitations to native tree recruitment (Flory 2010) and can cause declines in survival of young trees in fire-dependent systems (Salemme and Fraterrigo 2021), this species should be considered a top priority for statewide eradication if found in the state.

Question 10D: Does the plant pose a serious human health threat?
Answer: No
Outcome: Go to Question 10F (no)

The author could find no evidence that *M. vimineum* poses any threats to human health.

Question 10E: Is the health threat posed by the plant serious enough, and is the plant distribution sufficiently small enough to be manageable, and are management tools available and effective enough to justify listing as Prohibited / Eradicate species?
Outcome: Decision tree does not lead to this question.

Question 10F: Is the plant known to cause significant ecological or economic harm and can the plant be reliably eradicated (entire plant) on a statewide basis using existing practices and available resources considering the distribution, reproductive biology and potential for spread?

- *For distribution, note if the distribution is well documented, the number and acreage of known infestations and how widespread they are in the state. Note if there are infestations in border areas.*
- *For reproductive biology, note if there are reproductive biology factors that make the plant easier to control and eradication more likely (for example, long pre-reproductive period, self-incompatible pollination, short-lived seed bank).*
- *For potential for spread and re-invasion of controlled areas, note its potential to spread beyond places where it is being controlled such as deliberate planting by people, wildlife vectors, re-infestation from border states, or other factors that facilitate spread.*
- *For known management tools, note what management tools are available, potential non-target impacts, and the reasonableness of state management or mandating that landowners throughout the state use the management tools to eradicate or control existing plants.*
- *For available resources, consider the capacity of state and local personnel and availability of funding to respond to new and existing infestations.*

Answer: Yes
Outcome: LIST THE PLANT AS A PROHIBITED / ERADICATE NOXIOUS WEED (YES)
Because *M. vimineum* is known to outcompete native plants and poses limitations to native tree recruitment (Flory 2010) and can cause declines in survival of young trees in fire-dependent systems (Salemme and Fraterrigo 2021), this species should be considered a top priority for statewide eradication if found in the state.

Distribution: *M. vimineum* is not known to be present in the state.

Reproductive biology: As *M. vimineum* is an annual grass and can be string trimmed to remove all stem tissue at the appropriate time to halt seed production and prevent resprouting (PennState Extension 2020). Any location with *M. vimineum* will need to be revisited, as seed can be viable for up to five years (Tu 2000).

Potential for spread or re-invasion: The only known population of *M. vimineum* in states neighboring Minnesota resides in La Crosse County, Wisconsin. The greatest risk of spread of this population into Minnesota is via human-mediated movement, such as on muddy boots (from trailside population) or vehicle tire mud (from parking lot). Rauschert et al. (2008) suggest that “human-mediated dispersal, likely influenced by forest road management, is responsible for the rapid spread of this invasive species.” The Wisconsin Department of Natural Resources is actively working towards eradication of *M. vimineum* and have performed extensive surveys

beyond the current population and provided outreach letters to neighboring private landowners to increase awareness.

Known management tools:
Panke and Renz (2013) provide extensive information on management of *M. vimineum.* The following summarizes options recommended at the time of publication:

- Non-chemical control
    - Removal/pulling – effective for individual plants, but soil disturbance can expose stiltgrass seeds. Performing this method in late-summer/early-fall can limit the time new seeds have to germinate and subsequently reproduce.
    - Mowing – cut plants as close as possible to the ground in early-fall after flowering, but before seeds are present. Site will need to be monitored to ensure no plants were missed, and annually until the seed bank has been exhausted.
    - Prescribed burning – fall burns are more effective than spring if timed to occur before seed set and can remove the vegetative mat that stiltgrass can create. (But see previous comments stiltgrass increasing fire intensity and decreasing survival of small trees and saplings after prescribed burns from Salemme and Fraterrigo (2021)).
- Chemical control
    - Pre-emergence – herbicide application occurs directly to soil; the products Panke and Renz (2013) recommend state that "damage to established plants is rare" and that they will "only damage plants that germinate after the herbicide has been applied."
    - Foliar – recommendation is to "apply directly to individual plants or broadcast across an infested area." This is the most cost-effective option in dense populations. However, this is also more likely to have a negative impact of any underlying native plants.

PennState Extension (2020) also states that timing of any control method should coincide with its greatest efficacy. They provide a timetable for treatment methods that would need to be adjusted to coincide with Minnesota seasonal temperatures and possible phenological differences of stiltgrass growing in Minnesota's cooler climate.

Flory (2010) found that post-emergent herbicide or hand weeding over multiple growing seasons in natural systems were most effective at removing *M. vimineum*, while allowing for the resident plant community to recover.

Question 10G: Is the plant known to cause significant ecological or economic harm and can the plant be reliably <u>controlled</u> to limit spread on a statewide basis using existing practices and available resources? Would the economic impacts or other hardships incurred in implementing control measures be reasonable considering any ongoing or potential future increase of ecological or economic harm?

- *Also consider all bullet points listed under 10F when evaluating 10G*

Outcome: Decision tree does not lead to this question.

Question 10H: Would prohibiting this species in trade have any significant or measurable impact to limit or reduce the existing populations or future spread of the species in Minnesota?

Outcome: Decision tree does not lead to this question.

Question 10I: Are there any other measures that could be put in place as Special Regulations which could mitigate the impact of the species within Minnesota?
Outcome: Decision tree does not lead to this question.

Box 11:

The species is being proposed to be designated as a Specially Regulated Plant. What are the specific regulations proposed?

Outcome: Decision tree does not lead to this question.

Final outcomes of risk assessment (2024)

NWAC Listing Subcommittee

Outcome: The listing subcommittee recommends listing *Microstegium vimineum* as a Prohibited Eradicate noxious weed.
Comments:

NWAC Full Committee

Outcome: List as a prohibited eradicate noxious weed
Comments: The vote was 16 to 1 in favor of the recommendation.

MDA Commissioner

Outcome: List as a prohibited eradicate noxious weed
Comments: No comments

Risk Assessment Current Summary (08-01-2024)

- *Microstegium vimineum* (stiltgrass) is an annual, warm-season grass that is shade-tolerant and readily invades roads, trails and forest openings.
- Stiltgrass creates “dense monospecific stands that can reduce native plant diversity and productivity and inhibit forest regeneration.” *M. vimineum* has also been found to alter fire ecology in fire-dependent ecosystems. In addition, it has been associated with decreased small tree and sapling survival.
- There is a population of stiltgrass near the Minnesota-Wisconsin border in La Crosse County, Wisconsin, in the Coulee Experimental State Forest. While Wisconsin Department of Natural Resources is working to extirpate this population and provide outreach and education to neighboring properties, there is concern that it may be present in other areas of the state. Climate and habitat in the infested location in Wisconsin are similar to areas bordering southeast Minnesota.
- Stiltgrass is currently regulated in 10 states and present in 32 of the 48 contiguous United States.
- While range prediction models available on EDDMapS do not indicate stiltgrass expansion into Minnesota, areas of central and northern Wisconsin and the upper peninsula of Michigan are in USDA plant hardiness zones that extend into Minnesota.
- Stiltgrass is readily transported as seed from mud on boots and vehicles from infested areas.
- Control methods range in effectiveness from 50-90%; subsequent monitoring and treatment in infested areas should occur for at least 5-7 years due to the long-lived and prolific seed bank. *Microstegium vimineum* can produce up to 100 seeds per plant. Once large-scale establishment has occurred, eradication may be difficult due to the high seed production potential of the species, and the ease of human-assisted transport.

References

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