

EPPO Datasheet: *Microstegium vimineum*

Last updated: 2024-01-02

IDENTITY

Preferred name: *Microstegium vimineum*

Authority: (Trinius) A.Camus

Taxonomic position: Plantae: Magnoliophyta: Angiospermae:
Commelinids: Poales: Poaceae: Panicoideae

Other scientific names: *Eulalia viminea* Kuntze

Common names: Japanese stilt grass, Mary's grass, Nepalese browntop, flexible sasa grass

[view more common names online...](#)

EPPO Categorization: A2 list, Alert list (formerly)

[view more categorizations online...](#)

EU Categorization: IAS of Union concern

EPPO Code: MCGVI



[more photos...](#)

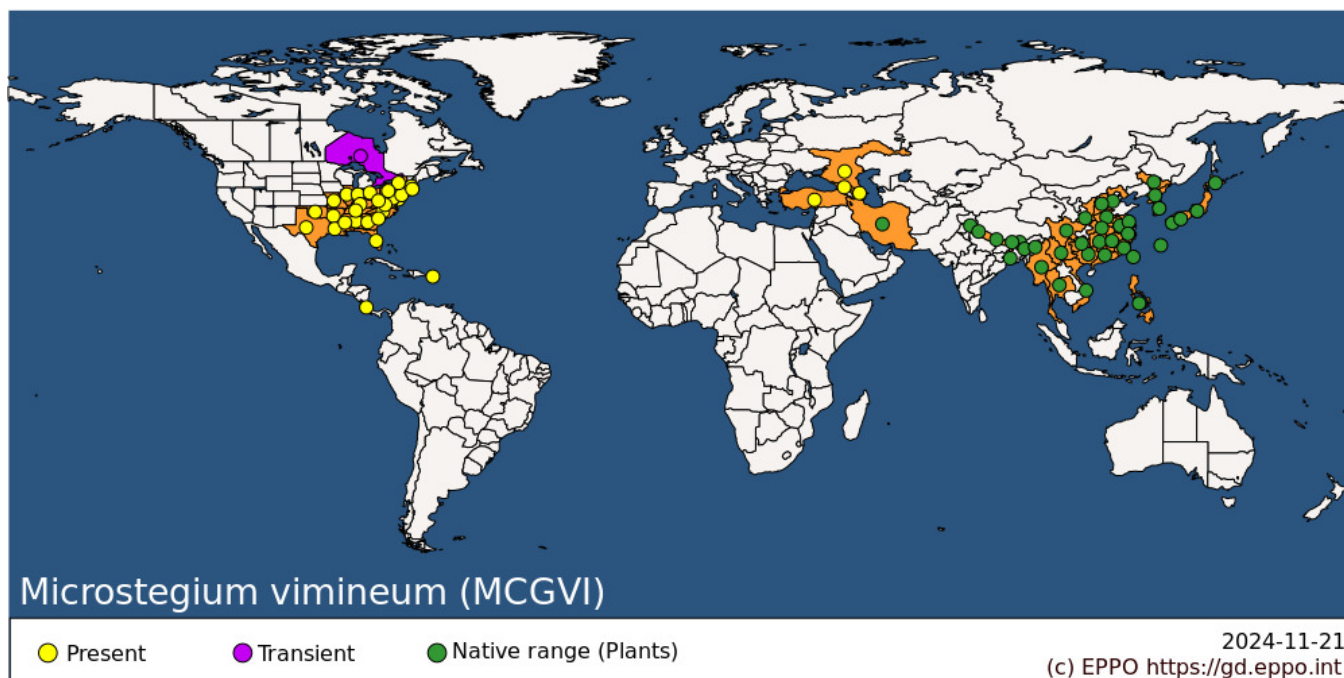
GEOGRAPHICAL DISTRIBUTION

History of introduction and spread

Microstegium vimineum was first identified in 1919 in Tennessee, where it was probably introduced accidentally (Barkworth *et al.*, 2003; Ehrenfeld, 2003; in Fryer, 2011), and by 1960 the species had spread to Ohio and Pennsylvania, and to all Atlantic coastal states from Florida to New Jersey. The species is now established in 27 states (USDA, NRCS, 2014). *M. vimineum* has become a significant problem in forests in many eastern and midwestern states. *M. vimineum* spreads rapidly due to high seed production and is able to out-compete native vegetation; its dissemination is facilitated by deer herbivory (Baiser *et al.*, 2008). It often establishes in locations where moist soils are scoured, such as along streambanks, floodplains, ditches and trails, but can be found in a wide range of habitats and environmental conditions from full sun to full shade.

Within the EPPO region, *M. vimineum* is established in the Southern Caucasus including Azerbaijan, the Republic of Georgia and Turkey (Valdés *et al.*, 2009). The species is native to the Russian Far East (Tsvelev, 1976) and introduced to the Northern Caucasus (Valdés *et al.*, 2009).

Note: there is a herbarium record of the species in the Democratic Republic of Congo from 1929. There are no additional records since that date, thus the record is not interpreted as an established population in the absence of further information.



EPPO Region: Azerbaijan, Georgia, Russia (Southern Russia), Türkiye

Asia: Bhutan, China (Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Shaanxi, Shanxi, Sichuan, Yunnan, Zhejiang), India (Himachal Pradesh, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal), Iran, Japan (Hokkaido, Honshu, Kyushu, Ryukyu Archipelago, Shikoku), Korea Dem. People's Republic, Korea, Republic, Myanmar, Nepal, Philippines, Taiwan, Thailand, Vietnam

North America: Canada (Ontario), United States of America (Alabama, Arkansas, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maryland, Massachusetts, Mississippi, Missouri, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Virginia, West Virginia)

Central America and Caribbean: Costa Rica, Puerto Rico

MORPHOLOGY

Plant type

Annual grass species.

Description

Microstegium vimineum is an annual C4 grass species with a sprawling habit which resembles a small bambootype plant. It germinates in spring and grows slowly until mid-summer ultimately reaching a height of 0.6–1.5 m. Reclining stems can grow to a length of up to 2 m. In unfavourable conditions, the plant can be as small as 10–20 cm in height but it is still capable of producing flowers and seed. The plant produces a sparse, very short root system. The lanceolate leaf blades are 5–8 cm long, 2–15 mm wide and sparsely pubescent on both sides. The ligules are membranous, usually ciliate, and are 0.5–2 mm long. The fruit or caryopsis (grain) is yellowish to reddish and ellipsoid in shape, 2.8–3.0 mm long. Slender stalks of tiny flowers are produced in August through to September or early October. In late autumn they fade to pale greenishyellow or turn pale purple in colour (Mehrhoff, 2000).

BIOLOGY AND ECOLOGY

General

Microstegium vimineum possesses characteristics typical of many invasive alien species: it grows quickly, fruits

within a single season, produces abundant seed and readily invades habitats that have been disturbed by natural (e.g. flooding) and anthropogenic (e.g. mowing, tilling) factors. It is also capable of invading natural areas and swiftly replacing natural communities with nearly monospecific stands (Tu, 2000; Oswalt & Oswalt, 2007).

Microstegium vimineum has a high degree of phenotypic plasticity, self-fertilization, an annual life history with a persistent seed bank and high seed production in dense stands (Claridge & Franklin, 2002; Gibson *et al.*, 2002; Droste *et al.*, 2010). Individual plants can produce thousands of seeds, resulting in an estimated 0.1–4 million seeds per m² (Barden, 1987; Gibson *et al.*, 2002; Judge, 2005; Cheplick, 2006). However, flowering and seed production vary considerably between years and across populations growing in different environmental conditions (Gibson *et al.*, 2002; Wilson *et al.*, 2015).

Microstegium vimineum produces both cleistogamous (closed, self-fertilizing) and chasmogamous (open, outcrossing) flowers, and the proportion of chasmogamous seeds appears to increase with greater light (Cheplick, 2006). This trait enables the plant to reproduce by facultative outcrossing when the gene pool is narrow. In the Eastern USA, *M. vimineum* germinates in early to mid spring (depending on latitude) and reaches full growth potential in mid to late summer when it can reach a length of 2 m and eventually produce numerous seeds in autumn (Barden, 1987; Hunt & Zaremba, 1992; Redman, 1995; Wilson *et al.*, 2015). Seeds are dispersed by water, animals and through human activities on clothing and vehicles.

Seeds may remain viable in the soil for 5 years (Barden, 1987). Seeds require 90 days' dormancy but not necessarily cold stratification (Judge, 2005).

Habitats

Microstegium vimineum can colonize natural environments, transport corridors and wastelands. Common habitats associated with *M. vimineum* are moist areas such as mesic roadsides, railway tracks, ditches, logging roads, roadsides, floodplain forest, forest wetland, herbaceous and shrub wetland, early and late successional forest, planted forest, forest edges and margins, woodland borders, floodplains, grassy areas, vacant lots, managed landscapes and stream sides. The plant is also found in mesic upland sites, usually in moderate to dense shade.

Disturbances due to management such as grazing, mowing, irrigation, fire and timber harvest may increase the susceptibility of habitats to establishment but intensively cultivated areas will be less susceptible (Oswalt & Oswalt, 2007; Shelton, 2010). Although mowing can reduce the reproductive capacity of existing stands (Shelton, 2010), mowing can also spread seeds and encourage the establishment of new populations if it is conducted following seed set.

Environmental requirements

Microstegium vimineum can perform well in a wide range of environments with maximum productivity under conditions of high soil moisture and light. Water availability is a limiting factor for distribution of *M. vimineum* (Touchette & Romanello, 2010), thus, well-drained sandy soils or other conditions that reduce soil moisture availability may be less susceptible to invasion. Although *M. vimineum* is a C4 plant, it can perform well across a wide range of light conditions. While it performs best at high light intensities, seed production can occur at <5% light (Wilson *et al.*, 2015). Thus, forest disturbances that result in more light reaching the ground may influence the spread of *M. vimineum* by creating a more favourable environment (Cole & Weltzin, 2004; Droste *et al.*, 2010; Hull, 2010; Flory *et al.*, 2011a; Wilson *et al.*, 2015). While early studies of *M. vimineum* in North America characterized its presence on acidic soils (e.g. Redman, 1995), subsequent expansion of its invasive range has occurred over a wide variety of soil types.

Natural enemies

Although a wide variety of fungal species are reported for the genus *Microstegium* (Zheng *et al.*, 2006; Farr & Rossman, 2014), *Bipolaris* spp. have been found on *M. vimineum* in the USA (Kleczewski *et al.*, 2011); some of these species occur in the EPPO region but the extent to which these pathogens limit *M. vimineum* populations is unknown. While the ability of these organisms to suppress *M. vimineum* populations remains unknown, during

invasion in North America, native fungi have switched host to *M. vimineum* and reduced its fecundity (Flory *et al.*, 2011b) – the same could happen in the EPPO region.

Uses and benefits

Microstegium vimineum has been used for basket weaving (Tu, 2000), but other than this the species has no other benefits.

PATHWAYS FOR MOVEMENT

Entry as a contaminant of travellers (their clothes and shoes), machinery, hay, bird seed and soil has been important for the introduction of *M. vimineum* in new regions.

As a contaminant of used machinery

Microstegium vimineum has been observed being transported on motor vehicles in the USA (Mehrhoff, 2000). In addition, roads play an important role in plant invasions (Trombulak & Frissell, 2000; Mortensen *et al.*, 2009). Road grading and construction equipment also represent a high risk (Mortensen *et al.*, 2009). Movement of agricultural machinery is considered a possible pathway for the entry and spread of *M. vimineum*.

As a contaminant of bird seed

Microstegium vimineum was introduced into Britain in birdseed. It was detected by the cultivation of samples of bird seed and the waste separated from commercial seed carried out by the authors Hanson & Mason (1985). In the British Isles, the plant is recorded to have been cultivated from bird seed (Ryves *et al.*, 1996).

As a contaminant of growing media adherent to plants for planting

An individual plant of *M. vimineum* can produce thousands of seeds (Wilson *et al.*, 2015), which remain viable in the soil for 3–5 years (Barden, 1987; Gibson *et al.*, 2002; Judge, 2005; Huebner, 2011). Seeds may be present in growing media adherent to plants for planting. Movement of plants for planting with adherent soil exists among EPPO countries.

As a contaminant of travellers, their clothes and shoes

Adhesion of fruits to passing hikers is thought to explain the spread of *M. vimineum* through otherwise undisturbed natural areas in the USA (Miller, 2011). Furthermore, *M. vimineum* can form near monospecific stands making it impossible for hikers to avoid (e.g. woodlands, roadsides, etc.).

IMPACTS

Effects on plants

Microstegium vimineum is not currently considered an agronomic weed. However, extensive invasion occurs in economically managed hardwood and pine forests in the USA and there is evidence that invasions can reduce natural tree regeneration (Oswalt & Oswalt, 2007; Flory & Clay, 2010a). Invasions may also increase fire intensities and further reduce survival of tree seedlings (Flory, pers. comm., 2014).

Differential effects on tree species may inhibit succession and cause a shift in the composition of forest communities over time (Flory & Clay, 2010a). The effect of invasion by *M. vimineum* on different tree life-history stages was studied in a long-term experiment in Indiana. A subset of plots was created in a blocked design where either tree saplings were planted or tree seeds sown. Seeds were planted to simulate old-field succession, while planted saplings simulated later-successional stages. Some tree saplings showed higher mortality in invaded plots, and recruitment was more than four times greater in uninvaded compared with the invaded plots. Greater impact was observed for early successional simulations, particularly for small-seeded tree species. Invasion had no significant effect on large-

seeded tree species (oaks or hickories), although there was a trend for decreased survival of *Quercus palustris* Munchh., *Quercus alba* L. and *Quercus macrocarpa* Michx. The number of small-seeded tree species, *Liquidambar styraciflua* L., *Liriodendron tulipifera* L. and *Fraxinus pennsylvanica* Marshall decreased in invaded plots (Flory & Clay, 2009, 2010a). This effect was dramatic for *L. styraciflua*, in contrast to the results of Wright (2010), where *M. vimineum* leaf leachate increased germination of this species. Additionally, a survey of invaded areas found reduced natural regeneration for *Acer negundo* L., *Acer rubrum* L. and *Lindera benzoin* (L.) Blume (Flory & Clay, 2010b). However, removal of *M. vimineum* using grass-specific herbicides significantly increased natural tree recruitment, including species of economic importance (Flory & Clay, 2009).

Microstegium vimineum threatens native understorey vegetation in full sun to deep shade. It readily invades disturbed shaded areas, such as floodplains, that are prone to natural scouring, and areas subject to mowing, tilling and other soil-disturbing activities including movement of white-tailed deer. It spreads opportunistically following disturbance to form dense patches, displacing native wetland and forest vegetation as the patch expands (Swearingen *et al.*, 2010). Invasions of *M. vimineum* can quickly crowd out native species resulting in significant reductions in the productivity and diversity of herbaceous species. Invasions can also reduce tree regeneration and alter the growth of trees.

Microstegium vimineum changes plant community richness (the number of species), plant diversity and overall groundcover, out-competing other species (Adams & Engelhardt, 2009; Flory & Clay, 2010a,b; Meiners, 2010). It may have negative impacts on native species through multiple mechanisms including competitive exclusion, changing soil properties, reducing light availability and increasing native consumer activity.

Environmental and social impact

Invasion of *M. vimineum* has cascading ecological effects on the arthropod community. In a study in the USA, the arthropod community in invaded and uninvaded plots was sampled in June and September. Invaded plots showed a 19% decrease in arthropod species richness and a 39% decrease in abundance. Abundance and diversity of carnivores and herbivorous arthropods was reduced, although the effect on carnivores was much larger (Flory, 2010). Baiser *et al.* (2008) found that *M. vimineum* altered forest food webs in New Jersey, USA, during the period 1980–2005, specifically via a reduction of breeding woodland birds, due to the alteration of sub-canopy community structure by the invading plant.

Microstegium vimineum may affect native plant and animal species by altering environmental conditions such as light availability. In an experimental field study, thatch biomass was over 120% greater in invaded plots than in control plots when measured in early spring. In addition, significantly more light reached ground level in the invaded plots than in control plots in June, but this pattern was reversed in September, with more light reaching ground level in control plots than in invaded plots (Flory & Clay, 2010b).

Multiple studies have shown that *M. vimineum* decomposes more slowly than co-occurring native species. DeMeester & Richter (2010) showed that plots invaded by *M. vimineum* accumulated approximately half the annual nitrogen biomass of the diverse community where *M. vimineum* had been removed. In addition, decomposition and release of nitrogen from *M. vimineum* detritus was much less than in the uninvaded community. In another study, in contrast, *M. vimineum* litter decomposed more slowly than the native species litter and it immobilized nitrogen (Ehrenfeld *et al.*, 2001).

Flory *et al.* (2015) showed that maximum fire temperatures were on average 57% greater in sites invaded by *M. vimineum* than in uninvaded control areas. In addition, fires burned at temperatures of over 300°C for nearly twice as long and flame heights were 98% higher in invaded compared with uninvaded habitats. *M. vimineum* invasion reduced survival of experimental trees by 37% in areas exposed to prescribed fire compared with uninvaded areas, and tree survival in invaded, burned plots was 53% lower than in uninvaded, unburned plots. Controlled burning increased natural tree regeneration overall but there were 60% and 57% fewer tree seedlings in burned and unburned invaded plots, respectively, compared with control plots with the same treatments. Burning increased *M. vimineum* biomass by five-fold the following growing season.

Multiple studies have shown that *M. vimineum* can alter soil carbon cycling. For example, Strickland *et al.* (2011) evaluated soil carbon at *M. vimineum* invaded and nearby uninvaded areas across eight sites in the South-East USA. They found significant declines in mass of faster-cycling particulate organic matter carbon pools, which resulted in an 11% decline in carbon in the top 10 cm of the soil profile. Carbon added by *M. vimineum* partially offset those

effects, resulting in a net carbon loss of about 6%. Their results suggest that invasions of *M. vimineum* may cause faster carbon cycling in invaded forests and result in an overall loss of soil carbon (also see Strickland *et al.*, 2010).

CONTROL

Hand pulling is the preferred method of removal when carried out at the end of the summer, i.e. before seed release, and when new seedlings have germinated. Mowing is effective if carried out in late summer as well. Grazing is not a control option since cattle; deer and even goats do not feed on the plant. Spring burns are ineffective since seeds will germinate after the burn, but burns in late autumn may control the species. Large patches can be sprayed with grassselective herbicides.

REGULATORY STATUS

In the EU, *M. vimineum* is listed as a species of Union concern within the EU Regulation 1143/2014.

Microstegium vimineum is listed by the US Forest Service as one of only 26 Category 1 invasive plants in the Eastern Region of the USA; these are described as highly invasive plants which invade natural habitats and replace native species (<http://www.fs.fed.us/>). Furthermore, *M. vimineum* was recently ranked as the number one invasive plant of concern by researchers and land managers in the Eastern USA.

PHYTOSANITARY MEASURES

EPPO (2014) recommends: (1) Contaminant of bird seed - Confirmation that the consignment is free from *Microstegium vimineum* seed should be provided by the country of origin. Surveillance and monitoring methods adopted should be specified by the exporting country. (2) Contaminant of growing media adherent to plants for planting - In addition to the existing requirement for a phytosanitary certificate (PC) by the exporting country, confirmation of pest free production from country of origin should be provided. Surveillance and monitoring methods adopted should be specified by the exporting country. In certain circumstances, an additional declaration on the PC may be needed (see EPPO Standard PM 1/1(2) Use of phytosanitary certificates). (3) Contaminant of used machinery - Decontaminate machinery that has come into contact with populations of the plant (see ISPM 41). (4) Contaminant of travellers, their clothes and shoes - Raise awareness on the species, including publicity.

REFERENCES

- Adams SN & Engelhardt KAM (2009) Diversity declines in *Microstegium vimineum* (Japanese stiltgrass) patches. *Biological Conservation* **142**, 10003–11010.
- Barden LS (1987) Invasion of *Microstegium vimineum* (Poaceae), an exotic, annual, shade-tolerant, C4 grass, into a North Carolina floodplain. *American Midland Naturalist* **118**, 40–45.
- Baiser B, Lockwood JL & Puma DAM (2008) A perfect storm: two ecosystem engineers interact to degrade deciduous forests of New Jersey. *Biological Invasions* **10**, 785, 795.
- Barkworth ME, Capels KM, Long S & Piep MB eds. (2003) *Flora of North America North of Mexico*. Volume 25: Magnoliophyta: Commelinidae (in part): Poaceae, part 2. Oxford University Press, New York. 814 p.
- Cheplick GP (2006) A modular approach to biomass allocation in an invasive annual (*Microstegium vimineum*, Poaceae). *American Journal of Botany* **93**, 539–545.
- Claridge K & Franklin SB (2002) Compensation and plasticity in an invasive plant species. *Biological Invasions* **4**, 339–347.
- Cole PG & Weltzin JF (2004) Environmental correlates of the distribution and abundance of *Microstegium vimineum*, in East Tennessee. *Southeastern Naturalist* **3**, 545–562.

- DeMeester JE & Richter D (2010) Differences in wetland nitrogen cycling between the invasive grass *Microstegium vimineum* and a diverse plant community. *Ecological Applications* **20**, 609–619.
- Droste T, Flory SL & Clay K (2010) Variation for phenotypic plasticity among populations of an invasive exotic grass. *Plant Ecology* **207**, 297–306.
- Ehrenfeld JG, Kourtev P & Huang WZ (2001) Changes in soil functions following invasions of exotic understory plants in deciduous forests. *Ecological Applications* **11**, 1287–1300.
- Ehrenfeld JG (2003) Soil properties and exotic plant invasions: a twoway street. In Proceedings: *U.S. Department of Agriculture Interagency Research Forum on Gypsy Moth and other Invasive Species: 13th Annual Meeting*; 2002 January 15–18; Annapolis, MD (eds Fosbroke SLC & Gottschalk KW), Gen. Tech. Rep. NE-300, pp. 18–19. U.S. Department of Agriculture, Forest Service, Northeastern Research Station, Newtown Square, PA.
- EPPO (2014) Pest risk analysis for *Microstegium vimineum*. EPPO, Paris. Available at http://www.eppo.int/QUARANTINE/Pest_Risk_Analysis/PRA_intro.htm
- Farr DF & Rossman AY (2014) Fungal databases, systematic mycology and microbiology laboratory, ARS, USDA. <http://nt.ars-grin.gov/fungaldatabases/> [accessed 22 October 2014].
- Flory SL (2010) Impacts and management of *Microstegium vimineum* invasions. In 2010 Stiltgrass Summit. River to River Cooperative Weed Management Area, Carbondale, IL. <http://www.rtrcwma.org/stiltgrass/2010presentations/flory.cfm>
- Flory SL & Clay K (2009) Invasive plant removal method determines native plant community responses. *Journal of Applied Ecology* **4**, 434–442.
- Flory SL, Long F & Clay K (2011a) Invasive *Microstegium* populations consistently outperform native range populations across diverse environments. *Ecology* **92**, 2248–2257.
- Flory SL, Kleczewski N & Clay K (2011b) Ecological consequences of pathogen accumulation on an invasive grass. *Ecosphere* **2**, 120.
- Flory SL & Clay K (2010a) Non-native grass invasion alters native plant composition in experimental communities. *Biological Invasions* **12**, 1285–1294.
- Flory SL & Clay K (2010b) Non-native grass invasion suppresses forest succession. *Oecologia* **164**, 1029–1038.
- Flory SL, Clay K, Emery SM, Robb JR & Winters B (2015) Fire and non-native grass invasion interact to suppress tree regeneration in temperate deciduous forests. *Journal of Applied Ecology* **52**, 992–1000. doi: 10.1111/1365-2664.12437
- Fryer JL (2011) *Microstegium vimineum*, Fire effects information system. Washington, USA: U.S. Department of Agriculture.
- Gibson DJ, Spyreas G & Benedict J (2002) Life history of *Microstegium vimineum* (Poaceae), an invasive grass in southern Illinois. *Journal of the Torrey Botanical Society* **129**, 207–219.
- Hanson CG & Mason JL (1985) Bird seed aliens in Britain. *Walsonia* **15**, 237–252.
- Huebner CD (2011) Seed mass, viability, and germination of Japanese Stiltgrass (*Microstegium vimineum*) under variable light and moisture conditions. *Invasive Plant Science and Management* **4**, 274–283.
- Hull JA (2010) *Microstegium vimineum* spread rate in relation to two different leaf litter disturbances and an evaluation of aboveground biomass accumulation and photosynthetic efficiency in response to four light treatments. Thesis for Master of Science Degree University of Tennessee – Knoxville.

- Hunt DM & Zaremba RE (1992) The northeastward spread of *Microstegium vimineum* (Poaceae) into New York and adjacent states. *Rhodora* **94**, 167–170.
- Judge CA (2005) Japanese stiltgrass (*Microstegium vimineum*): population dynamics and management of restoration of native plant communities. North Carolina State University, Raleigh, NC. Ph.D. Thesis. <http://repository.lib.ncsu.edu/ir/handle/1840.16/3645> [accessed 15 April 2014].
- Kleczewski N, Flory SL & Nice G (2011) An Introduction to *Microstegium vimineum* (Japanese stiltgrass/Nepalese browntop) an emerging invasive grass in the Eastern United. <https://www.btny.purdue.edu/WeedScience/2011/Microstegium-01.pdf> [accessed 15 April 2014].
- Mehrhoff JL (2000) Perennial *Microstegium vimineum* (Poaceae): an apparent misidentification. *Journal of the Torrey Botanical Society* **127**, 251–254.
- Meiners S (2010) Long-term dynamics and impacts of *Microstegium* invasion in the Piedmont of New Jersey. In 2010 Stiltgrass Summit, Carbondale, IL. <http://www.rtcwma.org/stiltgrass/2010presentations/meiners.cfm> [accessed 21 August 2014].
- Miller NP (2011) Invasions of secondary forest by a non-native grass species *Microstegium vimineum* {Nees}(Poaceae). Masters Thesis, The faculty of the College of Arts and Sciences of Ohio University. 78 pp. https://etd.ohiolink.edu/ap/10?0::NO:10:P10_ACCESSION_NUM:ohiou1307047314 [accessed 18 March 2014].
- Mortensen DA, Rauschert ESJ, Nord AN & Jones BP (2009) Forest roads facilitate the spread of invasive plants. *Invasive Plant Science and Management* **2**, 191–199.
- Oswalt CM & Oswalt SN (2007) Winter litter disturbance facilitates the spread of the non-native invasive grass *Microstegium vimineum* (Trin) A. Camus. *Forest Ecology and Management* **249**, 199–203.
- Redman DE (1995) Distribution and habitat types for Nepal *Microstegium* [*Microstegium vimineum* (Trin.) Camus] in Maryland and the District of Columbia. *Castanea* **60**, 270–275.
- Ryves TB, Clement EJ & Foster MC (1996) Alien grasses of the British Isles. Botanical Society of the British Isles. 181 pp.
- Shelton A (2010) Predictive spatial model of Japanese stiltgrass spread. In 2010 Stiltgrass Summit. River to River Cooperative Weed Management Area, Carbondale, IL. URL: <http://www.rtcwma.org/stiltgrass/2010presentations/shelton.cfm>
- Strickland MS, Devore JL, Maerz JC & Bradford MA (2010) Grass invasion of a hardwood forest is associated with declines in belowground carbon pools. *Global Change Biology* **16**, 1338–1350.
- Strickland MS, Devore JL, Maerz JC & Bradford MA (2011) Loss of faster-cycling soil carbon pools following grass invasion across multiple forest sites. *Soil Biology and Biochemistry* **43**, 452–454.
- Swearingen J, Slattery B, Reshetiloff K & Zwicker S (2010) Plant Invaders of Mid-Atlantic Natural Areas, 4th ed. National Park Service U.S. Fish and Wildlife Service. <http://www.nps.gov/plants/alien/pubs/midatlantic> [accessed 16 March 2014]
- Touchette BW & Romanello GA (2010) Growth and water relations in a central North Carolina population of *Microstegium vimineum* (Trin.) A. Camus. *Biological Invasions* **12**, 893–903.
- Trombulak SC & Frissell CA (2000) Review of ecological effects of roads on terrestrial and aquatic communities. *Conservation Biology*, **14**, 18–30.
- Tsvelev NN (1976) *Grasses of the Soviet Union*, Part II, ed. An. A. Federov. Leningrad. Washington, D.C, Translated from Russian by the Smithsonian Institution Libraries and the National Science Foundation. 1983.

Tu M (2000) Element Stewardship Abstract for *Microstegium vimineum* - Japanese stilt grass, Nepalese browntop, Chinese packing grass. Arlington, Virginia, USA: The Nature Conservancy.
<http://www.imapinvasives.org/GIST/ESA/esapages/documnts/micrvim>

USDA, NRCS (2014) The PLANTS Database. National Plant Data Center, Baton Rouge, Louisiana, USA.
<http://plants.usda.gov> [accessed 25 September 2015].

Valdés B, Scholz H, Raab-Straube E & Parolly G (2009) Poaceae (pro parte majore). Berlin, Germany.
<http://ww2.bgbm.org/euroPlusMed> [accessed 16 March 2014]

Wilson CH, Caughlin TT, Civitello DJ & Flory SL (2015) Combining mesocosm and field experiments to predict invasive plant performance: a hierarchical Bayesian approach. *Ecology* **96**, 1084–1092.

Wright J (2010) Understanding the ecosystem-level effects of stiltgrass: does it set the stage for its own success? In 2010 Stiltgrass Summit. River to River Cooperative Weed Management Area, Carbondale, IL.
<http://www.rtrcwma.org/stiltgrass/2010presentations/wright.cfm> [accessed 19 March 2014].

Zheng H, Wu Y, Ding J, Binion D, Fu W & Reardon RC (2006) Forest Health Technology Enterprise Team Invasive Plants of Asian Origin Established in the United States and Their Natural Enemies, 1. Washington DC, USA: USDA, 160.

ACKNOWLEDGEMENTS

This datasheet is an output from the expert working group that risk assessed *M. vimineum* in November 2014. The composition of the group was: Brundu G (University of Sassari, Department of Agriculture, Sassari, IT), Ergun A (Plant Protection Organisation of Turkey, Ankara, TR), Flory L (Agronomy Department, University of Florida, Gainesville, US), Novy A (US Botanic Gardens, Washington, DC, US), van Valkenburg J (National Plant Protection Organization, HC Wageningen, NL) and Brunel S (EPPO).

How to cite this datasheet?

EPPO (2024) *Microstegium vimineum*. EPPO datasheets on pests recommended for regulation. Available online.
<https://gd.eppo.int>

Datasheet history

This datasheet was first published in the EPPO Bulletin in 2016 and is now maintained in an electronic format in the EPPO Global Database. The sections on 'Identity' and 'Geographical distribution' are automatically updated from the database. For other sections, the date of last revision is indicated on the right.

EPPO (2016) Datasheets on pests recommended for regulation. *Microstegium vimineum* (Trin.) A. Camus. *EPPO Bulletin* **46**(1), 14-19. <https://doi.org/10.1111/epp.12276>