

Oplismenus undulatifolius

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Liliopsida	Cyperales	Poaceae

Common name wavyleaf basketgrass (English)

Synonym *Oplismenus undulatifolius* , (Ard.) Beauv.
Panicum undulatifolium , Ard.

Similar species *Microstegium vimineum*, *Arthraxon hispidus*

Summary Wavyleaf basketgrass (*Oplismenus hirtellus* ssp. *undulatifolius*) is a newly discovered subspecies found in the United States which has established invasive populations in Maryland and Virginia. It establishes patchy to dense, carpeting populations quickly and is believed to displace native plants and alter environments. Rapid response efforts are underway to contain and eradicate this species from known locations by hand-pulling and herbicide use.



[view this species on IUCN Red List](#)

Species Description

Oplismenus hirtellus ssp. *undulatifolius* is a stoloniferous perennial which typically reaches 20-30 cm tall. It is low-lying grass which branches and roots at lower culm nodes. It has ovate, elongate, sharply pointed leaf blades 4-8 cm long x 1.5-2 mm wide that are arranged alternately. Scattered 1-2 mm hairs are present on the upper and lower leaf blade surfaces and the blades are horizontally rippled or undulating. The sheaths and culm axis are noticeably pilose with hairs 1-4 mm long. It has delicate stolons, 1-3 mm in diameter that sometimes creep beneath leaf litter, rooting and branching from nodes. It has relatively showy flowers for a grass and blooms in late August-November. It has racemes with 3-7 spikelets. Spikelets have very long awns (extended pointed tips) which secrete a sticky substance which is a specialisation for dispersal via adhering to passing animals. They also adhere to clothing and footwear. *Oplismenus hirtellus* ssp. *undulatifolius* has been described as looking like small bamboo. Distinguishing characteristics include a 3-veined first glume, a 5-veined second glume, a 7-veined lemma (Kyde & Marose, 2008; Peterson *et al.*, 1999; Wavyleaf Basketgrass Task Force, 2009; Kyde, 2007).

Notes

There is much uncertainty concerning the taxonomy and origins of *O. hirtellus* ssp. *undulatifolius*. The Maryland and Virginia populations have been positively identified as ssp. *undulatifolius* and are currently referred to as such. Although the Integrated Taxonomic Information System (ITIS) currently lists wavyleaf basketgrass as *Oplismenus undulatifolius* researchers currently choose to recognize this taxon as a subspecies of *O. hirtellus*. The species *O. hirtellus* is native in tropical and subtropical areas in the Old and New World and the subspecies *setarius* is naturally occurring from NC south through FL and west to TX and AR and south into Central America and the Caribbean. An ornamental variegated pink, green and white form is sold as *O. hirtellus* "Variegatus," "Ribbon grass," or "basket grass," for hanging baskets. While some have thought that this variegated ornamental form has reverted to the subspecies *undulatifolius*, APHIS indicates that the reversions of these widely purchased variegated plants, whether natural or chemically induced, are dissimilar enough morphologically to *O. hirtellus* ssp. *undulatifolius* to cast doubt on this possibility (Kerrie Kyde, pers. comm., 2010; Peterson *et al.*, 1999).



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Oplismenus undulatifolius*

Lifecycle Stages

Oplismenus hirtellus ssp. *undulatifolius* is believed to have a seed dormancy of up to five years, although this could be affected by weathering, oxygen, or other possible factors. It tolerates dense shade and leaves remain green into late fall after most trees have senesced and light frost has killed most other annual species (Wavyleaf Basketgrass Task Force, 2009).

Habitat Description

Oplismenus hirtellus ssp. *undulatifolius* inhabits temperate environments and has been recorded from coastal plain, piedmont, and montane regions. It may typically be found in full canopy hardwood forests, forest margins, and shady riparian zones. It does not tolerate direct sunlight and appears adaptable to a fairly wide range of pH (Kerrie Kyde, pers. comm. 2010; Peterson, 1999; Wavyleaf Basketgrass Task Force, 2009).

Reproduction

Wavyleaf basketgrass produces racemes with 3-7 spikelets from August through November. The awns secrete a sticky substance which adheres to passing animals and greatly enhances seed dispersal. It also produces stolons and may produce dense colonies (Kyde & Marose, 2008; Kerrie Kyde, pers. comm., 2010).

General Impacts

Oplismenus hirtellus ssp. *undulatifolius* spreads rapidly through wooded natural areas and disturbed environments. It may crowd out native herbaceous plants, and seems to prevent regeneration of native hardwood tree species. It has displaced native species in several locations of both Maryland and Virginia and may alter environments (Westbrooks & Imlay, 2009).

Management Info

Preventative measures: Maryland state agencies, the research community and regional organizations are designing an Early Detection Rapid Response protocol for *Oplismenus hirtellus* ssp. *undulatifolius*. A Wavyleaf Basketgrass Task Force has also been put together which includes efforts from the Maryland Department of Natural Resources, Anacostia Watershed Society (AWS), NPS, USDA, USGS, and others. A public education campaign was initiated that contacted adjacent state agencies and university personnel to share observations and field locations with others in the invasive plant community. Mapping of all known locations of the infestation is underway. Increasing public awareness and encouraging the report of any newly discovered populations of *O. hirtellus* ssp. *undulatifolius* is essential to containment. The Maryland Department of Natural Resources website provides current information MDDNR, 2009 (Westbrooks & Imlay, 2009; Wavyleaf Basketgrass Task Force, 2009).

Physical: *Oplismenus hirtellus* ssp. *undulatifolius* is fairly easily hand pulled. If all roots can be removed at nodes pulling is thought to be more effective than herbicide treatment when the population is small enough for weeding (Westbrooks & Imlay, 2009; Wavyleaf Basketgrass Task Force, 2009).

Chemical: *Oplismenus hirtellus* ssp. *undulatifolius* may be treated effectively with a 1-2% solution of glyphosate. Research has demonstrated that Envoy Plus, and Roundup WM work well. Envoy Plus is recommended as it is grass-specific. Current populations in Maryland and Virginia are still relatively small and eradication is still possible. Roundup has been found to work best late in the year, while grass inhibitors are more effective early in the season (Westbrooks & Imlay, 2009; Wavyleaf Basketgrass Task Force, 2009).

Efforts to prevent re-contamination are necessary. The management team for an infestation in Great Falls National Park, MD has considered having a separate set of gear for WLBG. The special clothing would be taken off and wrapped, hip-wader style then stored in decontamination boxes using hazard labels, and could be removed later in the season to prevent reestablishment of seeds (Wavyleaf Basket Grass Task Force, 2009).



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Oplismenus undulatifolius*

Principal source:

[Kyde, Kerrie L. and Betty H. Marose, 2008. Wavyleaf Basketgrass in Maryland: An Early Detection Rapid Response Program in Progress. Maryland Department of Natural Resources.](#)
[Westbrooks, Randy & Marc Imlay, August 2009. Wavyleaf Basketgrass – A New Invader of Deciduous Forests in Maryland and Virginia.](#)
[Wavyleaf Basketgrass Task Force, 2009. Meeting Minutes 31 March 2009.](#)

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Paul Peterson, National Museum of Natural History, Smithsonian Institution
Kerrie L. Kyde, Wildlife and Heritage Service, Maryland Department of Natural Resources

Publication date: 2010-03-19

ALIEN RANGE

[2] UNITED STATES

BIBLIOGRAPHY

23 references found for *Oplismenus undulatifolius*

Management information

[Early Detection and Distribution Mapping System \(EDDMapS\), 2009. wavyleaf basketgrass *Oplismenus hirtellus* ssp. *undulatifolius* \(Ard.\) U. Scholz](#)

Summary: Available from: <http://www.eddmaps.org/distribution/usstate.cfm?sub=21294> [Accessed December 17 2009]

[Jordan, M.J., G. Moore and T.W. Weldy, 2008. *Oplismenus hirtellus* \(L.\) Beauv. subsp. *undulatifolius* \(Ard.\) U. Scholz USDA Plants Code: OPHI. Invasiveness ranking system for non-native plants of New York. Unpublished. The Nature Conservancy, Cold Spring Harbor, NY; Brooklyn Botanic Garden, Brooklyn, NY; The Nature Conservancy, Albany, NY.](#)

Summary: Available from: <http://nyis.info/PlantAssessments/Oplismenus.hirtellus.NYS.pdf> [Accessed December 17 2009]

[Kyde, Kerrie L. and Betty H. Marose, 2008. Wavyleaf Basketgrass in Maryland: An Early Detection Rapid Response Program in Progress. Maryland Department of Natural Resources.](#)

Summary: Available from: http://www.dnr.state.md.us/wildlife/Plants_Wildlife/WLBG/pdfs/wlbg_poster011108.pdf [Accessed 15 May, 2010]
[Maryland Department of Natural Resources, 2009a. Wavyleaf Basketgrass Invades Maryland. Invasive and Exotic Species, Wildlife and Heritage Service](#)

Summary: Available from: http://www.dnr.state.md.us/wildlife/Plants_Wildlife/WLBG/index.asp [Accessed 14 May, 2010]
[Maryland Department of Natural Resources, 2009b. Wavyleaf Basketgrass Species Identification. Invasive and Exotic Species, Wildlife and Heritage Service](#)

Summary: Available from: http://www.dnr.state.md.us/wildlife/Plants_Wildlife/WLBG/wl_basketgrass_ID.asp [Accessed 14 May, 2010]
[Maryland Department of Natural Resources, 2009c. Wavyleaf Basketgrass History of Invasion. Invasive and Exotic Species, Wildlife and Heritage Service](#)

Summary: Available from: http://www.dnr.state.md.us/wildlife/Plants_Wildlife/WLBG/wl_basketgrass_history.asp [Accessed 14 May, 2010]
[Maryland Department of Natural Resources, 2009d. Wavyleaf Basketgrass Distribution and Maps. Invasive and Exotic Species, Wildlife and Heritage Service](#)

Summary: Available from: http://www.dnr.state.md.us/wildlife/Plants_Wildlife/WLBG/wl_basketgrass_distribution.asp [Accessed 14 May, 2010]
[Maryland Department of Natural Resources, 2009e. Management of Wavyleaf Basketgrass in Maryland. Invasive and Exotic Species, Wildlife and Heritage Service](#)

Summary: Available from: http://www.dnr.state.md.us/wildlife/Plants_Wildlife/WLBG/wl_basketgrass_management.asp [Accessed 14 May, 2010]
[Wavyleaf Basketgrass Task Force, 2009. Meeting Minutes 31 March 2009](#)

Summary: Available from: http://www.fs.fed.us/ficmnew/documents/notices/WLBG_TaskForceMinutes_033109.pdf [Accessed December 17 2009]

[Westbrooks, Randy & Marc Imlay, August 2009. Wavyleaf Basketgrass – A New Invader of Deciduous Forests in Maryland and Virginia.](#)

Summary: Available from: <http://www.se-eppc.org/southcarolina/WLBG.pdf> [Accessed December 17 2009]

General information

[Erwin, Tracy L & Truman P Young, 2010. A Native Besieged: Effects of Nonnative Frugivores and Ground Vegetation on Seed Removal in a Highly Endangered Hawaiian Shrub, *Delissea rhytidosperma* \(Campanulaceae\). Pacific Science. Honolulu: Jan 2010. Vol. 64, Iss. 1; pg. 33, 11 pgs](#)

[Global Biodiversity Information Facility \(GBIF\), 2010. *Oplismenus undulatifolius* \(Ard.\) Beauv. Wavyleaf Basketgrass](#)

Summary: Available from: <http://www.gbif.net/species/13735778/> [Accessed 15 June 2010]

Global Invasive Species Database (GISD) 2025. Species profile *Oplismenus undulatifolius*. Available from: <https://iucngisd.org/gisd/species.php?sc=1557> [Accessed 01 April 2025]



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Oplismenus undulatifolius*

Guala, G. F.; Burton, F. J.; Proctor, G. R.; Clifford, S. P. 2002. Additions to the Flora of the Cayman Islands. Kew Bulletin. 57(1). 2002. 235-237.

[Integrated Taxonomic Information System \(ITIS\), 2010. *Oplismenus undulatifolius* \(Ard.\) Beauv.](#)

Summary: Available from: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=565334 [Accessed December 17 2009]

[Invasive.org, 2010. Small Carpgrass *Arthraxon hispidus* \(Thunb.\) Makino. Invasive.org. Center for Invasive Species and Ecosystem Health.](#)

Summary: Available from: <http://www.invasive.org/species/subject.cfm?sub=5136> [Accessed 17 March 2010]

[Motooka, Philip; Castro, Luisa; Nelson, Duane; Nagai, Guy and Ching, Lincoln. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa. 184 pp.](#)

Summary: Available from: http://www.ctahr.hawaii.edu/invweed/WeedsHI/W_Oplismenus_hirtellus.pdf [Accessed December 17 2009]

Peterson, Paul M., Terrell, Edward E., Uebel, Edward C., Davis, Charles A., Scholz, Hildemar, Soreng, Robert J. 1999. *Oplismenus hirtellus* subspecies *undulatifolius*, a new record for North America. Castanea. 64(2). June, 1999. 201-202.

Scholz, U. 1981. Monographie der Gattung *Oplismenus* (Gramineae). Phanerogamarum Monographiae 13:1-213.

[Space, James C. and Clyde T. Imada, 2004. Report to the Republic of Kiribati on Invasive Plant Species on the Islands of Tarawa, Abemama, Butaritari and Maiana. Contribution No. 2003-006 to the Pacific Biological Survey](#)

Summary: Available from: http://www.hear.org/Pier/pdf/kiribati_report.pdf [Accessed June 8th 2010]

[Space, James C., Barbara M. Waterhouse, Melanie Newfield and Cate Bull, 2004. Report to the Government of Niue and the United Nations Development Programme Invasive Plant Species on Niue following Cyclone Heta. UNDP NIU/98/G31 Niue Enabling Activity 17 December 2004](#)

Summary: Available from: http://www.hear.org/Pier/pdf/niue_report_20041217.pdf [Accessed December 17 2009]

Summerhayes, V. S. and C. E. Hubbard, 1927. The Grasses of the Fiji Islands. Bulletin of Miscellaneous Information (Royal Gardens, Kew), Vol. 1927, No. 1 (1927), pp. 18-44

[USDA, NRCS. 2010. *Arthraxon hispidus* \(L.\) P. Beauv. ssp. *undulatifolius* \(Thunb.\) Makino. The PLANTS Database \(<http://plants.usda.gov>, 17 March 2010\). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.](#)

Summary: Available from: <http://plants.usda.gov/java/profile?symbol=ARHI3> [Accessed 17 March 2010]

[USDA, NRCS. 2010. *Oplismenus hirtellus* \(L.\) P. Beauv. ssp. *undulatifolius* \(Ard.\) U. Scholz basketgrass. The PLANTS Database \(<http://plants.usda.gov>, 6 March 2010\). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.](#)

Summary: Available from: <http://plants.usda.gov/java/profile?symbol=OPHIU2> [Accessed December 17 2009]