

# REPORT ALL SIGHTINGS of this Dangerous, Dreaded Invasive WAVYLEAF GRASS OR WAVYLEAF BASKETGRASS

## Menaces Forests, Hitchhikes on Animals and People



Wavyleaf grass carpets the forest floor in Shenandoah National Park, aggressively colonizing shady, moist sites and obliterating wildflowers, ferns, and tree saplings in its steadily advancing path.

### The Culprit

This fearsome, invasive grass may be the worst of the worst. And the worst is yet to come, because wavyleaf grass only recently arrived in Virginia! Because it thrives in dense shade and its seeds hitchhike for miles and miles and miles by gluing themselves to animal fur and clothing – falling off days or months later – the consequences of not eradicating wavyleaf ASAP are dire. This perennial grass thickly blankets the ground and forms continuous carpets in short order. Wildlife scientists are concerned that wavyleaf’s rapid growth and dense roots and foliage have the potential to smother wildflowers, ferns, and other ground-



After walking through a colony of wavyleaf that was in seed, this dog emerged covered with sticky green seeds. Photo: Vanessa Beauchamp.

layer plants, and to prevent forest regeneration in intact forests like what is happening with Japanese stiltgrass. Wavyleaf could ruin our woodlands and our wild and timber forests. When hikers, hunters, or their dogs walk in this grass anytime from mid-August through November, they can emerge slathered with its sticky, difficult-to-remove seeds. Once established in huge colonies, the grass dramatically diminishes biodiversity of insects, birds, mammals, and native plants. If it runs rampant in Virginia, as it has in Maryland, wavyleaf could impact our economy by imperiling timber profits, ruining recreation, hunting, and tourist opportunities, and robbing Nature of its the variety and beauty. Virginia lists wavyleaf as a noxious weed, making it illegal to knowingly grow or transport it. With enough funding and manpower, it might not be too late to contain and control this menace. Each delay in control measures, however, makes this noxious weed’s exponential growth more difficult to contain.

Text and photos by Susan A. Roth except where noted.

Wavyleaf grass was first discovered in the US in Maryland in 1996 in and around Patapsco State Park near Baltimore. Now, it is out of control throughout much of Maryland and has crossed into D.C. In 2016, it was found in West Virginia and Pennsylvania. The grass was first found in Virginia in Shenandoah National Park at a site in Rockingham County in 2005. As 2021, wavyleaf is known to be in 15 Virginia counties: Albemarle, Arlington, Augusta, Clarke, Culpeper, Fairfax, Fauquier, Greene, Page, Madison, Nelson, Rappahannock, Rockingham, Spotsylvania and Warren.

Wavyleaf grass (*Oplismenus undulatifolius* formerly *Oplismenus hirtellus* spp. *undulatifolius*) was once suspected of having invaded the landscape from a carelessly discarded houseplant – one grown as a hanging-basket. However, recent genetic studies show that the invasive grass is a close match to the ecotype found in the Caucasus Mountains of Russia. The grass might have hitched a ride to the US on someone’s clothing or hiking boots, but the specifics remain an unsolved mystery.

In 2012, the U.S. Department of Agriculture Animal and Plant Health Inspection Service assessed wavyleaf and ranked it High Risk for invasion. Scientists used a climate-matching tool based upon the plant’s known worldwide distribution. They estimated that the nonnative invasive grass could overrun forests in 30% of the US because wavyleaf has the potential to grow in USDA Zones 6 -13 where rainfall averages 30 to 100 inches per year. It must be stopped now, before it is too late!

### Known Hangouts

Wavyleaf hangs out in the shade – sun is its enemy. It thrives in shady sites from very moist to somewhat dry, even in the kind of deep shade that challenges many forest plants. Wavyleaf is found in woodlands and forests in low wet areas, along streams, and in bottomlands, as well as on steep wooded slopes and along trails. You might find it first at the base of a tree, where an animal might have scratched off the seeds on the bark. It stops dead, however, at the forest edge and does not invade fields. This nasty plant chums around with Japanese stiltgrass, another invasive grass, in the shade, but does not follow it into the sun. You may even find wavyleaf hidden and spreading out on the ground beneath the taller stiltgrass.

### Modus Operandi



Wavyleaf grows ankle high and prefers moist shaded locations.



Wavyleaf flower stalk showing their long, barbed awls. Note the rippled leaves.

Follow all herbicide label directions.

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This conniving plant really knows how to travel. Wavyleaf's seeds, which form in profusion in late summer and fall, feature long, pointed tips (awls), which grab onto passing animals, people, and vehicle tires to hitch a ride. The seeds hang tight because the awls exude a glue-like substance. Seeds can adhere to fur and clothes for days until they dry or are physically rubbed or brushed off. Deer most likely are the primary culprits in spreading the seed from one location to another. Bucks, in particular, go on long excursions during rutting and hunting season, which coincides with wavyleaf seed production. Bears, whose territories encompass a radius of 2 to 15 miles, may travel up to 100 miles in search of food and may be guilty of long-distance seed dispersal. Hunters, hikers, and their dogs unwittingly carry wavyleaf seed great distances – even hundreds of miles – and the seeds can be carried downstream by



Wavyleaf seeds have long pointed awls and can stick to clothing.

water. Any seeds remaining on plants drop to the ground in winter, where they may later germinate. No one knows how long seeds are viable in the soil. Wavyleaf grass is a perennial, which gives it a decided advantage over invasive annuals such as Japanese stiltgrass because it has more power to thrust through deep leaf litter on the forest floor. It breaks dormancy and starts growing rapidly in April. This vigorous growth along with its extreme shade tolerance, allows it to grow under a dense tree canopy. Wavyleaf has ground-hugging, root-like stems, called stolons, which creep beneath leaf litter. They radiate from the main plant and send out roots and new shoots from their nodes. A single plant forms a large colony of interconnected plants in a few years, having germinated from only one seed. Seeds germinate from April into June. Early seedlings may flower and set seed their first year; later germinating ones don't flower until their second year.

## Positive Identification

Wavyleaf is a graceful-looking, low-growing plant. The leaves are .5 to 1 inch wide and 2 to 4 inches long when mature. They are deep green with elongated points and are *distinctly wavy from side to side*, looking like corrugated cardboard or water ripples. *The leaf bases touch the stems but do not clasp or wrap around them.* Stems are noticeably covered with short, white hairs. The grass is low and spreading to 6 to 8 inches high, but long-established colonies in wet sites can be 12 inches with flower and seed stalks rising above. Stems arch outward, radiating in several directions, so individual plants and colonies have a distinctive pattern of arching, undulating leaves that is easy to recognize from a distance.



Leaf bases of wavyleaf clasp the white-haired stems but do not circle them.

## Mistaken Identity

Two grasses are sometimes mistaken for wavyleaf. Joint-head grass, also called small carpetgrass, (*Arthraxon hispidus*) is an invasive with wavy leaves and white-haired stems, but the waves appear only on leaf edges and its leaf bases wrap all the way around its stems. It grows

straight and upright to 4 inches to 2 feet tall in sunny to partly shady, moist to wet sites, not in forests. Native, forest-dwelling, broad-leaf panic-grass (*Dichanthelium latifolium*) has a startling resemblance to wavyleaf in size and arching shape, but its leaves are not wavy. Small plants of native deertongue grass (*Dichanthelium clandestinum*) can at first glance resemble wavyleaf, but its leaves are stiff and leathery without waves.



Broadleaf panicgrass resembles wavyleaf in form but without the wavy leaves.



Deertongue grass has leaves that circle smooth stems.

## Search and Destroy

Most known infestations of wavyleaf are on public property. The extent on private land is unknown because the invasive may go unrecognized and unreported. Forest land anywhere in Virginia is at risk. If you find wavyleaf, report it using the cellphone application from [www.eddmaps.org](http://www.eddmaps.org) to upload a photo and a GPS location.

*Do not walk through wavyleaf if it is in seed.* If you collect wavyleaf seeds on yourself or your dog, use duct tape to remove them from clothing and comb seeds from dog fur. Burn gathered seeds. Scrape dirt from your boots on site or double-bag dirt and put in garbage or burn.

### Manual & Mechanical:

Wavyleaf can be hand-pulled if populations are small, but *all bits and pieces of stolons must be removed or they will resprout.* Be sure to remove tiny seedlings, which resemble miniature, mature plants. Hand-pulling is not effective in heavy infestations.

**Foliar Spray:** Use a recommended grass-specific herbicide from April through June. This won't harm wildflowers and is approved for wildlife management areas. Don't use a grass-specific herbicide in a wetland or near a stream, because it can harm fish and aquatics. One study shows grass-specific herbicides are less effective on wavyleaf in summer. After June, use a non-selective herbicide; this may also be used from April until frost. Add a surfactant if one is not already in the product. In wet areas or near streams, use an aquatic-safe product. Complete treatment before wavyleaf begins setting seed. If you must spray colonies that are in seed, use extreme caution; wear rubber boots and nylon clothing, which seeds are less likely to cling to. *Thoroughly clean or bag boots and clothing on site.* Treatment may be needed for several years due to missed plants, new seedlings, and fresh introductions. Be vigilant!



Leaves of jointhead grass are wavy only on the edges and entirely circle their white-haired stems, rather than clasping.

For currently approved herbicide recommendations, check the Virginia Department of Forestry chart *Non-Native Invasive Plant Species Control Treatments*, which you can download from the Blue Ridge PRISM website.