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### For more information

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## What You Can Do To Help

- Take a walk in William B. Umstead State Park, identify Japanese Stilt Grass and contemplate the problem.
- Look for this invasive weed in your neighborhood and on your property: destroy it just before seed production (early September). Easy ways include: pulling (it's easy to pull due to its shallow root system) or weed-wacking. This annual plant dies in the winter, the most important thing is to keep the plant from producing seeds.
- Reseed area with native grasses and colorful flowers in the fall after the *Microstegium* is pulled or after it turns brown from herbicide treatment. Native grasses include: switchgrass, sedges, deer tongue, rushes; native colorful flowers include: cardinal flower and jewel weed.
- Volunteer to help William B. Umstead State Park on volunteer days to control this plant.
- Make financial contributions to, or volunteer with, the Umstead Coalition which supports Umstead State Park in its eradication efforts against Japanese stilt grass.
- Pass this brochure on to others.



Above Photo © John M. Randall/The Nature Conservancy

Front Cover Photo courtesy of Betty Anderson

Brochure prepared by the Umstead Coalition:  
*Dedicated to Preserving the Natural Integrity of W.B. Umstead State Park  
and the Richland Creek Natural area.*

# Japanese Stilt Grass

*Microstegium vimineum*

## An Invasive Plant and A Threat to William B. Umstead State Park



## Other Common Names

Asian Stilt Grass

Bamboo Grass

Chinese Packing Grass

Mary's Grass

Japanese Wire Grass

Nepal *Microstegium*

Jewgrass

Vietnamese Stilt Grass

Flexible Sesagrass

Eulalia

## What Is It?

Japanese stilt grass (*Microstegium vimineum*) is native to Japan, Korea, China, Malaysia and India. It was accidentally introduced into the United States around 1919 in the state of Tennessee. Stilt grass is an **invasive species** that competes with our native species and disrupts local ecosystems. It has now spread to all states east of the Mississippi south of, and including, Connecticut.

Land managers consider silt grass one of the worst invasive species in the Mid-Atlantic and Southern States. It is found in at least 23 states and already covers 5 to 10% of the state of New Jersey.<sup>4</sup> In the Southeastern United States silt grass is common in the piedmont and mountains, but is also found in the coastal plains. Silt grass occurs in many habitats. It commonly grows in shady, moist, disturbed locations including wetlands, ditches and stream banks, although it often grows in partly sunny areas and upland forests as well. Originally described and studied on public lands, silt grass is now encroaching on private property, shaded lawns, landscape plantings, backyards, and on neighborhood roadsides.

Silt grass is pervasive throughout William B. Umstead State Park and is beginning to seriously affect the park's ecosystems. Park managers are examining approaches for containment.

Although silt grass has been present in the United States for over 80 years, little is known about how to control it. Many states, including North Carolina, have on-going research programs addressing the problem of silt grass control. Some departments at North Carolina State University are involved in these programs.

## General Appearance

Silt grass grows to as much as 3 feet in height. The individuals may be erect or prostrate and straggling over the ground. The grass resembles miniature bamboo plants because of the appearance of its stems and leaves. The leaves alternate along the stem and are distinct in color and size. They are shorter and broader than the leaves of most other grasses. They range from about 1 to 3 inches in length and are less than ½ an inch in width. Leaf shape is a general elliptical form, thicker in the mid-section and tapering to each end. The leaf dimensions and their distinct light-lime-green color are easy clues to identification for the non-botanist. A thin, silvery line of fine hairs may be seen along the center of the upper surface of the leaf. Silt grass is an annual plant which means it germinates from seed, grows and produces new seed and dies within one year (silt grass is dead by winter).

## A Formidable Foe

Silt grass is a significant problem for a number of reasons:

- it easily invades disturbed habitats
- it grows quickly
- it is well adapted to low light conditions
- it produces abundant seed within a single season
- it spreads by rooting from stem nodes as well as seeds
- it kills other plants by blocking sunlight
- it has no natural enemies in the U.S.

Silt grass invades habitats disturbed by natural causes such as flood-scoured stream banks or artificially disturbed areas like tilled and cleared areas. Once established, silt grass may expand out to other nearby habitats.<sup>2</sup> It can grow and produce seed in as little as 5% full sunlight<sup>1</sup> (i.e., it is shade tolerant).

Between 16,000 to 50,000 silt grass seeds are produced per square meter; the seeds are spread by water, animals, on clothing, and by automobiles. William B. Umstead State Park's many streams and animals provide excellent mechanisms for the distribution of silt grass seeds. The 'seed bank' in the soil is viable for 3 to 5 years (perhaps longer). In addition to its regular flowers that open to be fertilized, silt grass produces flowers that do not open but produce seeds. The seeds from these closed flowers are present earlier and must be considered in any control program.

Silt grass stems have joints (nodes) that can send roots into the ground forming another plant; increasing its prolificacy. The stems are stiff allowing silt grass to climb over other vegetation, killing the native vegetation by blocking sunlight.

## The Threat

Under favorable conditions, silt grass can form dense monotypic stands within 3 to 5 years of its first invasion of an area. These dense and extensive stands often form thick mats on the forest floor. Native plants including wildflowers, other natural ground cover, tree and shrub seedlings are killed or weakened by this mat. The missing or limited natural vegetation, would normally be part of many food chains, life cycles, ecological interactions and ecological niches involving other species of plants, animals and fungi. Therefore, the normal food, nesting and shelter materials, soil components, etc., for the native species are removed, causing serious disturbances to them and the ecosystems in which they live. For example, The Nature Conservancy states that Japanese stilt grass usurps quality nesting habitat from quail and other wildlife. In addition, they note that it creates excellent habitat for rats that often prey on the nests of native northern bobwhite and attract other predators as well.<sup>1</sup>

## Control

There are two basic approaches (physical or chemical) for control:

- **Physical** - Hand removal, mechanical destruction, or grazing.

Physical removal is the most ecologically-sound approach. It must be done in late summer, but before seed production occurs in September. Hand removal is the simplest approach. The shallow root system of this grass allows easy and inexpensive hand removal if done while the patches of infestation are still relatively small. With large infestations, hand removal is labor intensive and hence very expensive. Mechanical methods of destruction include mowing or the use of weed-wackers. In large infested areas, grazing with sheep or goats has shown promise, but further study is required. In addition, grazing is inappropriate on stream sides where native vegetation is extensive and in other sensitive environments.

- **Herbicide** - Broad-spectrum or narrow spectrum herbicides can be used to control silt grass. Broad-spectrum herbicides containing glyphosate (e.g., Roundup-Pro) are effective against silt grass. Glyphosate is biodegradable and is not violently toxic to humans or other animals. However, herbicides containing glyphosate kill all green plants to which they are applied. This can make them an ecologically unsound (by killing native plants) and esthetically unpleasant approach. Of course, silt grass itself is "ecologically unsound and esthetically unpleasant." Since broad-spectrum herbicides kill all green vegetation, proper restoration procedures have to be followed to prevent reinfestation after treatment. Narrow spectrum herbicides specific to grasses, for example, sethoxydim (e.g., Vantage) and fenoxaprop (e.g. Acclaim Extra), present an alternative approach. Unfortunately, these have greater human toxicity, are not as biodegradable as glyphosate and will kill native grasses.
- **General** - Provide good fall/winter ground cover with native grasses. This will help prevent silt grass seeds from germinating in the following spring. Reseed the area with native vegetation in the fall after the silt grass is pulled or after it turns brown from herbicide treatment. Suggested native grass seeds include: switchgrass, sedges, deer tongue, rushes; native colorful flowering plants include: cardinal flower and jewel weed.

The most environmentally sound methods, mechanical, chemical or some combination, must be assessed for each situation. Currently there is no simple, inexpensive, environmentally ideal control program. For William B. Umstead State Park, planning and analysis studies need to be carried out to assess the feasibility and methodology of control.