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Groups target invaders lest we can't see the forest for the weeds

Invasive plant species threaten integrity of watershed's woodlands as well as the wildlife and water quality that depend on them

By Lara Lutz

A small army advances on the grounds of Little Paint Branch Park in Beltsville, MD, armed with gloves and gardening tools. They have come to defend the woods.

Today, the enemy is wavyleaf basketgrass. The grass is one of 22 invasive species that compete with native plants and threaten the forest ecosystem here in the Anacostia River watershed.

The "Basketgrass Blitz" is one of several volunteer events organized by the Anacostia Watershed Society to remove, or at least reduce, this destructive plant before it carpets the local forest.

Invasive plants are a major concern in this urbanized area, where the integrity of remaining forests is critical for both wildlife and water quality.

"Almost every forest fragment in the Anacostia watershed has some kind of invasive plant problem," said conservation biologist Jorge Bogantes Montero of the Anacostia Watershed Society. "Regarding biodiversity, it's one of the most significant threats."

Problems with invasive plants are on the rise in forests throughout the Chesapeake region. Their growing presence, combined with the impacts of land use, invasive pests and a large population of browsing deer, has already left its mark. *The State of Chesapeake Forests* reports that forest diversity is at its lowest point in history, with at least 32 invasive plant species making major changes in the forest structure.

"We're seeing new invasives and the older invasives getting a stronger hold," said Judy Okay of the USDA Forest Service. "Japanese stiltgrass has been coming on really strong and becoming even more shade-tolerant. Garlic mustard is covering the understory very strongly and we're not seeing any weakening in that."

There are lots of reasons for the increase. Invasive plants tend to spread more quickly than native species, taking advantage of roadsides and other forest edges that appear everywhere in the developing landscape.

Climate change also plays a role. The Chesapeake region is hosting species that used to be at home in warmer settings, and invasive vines thrive on the increasing levels of carbon dioxide in the atmosphere.

Often, invasive plants avoid being eaten. The insects and animals that would normally feed on them in their home environment in other countries are not here. And although the reasons are unclear, and it is not true in all cases, native insects seem to prefer native plants. So do whitetail deer, and the mid-Atlantic has an enormous population of them.

"In portions of the state, we have very high populations of deer, and they selectively browse for the natives," said Anne Hairston-Strang of the Maryland Department of Natural Resources Forest Service. "They especially prefer the little oak seedlings that I would like to see become the future forest."

Deer also help invasive plants move through the woods by spreading seeds on their hooves, fur

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and in their droppings.

The increase in exotic invasive plants is a concern for Chesapeake forests because they interfere with conservation efforts. They smother wildflowers, shrubs and tree saplings—including those planted in streamside buffers. They reduce the diversity of food and shelter available to local wildlife.

Even mature trees are felled by invasive climbing plants like kudzu and English ivy. Bamboo thickets are too dense to support native growth.

Some species like wavyleaf basketgrass and the mile-a-minute vine—named for its stunning rate of growth—become a dense blanket on the forest floor with few species, if any, beneath it. Botanists call this a "monoculture," where a single species dominates the landscape.

Along with assaults to habitat and streamside buffers, Okay said that the growing presence of invasive species may affect the way forests function. Because invasives can outcompete native tree seedlings and reduce the stock of new trees, the forests' ability to absorb nitrogen from the air and water is lessened. Invasive species also change the composition of forest litter—the fallen leaves and branches that decay on the forest floor—so that it releases nitrogen much faster than litter from native species.

"Invasive species process nitrogen differently," Okay said. "They don't hold on to it as well as the natives."

Okay said that giant hogweed, wavyleaf basketgrass and cogongrass are among the newest invasives in the Chesapeake region. But they are not yet the most troublesome.

In a list of invasive species warranting top concern, Bay state forest managers listed the tree species ailanthus (tree of heaven), Bradford pear, Norway maple and the princess tree. Among shrubs, they named multiflora rose, autumn olive and Chinese privet.

The mile-a-minute vine topped everyone's list, along with oriental bittersweet, porcelainberry, kudzu, wisteria and Japanese hops.

Other worries include Japanese stiltgrass, garlic mustard and Canadian thistle.

The list is daunting, but Mark Imlay of the Maryland Invasive Species Council said that persistent removal efforts can reclaim the forest.

"The problem is that people feel discouraged and don't think they can win the battle," Imlay said.

Removing invasive plants is a long-term job. Hundreds of volunteers are often involved in a multiyear project. The end result may not eradicate the plants, but cut their numbers so drastically that a small resurgence is easy to spot and remove.

Imlay said that an aggressive period of hand-removal, combined with the use of herbicides, is usually followed by a maintenance period, when the land is watched closely for the return of unwanted plants. He estimates that the cycle could take five to 10 years for a large park, depending on how intensely the area is weeded and monitored.

"It's delayed gratification," Imlay said.

Imlay designed the invasive plant removal program for the Anacostia Watershed Society in 2005. The program combines a "weed-based" approach and "site-based" approach.

"With a weed-based approach, you go after the worst ones, especially when your resources are limited," Imlay said. "With a site-based approach, you go into a place that has invasives and you go after them all."

Over the last 10 years, the Anacostia Watershed Society has tackled invasive species in seven public parks with contributions of volunteer time estimated at more than 3,000 work days. Volunteers make repeated trips to troubled sites, where they uproot plants like garlic mustard, Japanese stiltgrass, mile-a-minute vine and English ivy.

In some places, the plants are so well-established that herbicides are needed. The Anacostia Watershed Society also worked with the USDA to combat the mile-a-minute vine in one park by releasing hundreds of foreign weevils that bore into its stems and defoliate the plant.

As a result, the group has reclaimed at least 47 acres of land from invasive plant species. In one recent case, volunteers from a local school pulled up about 300 square feet of garlic mustard.

"It was a dense monoculture with vigorous second-year plants," Montero said. "We came back this year, and the site was completely covered by native blackberry shrubs."

More research is needed to understand exactly why invasive plants spread so aggressively and how they might impact the forests of the future.



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John Parker, an ecologist at the Smithsonian Environmental Research Center in Edgewater, MD, studies these questions. When it comes to forest invasives, Parker said there are more hypotheses than data.

"'Exotics are distasteful'-that's the conventional wisdom," Parker said.

But lab tests with woolly bear caterpillars suggest the truth is more complicated. Parker found that the caterpillars avoid some invasives but eat many others. "It's a mixed bag," Parker said. "It means that some of these plants may have other traits that make them invasive."

Parker studies the impact of invasive plants by comparing controlled forest plots. Using 64 different plots of 100-square meters each, he compares areas with and without invasives, with mixed levels of contact from deer, and settings that vary from open to mature shaded forest.

"Forests may eventually recover to some state, but we don't know what that state will be," Parker said. "We may have set ourselves on a trajectory so that in 20 years the forest could look radically different."

Parker hopes to see preliminary results later this year and pursue a multiyear study that will help reduce invasive plants as quickly and cost-effectively as possible.

Okay agrees that they are winning some battles, but fears we are losing the war.

"People have been working very hard to get rid of these invasives, but we don't seem to be making a dent in what's going on," Okay said. "Sometimes, people walk away and think they're done but they're not. It's a matter of persistence. It's a forever job."

Lara Lutz is a writer and editor who lives on the South River in Mayo, MD. Read [more articles by this author](#).

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