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Vicksburg's Overcrowded Refuge: How Science is Helping Manage Deer

[Vicksburg National Military Park](#)

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In 1863, Civil War soldiers at Vicksburg, Mississippi faced a brutal 47-day siege—not just against enemy troops, but against hunger and dwindling resources. Today, another battle is unfolding in Vicksburg National Military Park (NMP), as an unchecked deer population is quickly eating through the park's vegetation, echoing the resource depletion of the siege.



A white-tailed deer fawn feeds on park vegetation.

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Vicksburg NMP is a refuge for both history and wildlife. Its rolling hills, dense forests, open fields, and streams offer ideal habitat for white-tailed deer. The park protects them from hunting, human disturbance, and seasonal flooding. But this sanctuary has come at a cost. Over time, the deer population has grown beyond what the park's landscape can likely handle, putting increasing strain on the environment. To understand the scale of the issue, park managers partnered with researchers to launch a scientific study.

Why Too Many Deer Is a Problem



Erosion-prone slopes, left bare partially due to deer eating away the plants, are more likely to collapse and damage trails or historical structures.

NPS/Devin Buck

An overpopulation of deer can have serious ripple effects. They often feed heavily on native plants, especially young saplings, thinning the forest's understory—the layer of vegetation that helps hold soil in place. Without this cover, Vicksburg NMP's steep slopes become more prone to erosion and landslides. Fast-growing, shallow-rooted plants may take over,

but they don't provide the same stability for the soil. Heavily grazed plants also develop weaker root systems, which increases the risk of erosion.

When native plants disappear, invasive species often move in. These invaders can outcompete native vegetation, reduce biodiversity, and provide lower-quality food for wildlife. This puts more pressure on the deer herd and the entire ecosystem. And with less vegetation to filter runoff, rain can wash more animal waste into streams, which reduces water quality.

Beyond damaging habitat, an overcrowded deer herd also threatens deer health. With a shorter supply of food, many deer have signs of malnutrition, as shown by low fat levels in their livers and kidneys. Overcrowding also increases the risk of disease transmission both within the herd and to deer beyond the park's boundaries.

To prevent these problems from escalating, the park needs a reliable way to track deer numbers to guide management decisions.

A Smarter Way to Count Deer

Tracking wildlife populations can be challenging, especially in a park with diverse terrain and limited staff and resources. Traditional deer surveys rely on visual counts, which can be inconsistent and inaccurate, or camera trap footage that is time-consuming to review.

To develop a better method, the National Park Service [Inventory and Monitoring Program](#) partnered with park managers and Dr. Guiming Wang and his research team at the University of Mississippi. Their goal: estimate the size of the deer population and create an accurate and efficient way to track it over time.

The researchers combined multiple survey techniques. They did nighttime visual surveys, driving set routes using high-powered lights to count deer. They also collected more than 500 deer scat samples, extracting DNA to identify individual deer and using statistical modeling to estimate the total population size.



Researchers used nighttime visual surveys and DNA from deer scat to estimate population size.

NPS

The team then compared DNA-based deer counts with visual survey counts. This helped them fine-tune a way to estimate the deer population from visual counts. With this improved method, park managers can now track population trends more efficiently and confidently while freeing up time for other important conservation work.

The Findings

The results confirmed what park managers had long suspected: the deer population far exceeds what the landscape can support. The study estimated around 778 deer live within the park's 1,815 acres—up to four times higher than the state's recommended density of one to two deer per 10 acres (Mississippi Department of Wildlife, Fisheries, and Parks 2024).

Now equipped with reliable data, park staff can explore management strategies. They may consider options like deer relocation or, if needed, carefully reducing the herd size through culling (the selective removal of some deer). While this step is never taken lightly, it's a common tool land managers use to protect deer herds and landscapes. Continued monitoring will be essential to ensure park managers have the information they need to make decisions as conditions change.



By restoring balance to the deer population, park managers aim to protect both the natural landscape and the cultural legacy of Vicksburg National Military Park.

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Looking Ahead

Thanks to this research, Vicksburg NMP now has a practical, cost-effective way to track its deer population. This knowledge will help park managers ensure a healthier future for both deer and their habitat. By taking action, the park is not only preserving its natural resources, but also safeguarding the historic landscape that tells the story of a pivotal Civil War battle. With informed management, Vicksburg NMP can continue to be a haven for history, visitors, and wildlife.

Want to learn more?

Visit the [final report](#) from this project.

References

Mississippi Department of Wildlife, Fisheries, and Parks. 2024. Personal communication.
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