

Introduction to White-tailed Deer Impacts on Indiana Woodlands



Jarred Brooke, Carolyn Chee, Lenny Farlee, Elizabeth Jackson, and Mike Jenkins



Extension - Forestry
and Natural Resources

in partnership with



Introduction

Deer are an important part of Indiana woodlands and represent a true conservation success story. Many Hoosiers spent time in the woods pursuing deer during hunting season or marveling at them during walks in their woodlands. But as recently as the 1930s deer were absent from Indiana woodlands. Restocking efforts led by the Indiana Department of Natural Resources helped reestablish deer populations across the state. However, deer populations have rebounded beyond what the land can support in many areas, leading to issues like crop damage, deer-vehicle collisions, and damage to woodlands.

Deer overabundance can pose a threat to the future health of many Indiana woodlands. Deer are considered a “keystone” species, which means their feeding habits (browsing) can shape our woodlands’ look and their plant and wildlife communities. This publication will outline some of the impacts deer can have on Indiana woodlands and what signs and symptoms to look for in your woods.

Why does deer impact matter to Indiana forest landowners?

Private forest landowners own more than 75% of Indiana’s forests and value their woodlands for various reasons. Many landowners may get the most enjoyment out of seeing a diversity of plants or wildlife species in their woodlands or may value the aesthetic beauty of their woodlands, whereas some landowners may value the timber resources their woodland can produce. The impacts of overabundant deer not only threaten the health of our woodlands, but may also diminish the value or enjoyment we derive from those woodlands.

As the stewards of a majority of Indiana’s forest, private landowners play an important role in identifying and addressing the problem of deer overabundance. The first step in addressing the issue is understanding and recognizing the



problem. By knowing the impacts deer can have on woodlands, and the signs and symptoms of overabundant deer, forest landowners can help protect Indiana’s woodlands.

Deer, do I have too few, too many, or just enough?

Many landowners want to know how many deer – in abundance (total number of deer) or density (deer per square mile) – is right for their property. But, this is a complex question to answer, and isn’t likely the most important question.

A better question is, what impact do the deer on my property have on the forest? If the answer to this question is moderate or high impact, then you have too many deer, regardless of if you have 5 or 50 deer on your property. If the answer is low impact, then you likely have the right amount of deer or too few deer, regardless of if you have 5 or 50 deer.

The important point to make is to consider the impact deer have on your woodland, not necessarily the number of deer you have. But how do you gauge the impact deer are having? The first step is to learn to spot the signs and symptoms of negative deer impacts in your woodlands, which are described in this publication. The next step may be to identify what deer are eating and measuring their impact. Deer browse preferences and different ways to evaluate deer impact are described in other publications within the Deer Impact Toolbox (see later).

What impacts do deer have on Indiana woodlands?

White-tailed deer are selective in what they eat—favoring certain plants over others and even certain parts of plants (e.g., young tender stems). It's this selective nature that allows deer to help shape the plant communities of a forest.

When deer are in balance with their habitat, their browsing can positively impact the plant diversity and health of our woodlands. But, when deer numbers exceed what a woodland can support, those impacts may become negative for both the deer and the forest. And when left unchecked for years, these impacts can have long-lasting, or "legacy" effects.

Common problems caused by white-tailed deer overabundance can be summed up into the following categories:

1 Change in plant or wildlife diversity

Overbrowsing of plants favored by deer can reduce important native plants and allow less preferred species to flourish. Some native species like trillium may be eliminated from a woodland because of deer browse. This change in woodland composition can impact the food and cover available for many other wildlife species.

2 Increase in invasive plants

Overbrowsing of native plants creates room for invasive plants to thrive and spread, resulting in a woodland with a worsened invasive species problem. Invasive species like garlic mustard and Japanese stiltgrass are unpalatable to deer and thrive when deer overbrowse native plants.

3 Reduction in tree regeneration and growth

Overbrowsing from deer affects many young trees and shrubs in a forest. When browsed repeatedly, young tree seedlings may never grow taller than a deer can reach or can be eliminated in a woodland. And by selectively browsing certain tree species – like oak – the diversity of tree regeneration can be reduced.

4 Change in forest structure

Severe overbrowsing can cause structural damage in a forest by eliminating particular forest layers like the ground cover or understory. This often leads to an open or "park-like" look to the forest understory. Many wildlife species rely upon a dense understory for food and cover; thus, deer overbrowsing can reduce habitat for these other wildlife species.

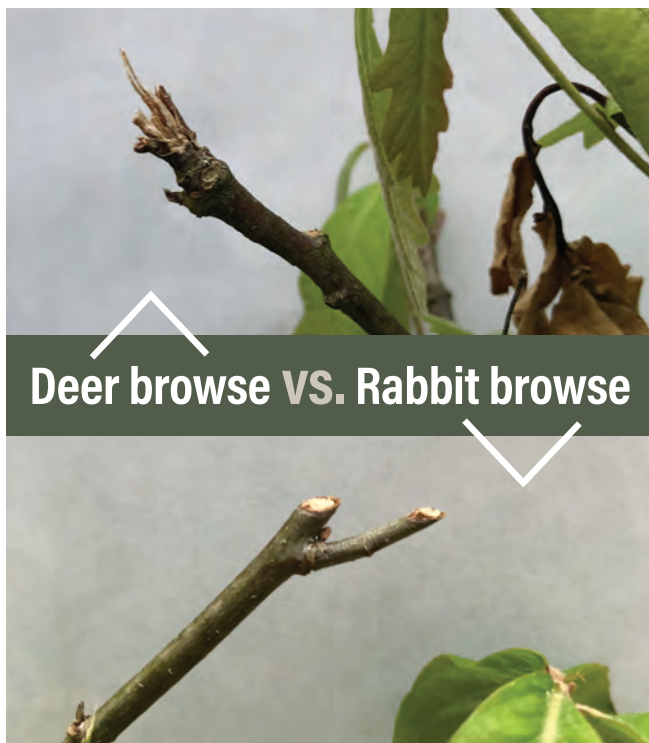


HOW TO TELL DEER BROWSE FROM RABBIT BROWSE?

White-tailed deer are generalists and eat a range of foods. Their diets consist primarily of twig ends from woody plants, forbs (broadleaf herbaceous plants), woody vines, agricultural crops, waste grain, and hard (e.g., acorns) and soft mast (e.g., persimmons). Deer browse is a clear indicator of deer presence in your woodland. Being able to correctly identify deer browse is essential in determining if deer are causing a problem.

To an untrained eye, deer browse is similar to rabbit browse, which can be confusing. But there are a few key differences.

Deer lack upper incisors, so they grab and pull the plants they bite (or browse) leaving a jagged or tattered looking stem behind (top photo). Rabbits have both upper and lower incisors. When they browse plants, they leave a clean almost 45-degree angle bite mark (bottom photo). Rabbits and deer also browse at different heights. Deer browse plants up to 6 feet tall, whereas rabbits will browse plants up to 3 feet tall.



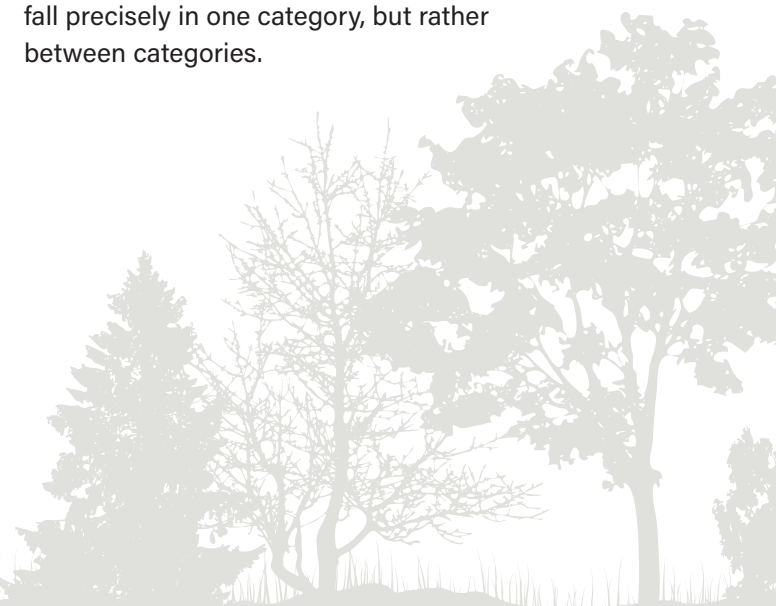
Signs and Symptoms of Deer Impacts

Some of the impacts that deer have on Indiana woodlands – or signs of impacts – may occur subtly over time and might be hard to notice. For example, the loss of trillium in a woodland because of overabundant deer may have occurred over several years or decades. But, suppose you recently purchased your property or were not watching trillium populations closely in your woodland. In that case, you may not know there is a problem.

Other impacts of deer in a woodland may be more obvious. When deer are very overabundant, they can create a “browse line” by consuming most of the vegetation within their reach (less than 6 ft). Once you know what to look for, it’s easy to walk into a woodland and spot a browse line.

By knowing the signs and symptoms of deer overbrowsing, you can spot a problem with deer overabundance early and take steps to correct it. When looking for the signs and symptoms of deer overabundance, it’s also good to know what plants deer like to eat in your area. Because deer browse selectively, knowing what deer are eating in your woodland can also give you an indication of deer impact. To learn more about deer food habits, see other publications within the Deer Impact Toolbox.

It’s important to note that deer impacts exist on a gradient from low impact to very high impact. And the conditions in your woodland may not fall precisely in one category, but rather between categories.



Amount of Impact

low



Low Impact

When deer have little impact on your woodlands, you often see a high diversity of plants. An abundance of preferred species like trillium (picture) can also be a sign of low deer impact.

Photo: Matt Beatty



Moderate Impact

When sprouts of preferred species are "hedged" or kept short by deer browse and browse on less preferred species is noticeable, then deer impact may be moderate.



High Impact

If invasive species like Japanese stiltgrass and garlic mustard are common in your woodland, it may be a sign that deer are overbrowsing native plants.



High Impact

Woodlands that have limited understories – or understories with only a few species of plants – can be a sign of severe deer impacts.



Very High Impact

Browse lines indicate a severe deer problem and appear when deer browse all plants within their reach (<6 feet).

high



What's next? - Deer Impact Toolbox

This publication is part of the Deer Impact Toolbox, a series of resources for landowners who want to learn more about deer and their impact on our woodlands. This toolbox provides the resources needed to understand, identify, monitor, and manage deer impacts to your woodland. Resources within the Deer Impact Toolbox can be found on the Purdue Extension Education Store website (www.mdc.itap.purdue.edu).

1

Understand the Problem

The first step in addressing the issue of deer impacts on your woodlands is to understand the problem. But, it is also important to understand other factors related to the problem of deer impacts, such as what plants deer select to eat. The publication *Understanding White-tailed Deer and Their Impact on Indiana Woodlands* provides the necessary information to help you understand the problem with deer impacts.



Identify the Problem

Once you understand the problem of deer overabundance you can identify if it's an issue on your property. This can first be done by answering the deer impact questionnaire in the *Understanding White-tailed Deer and Their Impact on Indiana Woodlands* publication and looking at the signs and symptoms of deer impact described in this publication.

2

3

Monitor

If you suspect you have an issue with deer impacts, consider monitoring your woodland to get a true sense of the severity of the problem. There are several methods – varying in time and complexity – that can be used to monitor deer impact in your woodland. Some of these methods are described in the *Monitoring White-tailed Deer and Their Impacts on Indiana Woodlands* publication.



4

Manage

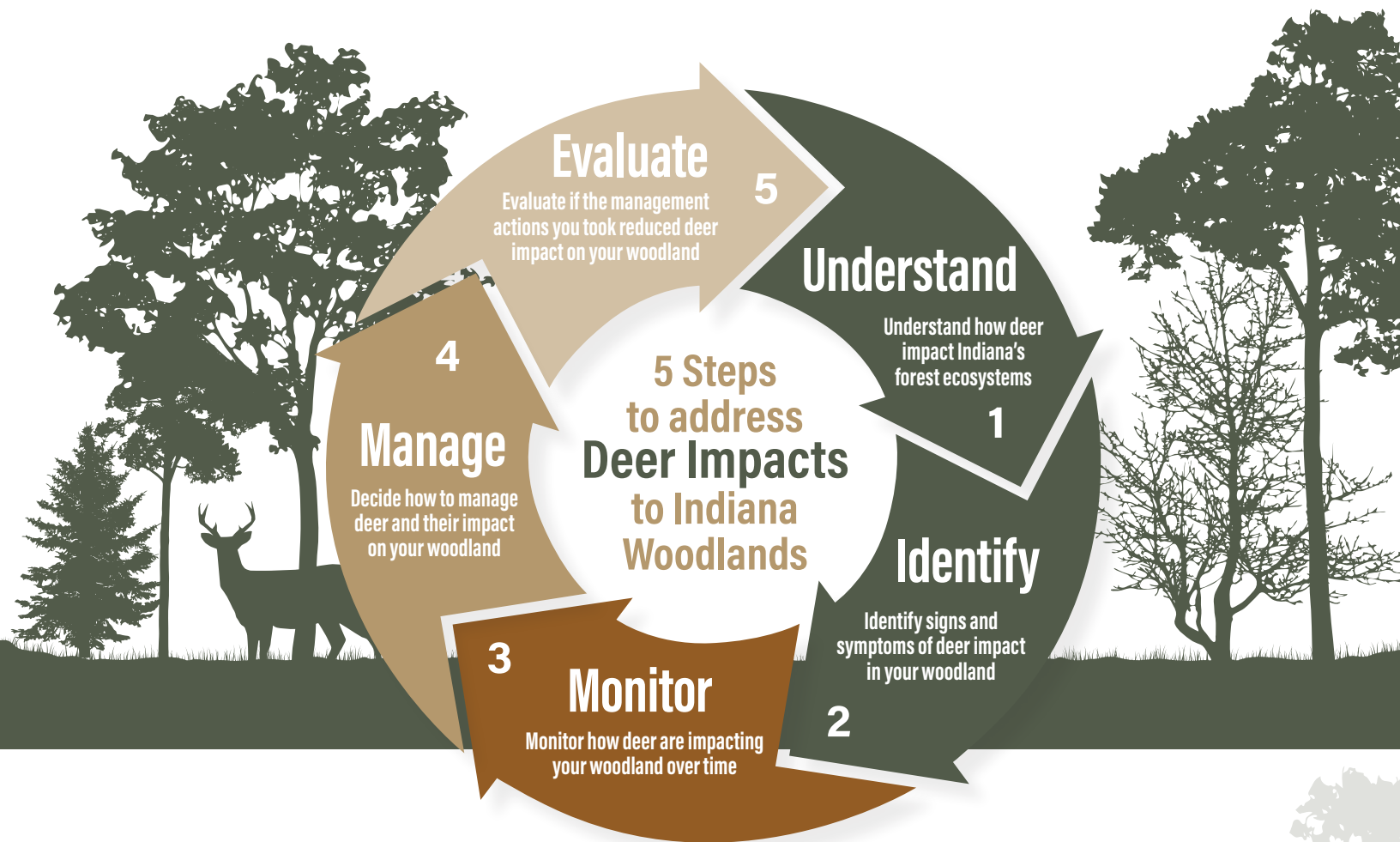
When you have a good understanding of the severity of the deer impact on your woodland, you can decide how best to address the problem. You have several options for reducing the impact of deer including hunting, fencing, tree tubes, or habitat modification. These methods are described in the publication *Managing White-tailed Deer Impacts on Indiana Woodlands*.



5

Evaluate

The last step in the process of addressing deer impacts is evaluating what you did. What action did you take? Did it result in less deer impact? If not, why? To evaluate the impact of your actions you should monitor your property following the action. This should be done by conducting the same methods you used during the monitoring step. Comparing the results of the monitor before and after the management action will allow you to see if your management is working.



Conclusion

Deer are an important part of Indiana woodlands, but they present a challenge to forest health when overabundant. When deer populations are balanced with their habitat, deer browse can benefit forest health. But when overabundant, deer can reduce plant diversity, increase invasive species, limit forest regeneration, and change our woodlands' look or structure. Understanding these impacts is vital to recognizing and addressing the problem. The Deer Impact Toolbox provides landowners with the resources necessary to address the impact of deer in their woodlands.

Reference in this publication to any specific commercial product, process, or service, or the use of any trade, firm, or corporation name is for general informational purposes only and does not constitute an endorsement, recommendation, or certification of any kind by Purdue Extension. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer.

Find out more at
THE EDUCATION STORE
edustore.purdue.edu



Extension - Forestry
and Natural Resources