



Healthy Forests – Healthy Deer

Finding the right balance



Pa. Game Commission



pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

Deer and the Forest

Pennsylvania's forest ecosystem has provided habitat for white-tailed deer for thousands of years. Today, from the "big woods" of the northern tier to the richly forested ridges and woodlots of southern Pennsylvania, white-tailed deer thrive throughout its extensively forested landscape.

The Department of Conservation and Natural Resources (DCNR) is charged with managing 2.2 million acres of state forest land with a mission to ensure its long-term health, viability, and productivity and to conserve native, wild plants. A large part of fulfilling this mission is ensuring the right balance between deer and the forest they inhabit.

The health of both deer and the forests is closely tied together. Deer feed primarily on "browse," the tender shoots and buds of young trees and plants. They also depend on a lush forest understory to hide from predators and protect their young. When deer are out of balance with their habitat, they can very quickly degrade the forest environment for themselves and other plants and animals. However, with the right balance, both the deer and the forest thrive. We really can have both healthy deer and healthy forests.



What is a Healthy Forest?

While a healthy forest is many things, one of the most reliable indicators is what is called the forest understory, the young trees and plants that grow in the lower layer of the forest, close to the ground. In a healthy forest, the understory has several layers and consists of many different species of young trees, shrubs, and wildflowers.

A well developed understory is not only an essential habitat element for many plants and animals, it also demonstrates the forest's capacity to renew itself—a primary indicator of forest health. The young trees that will one day replace the canopy and become the next forest grow in the understory.

Unfortunately, fewer than half of Pennsylvania's forest holds adequate numbers of young trees to simply replace itself. This is a concern for foresters, wildlife biologists, hunters, and other conservationists interested in the future of Pennsylvania's forests and the deer that live there.



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Benefits of a Healthy Forest

A healthy forest yields healthy deer. When deer are in balance with their habitat, they can adequately meet their nutritional needs and thus grow faster and attain heavier weights. Their antlers are larger and bucks are what many consider higher quality. Because of the adequate food and cover, does have more fawns with higher survival rates, allowing the population to quickly recover from mortality sources such as hunting, natural predation and hard winters.

A healthy forest, however, supports much more than white-tailed deer. It provides abundant food and habitat for a whole host of game and non-game species. Grouse pluck berries from the shrub layer. Turkeys hide their broods under lush ground cover. Bears feast on abundant acorns, and songbirds nest in the shrubs and saplings. A healthy forest benefits people, too, playing a vital role in our economy, environment, sense-of-place, and quality of life. It supplies clean water, fresh air, renewable wood products, and places to recreate. Managing for a healthy forest today is vital to ensuring these values and benefits continue into the future.

The Hunter's Role

Hunters help keep our forests healthy. Taking on the role of "predator" once played by large carnivores such as wolves and mountain lions, hunters help keep the balance between deer populations and forest habitat. Without hunters, our forests would not be nearly as healthy. All the benefits society comes to expect from our forest, from clean streams and lumber to colorful fall foliage and paper products, would

be in jeopardy. Hunters provide an irreplaceable ecological service to all Pennsylvanians.

In addition to conventional seasons, DCNR uses the Deer Management Assistance Program (DMAP) on state forests and state parks to target certain areas for additional antlerless deer harvests. These are often where foresters are most concerned about habitat quality or where they are trying to protect emerging trees and plants. The DMAP program is successful at providing hunters with additional opportunities while working toward a more healthy and sustainable state forest.



Measuring Balance

Because of the importance of healthy forests to people and the whole forest ecosystem, DCNR has long advocated balancing deer populations using habitat quality as the primary measure. That is, the health of the forest understory and the forest's capacity to renew itself. In recent years, DCNR foresters and wildlife biologist have noted significant improvements. However, many areas of the state, particularly in the north-central "big woods," forest health and habitat quality is still poor across large areas.

How will we know when we've found the right "balance" in these areas? It's all about reading the forest. When we find a wide variety and abundance of young trees, shrubs and wildflowers—a healthy understory—and the forest exhibits the ability to replace itself, then we know we are close to finding that critical balance between deer and the forest.

DCNR annually monitors habitat conditions across the entire state forest system, as well as state parks. In addition, we've supported innovative studies to gain a better understanding of how forest health relates to deer abundance. These studies include examining deer browsing and monitoring regeneration, deer density and impact on select areas, and the development of a faster and more accurate method to assess forest habitat conditions.



Other Factors

Many factors influence the health of the forest, including invasive insect and plant species, acid precipitation, changing weather patterns, soil quality and competing vegetation. The complex interaction among these factors, in addition to the local deer populations, greatly influences the forest's capacity to renew itself and respond to more balanced deer populations. Both research and operational experience, however, continue to demonstrate that deer are a large part of the equation, and that balancing deer populations is key to establishing a healthy, biologically diverse forest.

Use this Brochure as a Guide

Use the photos and information in this brochure to gauge the health of the forests you frequent. (See reverse.) Does a clear browse line exist? Are there a variety of young trees in the understory to replace the loss of mature trees? Is the understory sparse, composed mostly of ferns and grasses, or is it thick and lush with many seedlings, shrubs, and wildflower species? These questions help provide clues to the health of the forest and the local deer population. Take the time to learn the plants that deer prefer and look for them in your forest. The presence of these preferred species is a good sign that deer are balanced with the habitat. Use this guide to help get you started.



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Hunt on DCNR Lands

More than 2.2 million acres of state forest and 200,000 acres of state parks are open to public hunting. Opportunities include everything from remote back country areas to urban hunts in some state parks conducted by special drawings. For more information on hunting on DCNR lands please visit www.dcnr.state.pa.us/whattodo/activities/hunting. For more information on DCNR's DMAP program where hunters can purchase additional antlerless tags, visit www.dcnr.state.pa.us/forestry/deer/dmap.

Additional Information

For more information, e-mail askDCNR@pa.gov or visit us on the web at www.dcnr.state.pa.us/forestry/deer. Here, hunters can find information about DCNR DMAP areas, hunting habitat maps, access roads open for hunting season, as well as state forest and park public-use maps.

iConservePA

To learn more about the state's natural resources and what you can do to help protect and enjoy them, log onto iConservePA.org.





Field Guide to Healthy Forest Habitat



Browse line

This forest has a clear browse line with little or no understory. You can see how deer have browsed nearly everything they can reach. This is an indicator of severe deer impacts and an unhealthy forest. Because of the missing understory, the forest provides little food and cover for deer, turkeys, grouse and other wildlife species. When the mature trees die, it is unlikely this forest will be able to replace itself.



Healthy understory

One of the most reliable signs of a healthy forest is a well developed understory. If your forest has a lush understory with many different kinds of trees, shrubs, wildflowers and other plants, that's a good indication that your forest is healthy and in balance with the local deer population. The forest understory is important in providing food and cover for wildlife. (Older, more mature forests often have more gaps in the canopy, allowing sunlight to reach the forest floor and allowing the understory to fully develop.)



Hobblebush

Hobblebush is highly favored by deer. In areas with high deer density it is found mostly on steep slopes or in places difficult for deer to access. If you have hobblebush in your forest it's a good indicator that deer populations are balanced with the habitat.



University of New Hampshire

Striped maple



Striped maple bark



Barberry

Striped maple and exotic invasive species such as Japanese barberry are not preferred by deer, which gives the species an advantage when competing with other deer favorites such as oaks and white pine. In heavily browsed areas where deer are not in balance with habitat, they can take over entire areas. While striped maple can provide some cover, it provides little food in the form of browse and mast. Barberry can prevent other native trees and berry-producing shrubs from establishing.



Browsed white pine

Deer exclosures are routinely installed on state forest land to protect young trees and plants from excessive browsing and help establish a new forest. Some fenced areas quickly show dramatic differences from areas outside the fence while others take longer to yield results. Responses in new growth can vary depending on soil type, seed source, the presence of invasive species, and other environmental factors.

Seedlings severely browsed may never reach beyond feeding deer and will eventually die from the repeated stress. One deer can eat 4 to 10 pounds of browse a day.



Purple flowering raspberry



Blackberry fruit

Raspberries and blackberries are highly preferred by deer and are an important food source for many forest dwellers. Abundant raspberry and blackberry bushes can be one indicator of a healthy forest understory.



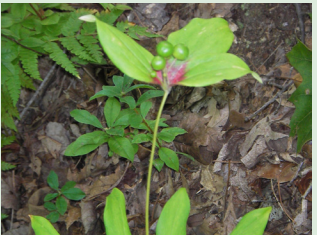
Trillium



Canada mayflower



Jack-in-the-pulpit



Indian cucumber root

The presence or absence of some common wildflowers can be key indicators of the level of deer impact on a given forest site. These four were selected in a recent study as quick indicators of browsing pressure and forest health. If you have these species on your forest, and they are allowed to fully grow and develop, deer populations are likely in balance with available habitat.



Hay-scented fern

When almost all the plants seem to be the same it may be because deer do not browse on that species. Deer in Pennsylvania typically do not eat ferns. Forests with understories dominated by ferns indicate degraded habitat and could mean deer populations are not balanced with habitat conditions.