

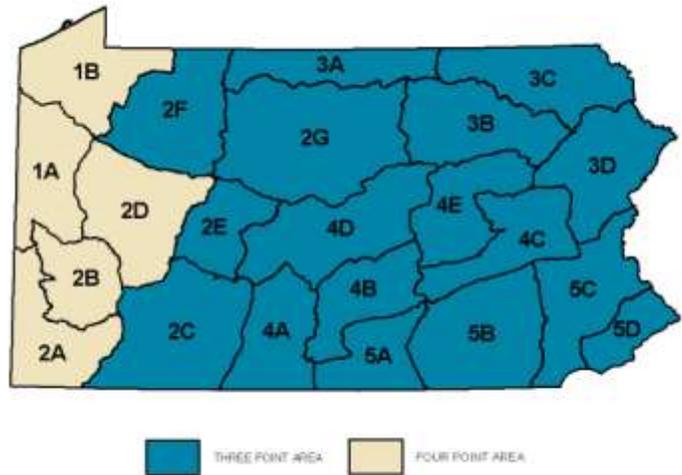


Antler Restrictions in Pennsylvania

Are they working?

Antlers! Nothing captures the attention of a deer hunter more. Antlered bucks star in the dreams of many a hunter on the night before deer season. However, for years, most Pennsylvania deer hunters could only dream of harvesting a large antlered buck. Typically, bucks taken by hunters only had a chance to grow one set of antlers. Few had the larger antlers of an adult buck. One way to change this situation was implementation of antler restrictions.

In 2002, the Pennsylvania Game Commission changed the antler restriction to harvest an antlered deer. Prior to 2002, the antler restriction was 2 points to an antler or a spike at least 3 inches in length. From 2002 to 2010, the antler point restrictions (APR) were 3 or 4 points-to-an-antler depending on area of the state. Starting in 2011, the 4-point area changed to 3 points to an antler, not including the brow tine. The 3 points-to-an-antler area did not change. Since APRs began a swirling of myth and reality has followed. Here are the facts about Pennsylvania's antler point restrictions.



Antler restrictions vary by WMU to protect most yearling bucks.

The primary goal of APRs was to increase the number of adult bucks (2.5 years of age or older) in the population. By doing so, benefits of a more natural breeding ecology, an older buck age structure, and greater hunter satisfaction might be realized. To achieve this goal, APRs needed to protect most yearling bucks (1.5 years of age) from harvest. This required two different APRs: a 4-points-to-an-antler restriction in western Pennsylvania and a 3-points-to-an-antler over the rest of the state (excluding junior hunters).

To assess biological and social aspects of APRs, the Game Commission initiated a multi-year study with the U.S. Geological Survey's Pennsylvania Cooperative Fish and Wildlife Research Unit at Penn State. This study included the capture of more than 2,000 white-tailed deer and the surveying of more than 8,000 hunters. Additional information came from the Game Commission's annual collection of deer harvest data.

BIOLOGY: Why Antler Points?

When defining antler restrictions, antler points and spread can be used. Although hunters can judge both criteria in the field, we chose antler points.

APRs can be defined by any number of points; however, spread restrictions are usually judged on the distance between ear tips. In many areas of Pennsylvania, a spread restriction of 15" (a common ear tip width estimate) would have protected nearly all yearling bucks as well as most adult bucks. Although this level of protection would attain our goal, it would also make many adult bucks ineligible for harvest. Antler points were chosen to protect most yearling bucks and allow most adult bucks to be harvested.



Antler points were chosen as the best method of restricting buck harvest.

BIOLOGY: Buck Survival

Prior to APRs about 80 percent of bucks (a majority of which were yearlings) were harvested by hunters each year. This led to buck survival rates of less than 20 percent. Protecting most yearling bucks would increase buck survival thereby increasing adult bucks in the population, the goal of APRs.

Based on survival rates of hundreds of radio-collared bucks, yearling buck survival increased from less than 20 percent to 64 percent after APRs. Adult buck survival increased as well to 36 percent.

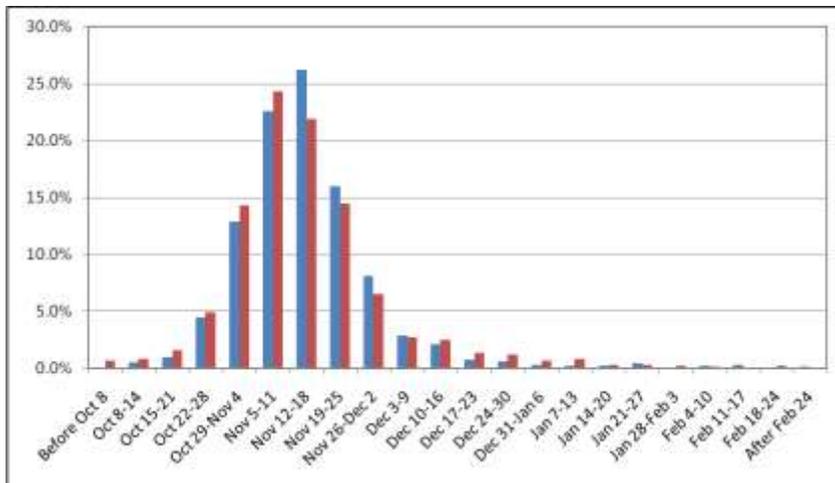


Young buck with radio collar leaves capture site.

BIOLOGY: Breeding Changes

With 80 percent of bucks being harvested each year prior to APRs, most bucks survived through only one breeding season. Few older bucks were present in the population. Could APRs change the breeding ecology in Pennsylvania's deer herd?

Although yearling bucks are capable breeders, the dominance-based breeding hierarchy to which white-tailed deer were thought to conform was absent in Pennsylvania due to the high buck harvest rate. This low number of older bucks and "unstructured" breeding could have extended the breeding season. Would APRs and more adult bucks lead to changes in breeding behavior, in particular conception dates?



Breeding dates of adult females prior to (blue bars) and after (red bars) antler restrictions.

From 2000 to 2007, data on breeding dates from more than 2,500 females were collected. Average date of conception prior to APRs was November 17. Following APRs, average date of conception was November 16.

In Pennsylvania, most adult does are bred in mid-November and sexually mature female fawns tend to peak about two weeks later. Other aspects of breeding ecology, such as pregnancy rates and embryo counts, have also remained at stable and healthy levels.

Based on these data, it does not appear APRs significantly changed timing of breeding in Pennsylvania.

BIOLOGY: Genetic Impacts

Concerns over genetic impacts of selective harvest are common. Would selecting bucks based on the number of antler points they carried be enough to alter future antler development? Current research is clearly mounting evidence to the contrary.



Research has shown yearling antler points are poor predictors of future antler points and size.

First, yearling antler points are poor predictors of future antler development. Research indicates little relationship between a buck's first set of antlers and those he carries at 4.5 years of age and older. So, using yearling antler points as a harvest criterion should not influence future antler development in the population as a yearling spike buck and a yearling 6-point can have similar sized antlers by age 4.5 years.

Second, most of Pennsylvania's antlered males are harvested after the breeding season. About 75 percent of Pennsylvania's antlered deer harvest occurs during the firearms season in late November and early December. The peak of breeding is mid-November. As a result, most antlered males harvested in Pennsylvania have already passed their genes onto future generations.

Third, a few mature males are not dominating breeding. In two different studies, yearling males successfully sired fawns in populations with high percentages of older males. In fact, most males, regardless of age, only sired one litter.

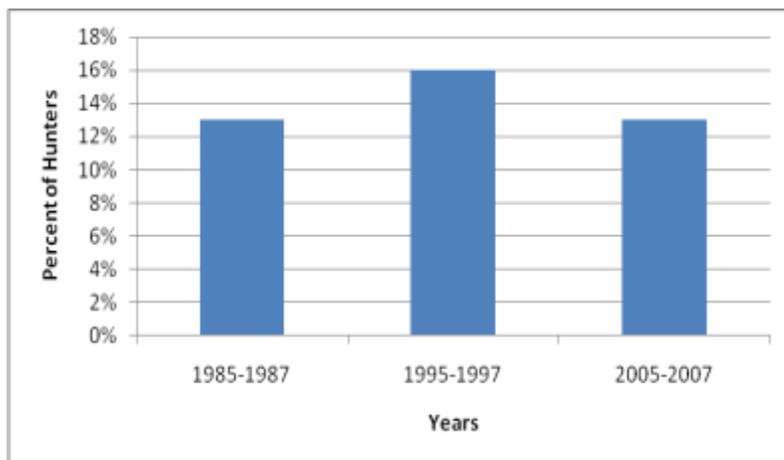
Fourth, does are regularly being bred by multiple bucks. Initially studied in captive deer, multiple paternity has been documented in every free-ranging white-tailed deer study in which researchers have looked. Populations with different male age structures in different states have seen litters with two or more offspring having different fathers at rates of 20-24 percent.



About 1 in 4 litters will have fawns with different fathers.

Finally, a buck's mother contributes half of his genetic characteristics, but nobody can tell what a doe's contribution to her son's antlers will be. There is no way to visually evaluate the genetic antler potential of a doe. As a result, 50 percent of the genetic contribution to future antler development is randomly selected in Pennsylvania.

Given the complexity of the white-tailed deer's breeding ecology and high genetic variation, large-scale alteration to Pennsylvania's deer herd genetics is unlikely.



Percent of hunters harvesting a buck is similar to previous decades.

HUNTING: Hunter Success Rates

Increasing the standard for the harvest of a legal buck with APRs could have reduced the number of hunters that were successful. Tracking hunter success rates over the last 3 decades has shown little change in the percentage of successful hunters. Today, licensed Pennsylvania hunters are as successful harvesting a buck under APRs as their predecessors were 20 years ago under the old antler restriction.

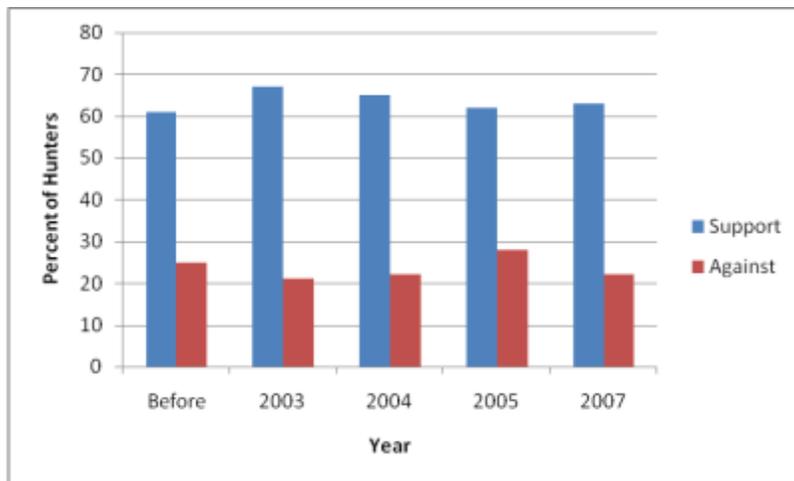
HUNTING: Age Structure of Antlered Harvest

Age structure of the antlered harvest before APRs was about 80 percent yearling bucks and 20 percent adult bucks. With the increase in survival of yearling bucks under APRs, the age structure of the antlered harvest changed to about 55 percent yearling bucks and 45 percent adult bucks. This increase in adult buck harvest has occurred during a time when overall deer populations have declined.

The increased harvest of adult bucks does not necessarily mean more “record book” bucks. Although age structure and number of adult bucks in the harvest has increased, about 75 percent of them are only 2.5 years-of-age. In other words, most of Pennsylvania’s bucks are still being harvested prior to growing their largest antlers.

HUNTING: Hunter Support

Prior to changing to APRs, surveys showed a majority of hunters favored them. Many hunter surveys have been conducted since APRs started in 2002. Would hunter support wane after APRs became reality? Not hardly! In fact, hunter support of APRs has remained steady since their implementation.



Hunters continue to support antler restrictions by a large margin. Percentages do not add up to 100% because those who neither support nor oppose are not included.

CONCLUSION

After 6 years, APRs are a success. They have increased buck survival and the buck age structure. They have maintained strong support from hunters. And Pennsylvania hunters are experiencing the same levels of success to which they are accustomed.

For more information on deer and deer management, please visit the Game Commission’s website:

www.pgc.state.pa.us



Antler Restriction Report Card

1. Increase buck survival **PASS**
2. Change breeding timing **NO CHANGE**
3. Avoid negative genetic impacts **PASS**
4. Maintain hunter success rates **PASS**
5. Increase number of adult bucks **PASS**
6. Increase age structure of buck harvest **PASS**
7. Maintain hunter support **PASS**