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Resource Management & Research Report Indiana State Parks

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Title: 2017 State Park Deer Reduction Results

Author: Anthony Sipes, Chief of Natural Resources

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Abstract: The year 2017 marked the 24th anniversary of deer reductions in Indiana State Parks. The first reduction hunt was held in 1993 as an effort to mitigate damage to vegetation and unique habitat by an overpopulation of white-tailed deer (*Odocoileus virginianus*) in Brown County State Park. Multiple parks have hosted deer reduction hunts annually since 1995 and have included up to 21 parks and one natural area per year. The decision to start reductions at individual parks has been based on scientific vegetation monitoring. Decisions to continue reductions at individual parks are made annually using harvest data and consideration of occurrences of rare, threatened, and endangered flora that could be affected by excessive browsing by deer. In 2017, 4,348 hunter efforts were used to assist 16 parks, one recreation area, and one natural area. The result was a harvest of 1,158 deer. Daily standby drawings were held at one park. Such drawings are conducted from time to time to reduce the impact of originally drawn hunters not showing up or not returning on the second day of each hunt. The 2017 harvest yielded a mean harvest per effort of 0.28, which is higher than the program target of 0.22-0.20.

Introduction

White-tailed deer (*Odocoileus virginianus*) have thrived in Indiana State Parks since they were reintroduced to Indiana in the middle 20th century. Mild winters, absence of once-present natural predators, and a decades-long lack of human hunting within protected state park boundaries resulted in excessive browsing by deer that compromised the overall composition, structure, and function of most natural communities throughout the state park system. Browse lines and small, malnourished deer were a common sight at most state park properties by the late 1980s.

The first deer reduction hunt was held in 1993, with 466 hunters harvesting 392 deer. Since 1995, as many as 21 parks, 22 if including Cave River Valley Natural Area (CRV), have held reduction hunts in the same year (Table 1.). The decision to start reductions at any one park has been supported by data from monitoring particular herbaceous species at individual parks. Once parks begin reduction, harvest data are incorporated into annual decisions regarding habitat recovery and whether specific parks require a reduction the next year. Research indicates that vegetation and habitat begin to recover from overbrowsing at a property once a rate of firearm harvest per effort (H/E) lowers to 0.22-0.20 and/or a harvest per square mile (H/Mi².) is between 12 and 16 deer. Hunters are drawn for each park to fit a density of one hunter per 15-20 acres. Parks where archery is regularly used (Clifty Falls, Fort Harrison, and Trine SRA) due to urban interface, have an H/E target of 0.10-0.08 and one hunter per 7-10 acres. Participants have been

allowed to take up to three deer each (up one of which could be antlered). These deer are in addition to regular statewide bag limits.

Table 1. Number of State Parks and Deer Harvest 1993-2017		
Year	Number of Parks	Total Deer
1993	1	392
1994	0	0
1995	5	1,422
1996	7	2,027
1997	9	2,430
1998	10	1,735
1999	10	1,599
2000	15	1,697
2001	13	1,483
2002	14	1,609
2003	20	2,121
2004	15	1,253
2005	16	1,336
2006	17	2,213
2007	18	1,300
2008	17	1,468
2009	17	1,334
2010	16	1,689
2011	22	1,546
2012	14	1,292
2013	22	1,763
2014	19	1,004
2015	14	806
2016	18	1,219
2017	18	1,158
Total Deer:		35,896

2017 Summary

Eighteen state parks (including one natural area and one recreation area) required deer reduction in 2017. The first two-day hunt was held Nov. 13 and 14 and the second was held Nov. 27 and 28. A total of 1,158 deer were harvested with 4,348 hunter efforts across two, two-day reductions. The mean 2017 H/E was 0.28, which is a slight increase over the 2016 H/E of 0.27. In 2017, Trine State Recreation Area (SRA) hosted its first reduction. Archery equipment was required and 16 hunter efforts yielded two deer harvested, for a H/E of 0.13 and a H/Mi² of 6.9.

Nov. 13 and 14 saw generally cool, clear weather throughout the state. Nov. 27 was warmer than usual, slightly windy, and saw rain in some locations. Nov. 28 was also unseasonably warm with overcast skies and rain in some locations.

The mean no-show rate was 46%. This is slightly lower than the current five-year mean no-show rate of 47%. This percentage represents the number of total hunters who participated each day of the hunt compared to the total number of hunters who were drawn for each hunt.

The data for H/E continue to indicate relative stability from 2007 to 2017, compared to the gradual decline from prior years. There were slight increases in 2010 and 2012, but the generally stable trend holds true. The 2017 mean H/E of 0.28 represents a slight increase from 2016, but is not outside the range of variation of the last 10 years (Figure 1). This five-year mean H/E decreased slightly to 0.26, or 0.06 above the target. Three firearms properties fell at or below the target H/E threshold after the 2017 reduction and will likely not require reductions in 2018. All archery properties, however, remain far above target harvest rates. These parks will likely continue to require annual reductions for some time.

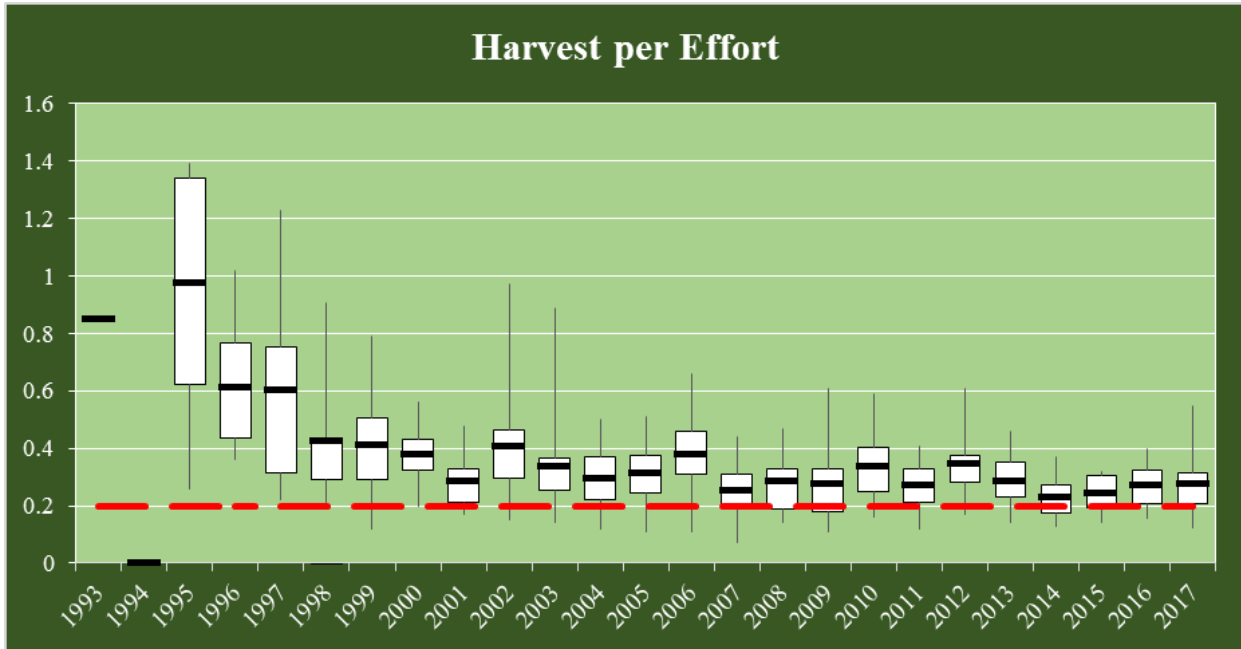


Figure 1. 1993-2017 Harvest per Effort. The center black bar indicates the mean H/E for each year. The white box indicates the first and third quartile. The whiskers (vertical black lines) represent the minimum and maximum H/E for each year. The red dashed line highlights the target of 0.20 H/E for firearms properties. Only one property was hunted in 1993, and no properties were hunted in 1994.

The trend for $H/Mi.^2$ is similar to that of H/E. The data for $H/Mi.^2$ also support relative stability from 2007 to 2017. The 2017 mean $H/Mi.^2$ did decrease slightly from 20.1 in 2016 to 20.0 this year (Figure 2). The five-year mean $H/Mi.^2$ decreased to 18.5, slightly below the target for the third consecutive year. Seven firearms properties fell at or below the target $H/Mi.^2$ threshold after the 2017 reduction. As with H/E, most archery properties remain far above target harvest rates.

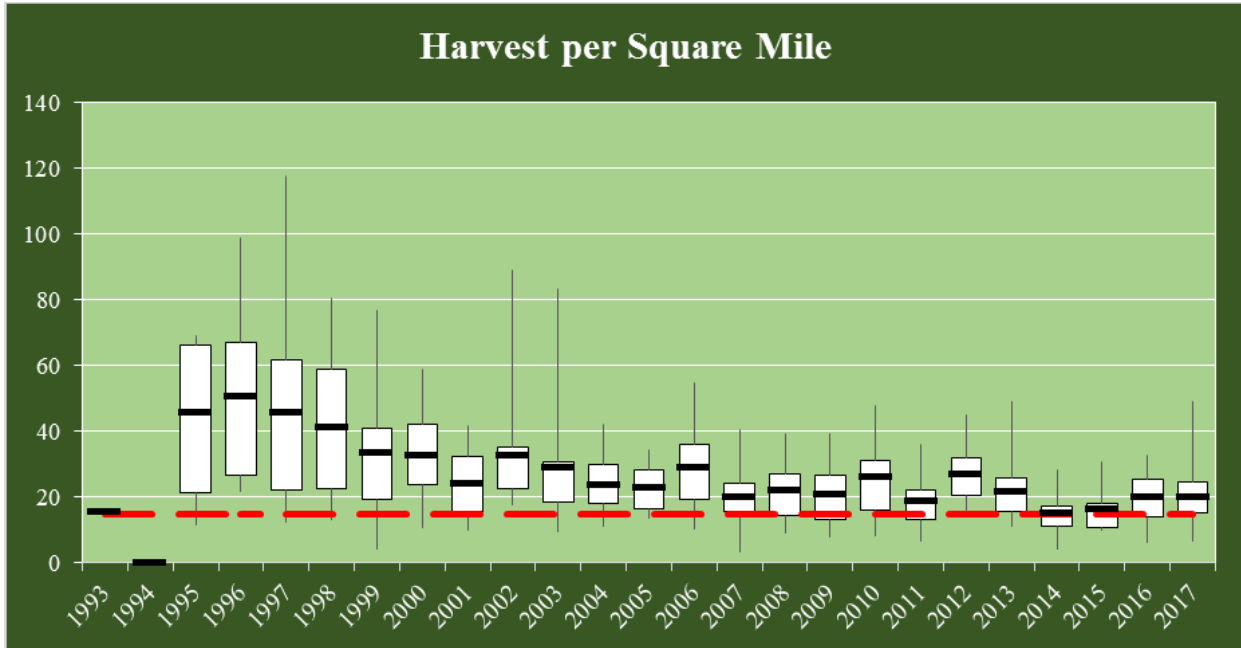


Figure 2. 1993-2017 Harvest per Square Mile. The center black bar indicates the mean H/Mi.² for each year. The white box indicates the first and third quartile. The whiskers (vertical black lines) represent the minimum and maximum H/Mi.² for each year. The red dashed line highlights the target of 15 H/Mi.² level for firearms properties. Only one property was hunted in 1993, and no properties were hunted in 1994.

Adult Buck Harvest

The mean adult buck harvest has increased steadily since the reduction program began. The current five-year mean adult buck harvest is 35%. A decade ago (2007) the five-year mean was 30%. The 2017 mean adult buck harvest is 34%, which is slightly less than the 2016 mean adult buck harvest of 35%. In 2017, five parks, or 28% of the properties, harvested more than 40% adult bucks (Figure 3). This is down from 33% in 2016. The current five-year mean for the percentage of parks exceeding a 40% adult buck harvest is 36%. This is much higher than the five-year mean from a decade ago (2007) of 10%.

Overall, 2017 showed improvement in the adult buck percentage, but the long term trend still points toward an increase in selective harvesting of adult bucks. At a few properties, the adult buck harvest consistently exceeds 40% of the total harvest. Such parks may need to switch into a disincentive model for hunters to help ensure that over-selective hunting is not occurring. Examples include “earn a buck” and antler removal by park staff at check stations. One must first harvest an antlerless deer before harvesting an antlered deer within the “earn-a-buck” model.

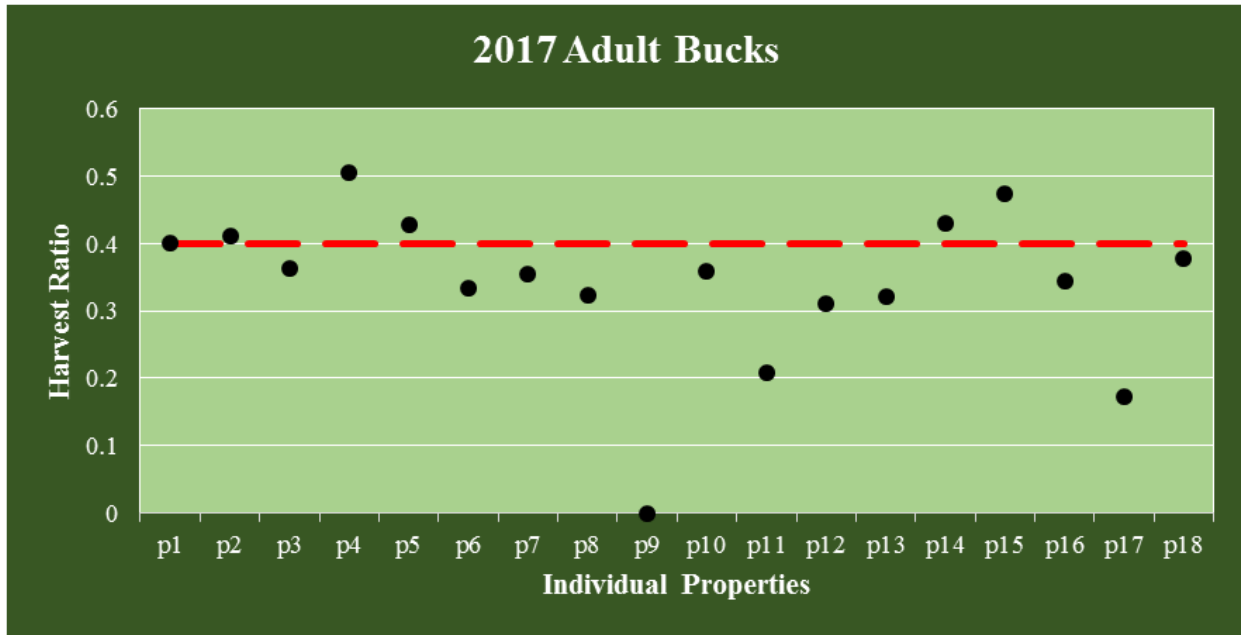


Figure 3. 2017 Adult Buck Harvest Percentage. Each label (p1-p18) represents one of the 18 properties hunted in 2017. Names are not given as to avoid encouraging selective harvest on these properties.

Standby Drawing

Standby drawings are sometimes held at parks in an attempt to fill spots left vacant by originally drawn hunters. The objective is to increase hunting pressure on deer. Participating properties are selected based on several factors, but they are generally experiencing no-show rates greater than 50% in recent years. These parks are also laid out in such a way that facilitates an ample staging area for the drawing while providing staff ability to monitor and control potential standby hunters’ entry into the park.

Participants in the standby drawing are chosen daily, on-site, and have to meet the same criteria as those originally drawn (Indiana residents or those in possession of a lifetime license for harvesting deer, 18 years of age by the date of the first hunt, and possession of a valid license to hunt deer in Indiana). Given the timing of the hunts and the elevated success rates, parks generally expect no-show rates between 25-30%. The average no-show rate for the first day of each hunt in 2017 was 38%. The overall average no-show rate was 46%. This is slightly lower than the current five-year average no-show rate of 47%.

Standby drawings were held at one property in 2017, in a park with historically high no-show rates. Standby hunters at this park continue to contribute significantly to the harvest total. The success of standby drawings continues to be monitored and explored throughout the park system.

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Summary

Though cumulative harvest rates seem to have stalled slightly higher than desirable in recent years, statistics continue to illustrate overall success for the deer reduction program. The program has performed well at coming closer to target harvest levels in the previous few years, although 2017 maintained these slightly higher harvest levels.

Though some parks are more successful than others at achieving a maintenance phase of taking a year off from reductions every few years, the data have and continue to indicate habitat recovery as well as sustained deer populations. It should be reiterated that park reductions are not intended to manage populations for optimal recreational hunting. The goal is simply to reduce the impact of browsing to a level that allows some of Indiana’s rarest and most distinctive habitat to thrive and benefit multiple species.

As noted in previous reports, browse lines and emaciated deer are no longer a problem in state parks. The extreme overabundance issues of the 1990s have been corrected. However, less-obvious damage persists throughout the parks as a legacy of decades of chronic deer herbivory. In some areas, unpalatable plant species such as pawpaw (*Asimina triloba*) and spicebush (*Lindera benzoin*) are overrepresented in the understory. In addition to competing with other fauna for limited resources within park boundaries, deer continue to affect rare, threatened and endangered flora as well as valuable habitat such as oak forests. Other impacts included compromised understory structure for ground- and shrub-nesting songbirds. Future resource management projects will address lingering vegetation issues with mechanical and chemical treatment of target plant species. The 2017 effort was once again a success in helping reduce and maintain browse effects. Cumulative 2017 harvest numbers are consistent with recent positive trends (Table 2). At the individual park level, certain locations experienced relatively high harvests, while others were low enough to warrant removal from the 2018 reductions.

Although there has been some concern voiced about the potential of overharvesting, it is clear that deer populations are still being sustained within parks. Harvest rates at parks consistently remain well above harvest rates on public properties open to deer hunting, such as reservoirs. Deer hunting continues to be a viable recreational pursuit year in and year out in such public hunting areas. A random sampling of harvest data from state reservoir properties on the first and

Property	Harvest
Cave River Valley	24
Chain O’ Lakes	100
Charlestown	83
Clifty Falls	33
Fort Harrison	45
Harmonie	84
Lincoln	61
McCormick's Creek	45
Ouabache	43
Pokagon	28
Potato Creek	136
Shades	119
Shakamak	29
Spring Mill	25
Tippecanoe River	109
Trine	2
Versailles	131
Whitewater Memorial	61
Total	1,158

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second weekend of regular deer firearms season revealed an average H/E of 0.05. Park properties generally take a year off once the H/E is equal or below 0.20-0.22.

It should be noted that harvest totals alone have limited value in determining the success of a reduction hunt. Many factors such as park acreage, weather, rate of participation, and other local variables can influence an individual park's harvest from year to year. For this reason, H/E is the primary indicator of success rather than harvest numbers alone.

Parks requiring reductions in 2018 will be listed and made available along with online applications for 2018 reserved hunts in July at wildlife.IN.gov/5834.htm along with other DNR reserved hunts.