



# Resource Management & Research Report Indiana State Parks

No. 18-1

Memories made naturally.

**Title:** 2018 State Park Deer Reduction Results

**Author:** Anthony Sipes, Chief of Natural Resources

**Date:** 5/13/2019

---

**Abstract:** The year 2018 marked the 25th 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 2018, 5,383 hunter efforts were used to assist 17 parks, one recreation area, and one natural area. The result was a harvest of 1,302 deer. Daily standby drawings were held at three parks. 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 2018 harvest yielded a mean harvest per effort of 0.26, 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/Mi<sup>2</sup>.) 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 to one of which could be antlered). These deer are in addition to regular statewide bag limits.

Table 1. Number of State Park and Deer Harvest 1993-2018		
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
2018	19	1,302
<b>Total Deer:</b>		<b>37,198</b>

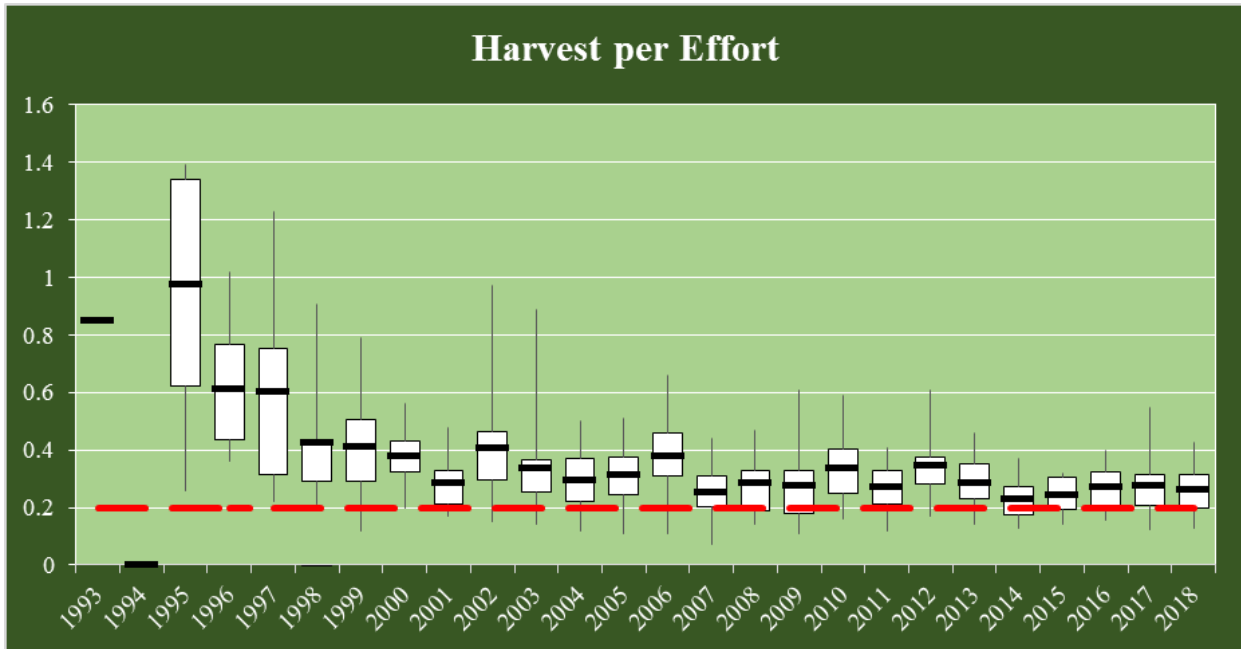
**2018 Summary**

Nineteen state parks (including one natural area and one recreation area) required deer reduction in 2018. The first two-day hunt was held Nov. 12 and 13 and the second was held Nov. 26 and 27. A total of 1,302 deer were harvested with 5,383 hunter efforts across two, two-day reductions. The mean 2018 H/E was 0.26, which is a slight decrease below the 2017 H/E of 0.28. In 2018, Trine State Recreation Area (SRA) hosted its second reduction. Archery equipment was required, and 31 hunter efforts yielded four deer harvested, for a H/E of 0.13 and a H/Mi<sup>2</sup> of 13.8.

Nov. 12 and 13 saw near perfect hunting weather, with conditions being cold and still throughout the state, with a light dusting of snow in some northerly locations. Nov. 26 was also cold, but very windy and rainy. Nov. 27 continued to be cold and windy with snow in many locations.

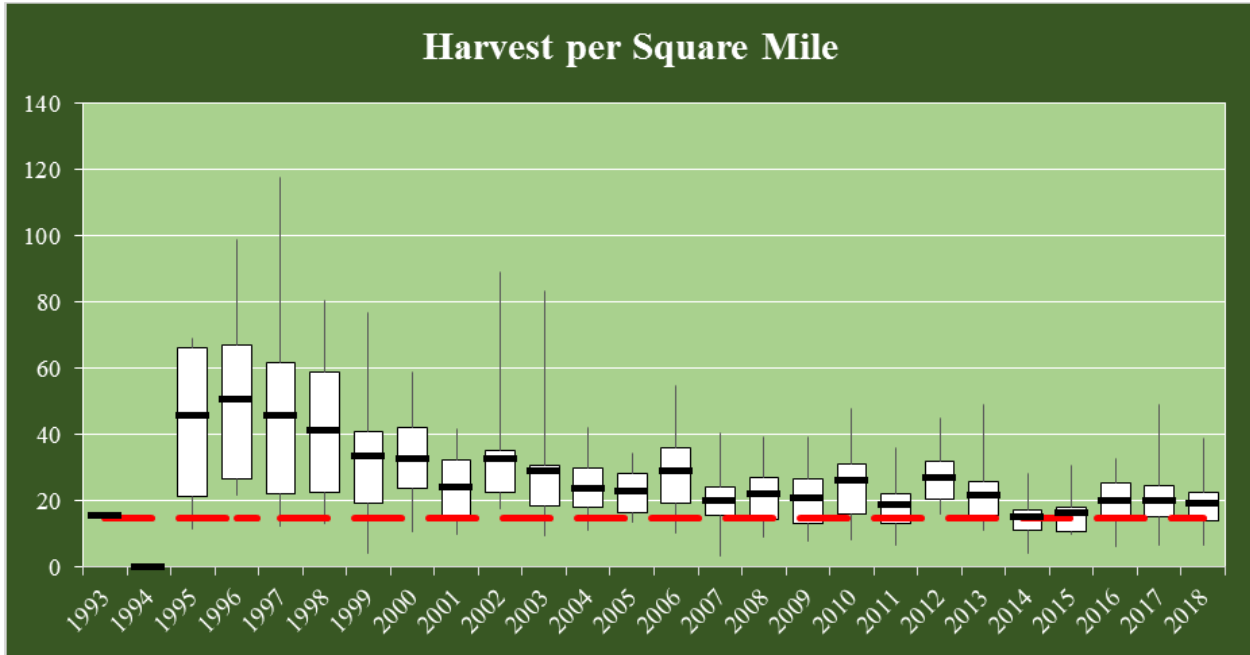
The mean no-show rate was 43%. This is slightly lower than the current five-year mean no-show rate of 47%. This percentage represents the number of total hunters who participated in the hunt compared to the total number of hunters who were drawn to hunt.

The data for H/E continue to indicate relative stability from 2007 to 2018, compared to the gradual decline from prior years. There were slight increases in 2010 and 2012, but the generally stable trend holds true. The 2018 mean H/E of 0.26 represents a slight decrease from 2017, but is not outside the range of variation of the last 10 years (Figure 1). This five-year mean H/E remained at 0.26, or 0.06 above the target. Six firearms properties fell at or below the target H/E threshold after the 2018 reduction and will likely not require reductions in 2019. All archery properties, however, remain far above target harvest rates. These parks will likely continue to require annual reductions for some time.



**Figure 1. 1993-2018 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 2018. The 2018 mean  $H/Mi.^2$  did decrease from 20.0 in 2017 to 19.3 this year (Figure 2). The five-year mean  $H/Mi.^2$  decreased to 18.1, slightly below the target for the third consecutive year. Six firearms properties fell at or below the target  $H/Mi.^2$  threshold after the 2018 reduction. As with H/E, most archery properties remain far above target harvest rates.

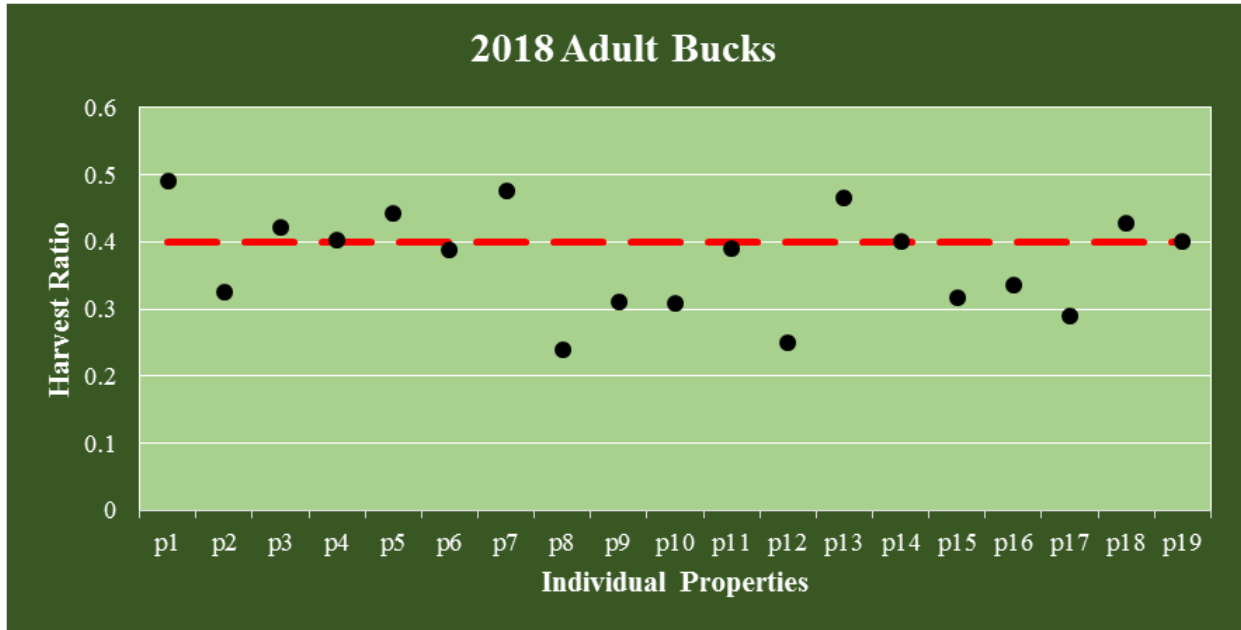


**Figure 2. 1993-2018 Harvest per Square Mile. The center black bar indicates the mean H/Mi.<sup>2</sup> for each year. The white box indicates the first and third quartile. The whiskers (vertical black lines) represent the minimum and maximum H/Mi.<sup>2</sup> for each year. The red dashed line highlights the target of 15 H/Mi.<sup>2</sup> 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 36%. A decade ago (2008) the five-year mean was 30%. The 2018 mean adult buck harvest is 37%, which is greater than the 2017 mean adult buck harvest of 34%. In 2018, seven parks, or 37% of the properties, harvested more than 40% adult bucks (Figure 3). This is up from 28% in 2017. The current five-year mean for the percentage of parks exceeding a 40% adult buck harvest is 38%. This is much higher than the five-year mean from a decade ago (2007) of 13%.

Overall, 2018 showed consistency with the last few years 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. 2018 Adult Buck Harvest Percentage.** Each label (p1-p18) represents one of the 19 properties hunted in 2018. 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 2018 was 32%. The overall average no-show rate was 43%. This is slightly lower than the current five-year average no-show rate of 47%.

Standby drawings were held at three properties in 2018, in parks 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.

**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 2018 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. Ongoing resource management projects will address lingering vegetation issues with mechanical and chemical treatment of target plant species. The 2018 effort was once again a success in helping reduce and maintain browse effects. Cumulative 2018 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 2019 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 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.

Table 2. 2018 Parks Requiring Reduction and Resulting Harvest	
Property	Harvest
Brown County	164
Cave River Valley	19
Chain O'Lakes	124
Clifty Falls	30
Fort Harrison	52
Harmonie	101
Indiana Dunes	41
Lincoln	40
Ouabache	46
Potato Creek	119
Prophetstown	31
Shades	82
Shakamak	43
Summit Lake	45
Tippecanoe River	107
Trine	4
Turkey Run	55
Versailles	121
Whitewater Memorial	78
<b>Total</b>	<b>1,302</b>

This resource management and research report is issued to provide a quick source of information on issues related to wildlife or natural areas management in Indiana State Parks. Any information provided is subject to further analysis, and therefore is not for publication without permission.

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 2019 will be listed and made available along with online applications for 2019 reserved hunts in July at [wildlife.IN.gov/5834.htm](http://wildlife.IN.gov/5834.htm) along with other DNR reserved hunts.