

Recent White-Tailed Deer Trends in Eastern Kentucky



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Summary of Key Facts:

- An outbreak of Hemorrhagic Disease significantly impacted deer populations in 2017, especially in the Zone 3 and Zone 4 counties of eastern Kentucky.
- [Kentucky Fish & Wildlife](#) (KDFWR) responded in 2018 with the following regulation changes:
 - Zone 4 – reduced the total bag limit by half from 4 to 2, and reduced the maximum number of antlerless deer a hunter could harvest from 4 to 1 across all methods and season segments.
 - Zone 3 – reduced the maximum number of antlerless deer a hunter could harvest with a firearm from 2 to 1.
- Many hunters in eastern Kentucky's Zone 3 and 4 counties have observed fewer deer after 2017, although some have seen a gradual increase since 2018.
- With a reduced bag limit in place since 2018 for Zones 3 and 4, total and antlerless harvest have decreased as intended to allow for more growth in the deer herd in eastern Kentucky.
- Other data sources used by KDFWR indicate that the deer population in Zone 4 and eastern Zone 3 counties is gradually rebounding as expected. Staff observations and public feedback corroborate this. This rebound is predictably slower in heavily forested areas like eastern Kentucky where the total forage base (available biomass) and hiding cover are lower than in other areas of the state, where the deer reproductive rate is higher.

Some hunters in eastern Kentucky counties have reported seeing fewer deer during the 2020 deer season. Additionally, public observations of [telecheck](#) data have further raised concerns among some stakeholders about a possible decline in the deer population in these mountain counties. Recent public dialogue on this topic has mainly focused on the Hemorrhagic Disease outbreak of 2017, and the perceived expansion of the 2018 modern gun season. This document addresses these concerns objectively and provides additional, relevant information to help inform the discussion.

Deer Regulation Changes:

In 2017 and prior deer seasons, a deer hunter could harvest up to 4 deer in Zone 4 counties. As is the case statewide in all zones, only 1 of these deer could be antlered. In Zone 4, antlerless deer could only be taken during the last 3 days of the late muzzleloader season, youth seasons, and with archery or crossbow equipment. Additionally, 10 days total were allocated for the modern gun season. In Zone 3 counties, up to 4 antlerless deer could be harvested, including 2 with a firearm. Prior to the 2017 Hemorrhagic Disease outbreak, deer numbers in our mountain counties were at an all-time high, so regulations intended to increase the harvest numbers were necessary to avoid ecological damage to forested habitats.

In 2018, the modern gun season for Zone 3 and 4 counties was extended from 10 to 16 days in keeping with Department initiatives to improve hunters' experiences by: a) offering maximum sustainable opportunity and b) simplifying regulations wherever possible. Establishing the same modern firearms season dates statewide was an important simplification to benefit hunters. Strong hunter support for the 16-day modern gun season in these zones was clearly indicated in the 2015 deer hunter survey results. **The extension of the modern gun season had no impact on the numbers of does harvested in Zone 4 counties, and thus had no impact on the overall population trends.** This is because simultaneously in 2018, **the Zone 4 total bag limit was reduced by half to 2 deer, and the maximum number of antlerless deer allowed per hunter was cut from 4 to 1).** As was the case prior to this regulation change, a hunter can only take antlerless deer during the youth firearms, archery, or crossbow seasons and during the last 3 days of the late

muzzleloader season. **In Zone 3 counties, the maximum antlerless harvest with a firearm was reduced from 2 to 1.**

In 2019 and 2020, Zone 4 was the only zone where the antlered harvest was higher than the antlerless harvest overall, across all hunting methods. This was expected by KDFWR staff and our Commission, because **the 2018 regulation changes were put in place to reduce antlerless deer harvest, and in turn gradually increase deer numbers in Zones 3 and 4.** The expanded crossbow opportunity did not impact overall harvest; in 2019 only 348 antlerless deer were harvested with crossbows across all 24 of the Zone 4 counties.

Hemorrhagic Disease and its impacts:

KDFWR documented all public reports of, and investigated intensively in the field, the widespread [Hemorrhagic Disease](#) outbreak that occurred in the Appalachian mountains during the late summer and fall of 2017 (see Map 1 below). This outbreak was most severe deer in eastern Kentucky, with significant population-level impacts occurring in several counties. In direct response to this outbreak, in 2018 the Department reduced the antlerless bag limit from 4 to 1 deer in Zone 4 counties and reduced the antlerless firearms bag limit in Zone 3 from 2 to 1 deer, as mentioned above. It is impossible to tease apart the impact on population numbers from the Hemorrhagic Disease outbreak versus that of a reduced overall bag limit when using harvest data alone. This highlights why KDFWR uses alternate data sources, as discussed below, and not just raw harvest data to predict population trends and to propose future regulations. However, the bag limit reductions following enactment in 2018 undoubtedly resulted in lower harvests in Zones 3 and 4 (see Map 2 below) compared with 2017 and prior years.

Other Relevant Deer Data:

In the case of the reduced harvest in eastern Kentucky, harvest data alone cannot be reliably used to predict population trends. KDFWR's deer population model (used to derive Maps 3 and 4 below) incorporates a variety of data sources, many of which are independent of hunter harvest metrics. Furthermore, other data such as quota hunter deer observations, disease reports, antler spread data collected via telecheck, spring fetus surveys collected from road-killed deer, deer damage reports, and road-kill numbers all combine to paint a more complete picture of the Kentucky deer herd. When strictly looking at harvest numbers, it is most appropriate to compare averages across years in which similar regulations or other conditions existed whenever possible. As such, Map 2 below illustrates the percent change between the average of 2013-2017 (representing a fairly consistent plateau in deer harvest while taking into account the high harvest of 2015 and the disease outbreak of 2017) vs. the average of 2018-2020 (after Zone 4 bag limit reductions were in effect). It is certainly clear that we have a reduced deer harvest in many of the same counties that experienced the Hemorrhagic Disease outbreak in 2017.

Discussion:

Some current public dialogue has suggested that there has been a lack of appropriate regulatory response to the 2017 Hemorrhagic Disease outbreak, and that the extension of the modern gun season may have exacerbated the impact of the disease. However, these claims use harvest data from Kentucky's single highest deer harvest ever (2015), compared to data from other single years. These speculations do not take into account both the Hemorrhagic Disease outbreak of 2017 and the bag limit changes of 2018.

Simply put, KDFWR's response to the Hemorrhagic Disease outbreak was to reduce deer harvest in the impacted counties, particularly those with a Zone 3 or 4 designation. Reduced harvest numbers in the eastern Zone 3 and in Zone 4 counties reflect the intended reduction in total and antlerless harvest. Due to the severity of the Hemorrhagic Disease outbreak and given the location of where it occurred, the recovery of deer numbers to levels at or exceeding those observed prior to 2017 will likely take several years. Predominately forested areas like the Appalachian Mountains are not

capable of supporting the numbers of deer that other regions of Kentucky are, nor do they provide the habitat capacity to sustain as rapid a population rebound following a Hemorrhagic disease outbreak.

Prior to the 2017 Hemorrhagic Disease outbreak, deer densities in eastern Kentucky's Zone 4 counties were at or above the threshold for reducing the zone number and expanding hunter opportunities to harvest antlerless deer. As such, KDFWR had planned to re-zone many of our Zone 4 counties to the Zone 3 designation. Following the disease outbreak, KDFWR instead retained the Zone 4 designation for these counties and reduced the bag limit by half. Additionally, we reduced the antlerless bag limit with a firearm in Zone 3 counties. We currently have data for three hunting seasons following the disease outbreak of 2017 and have begun to measure trends that indicate a population rebound (see Map 3 and 4). Map 3 indicates a sharp decline in the number of deer per square mile of available habitat between the years of 2017 (pre-Hemorrhagic Disease) and 2018 in Hemorrhagic Disease affected areas. Conversely, we see a slight to negligible decline when we use this same metrics to compare the years of 2018 to 2019, when looking at the number of deer per square mile of available habitat. KDFWR deer biologists will continue to monitor this trend by incorporating relevant data into the 2020 deer model, once those data have all been compiled. As mentioned above, a population rebound will take time because these deer live in predominantly forested habitats. KDFWR will continue to monitor these harvest trends over time to ensure the deer population rebounds in the counties that were most impacted by the 2017 disease outbreak.

Conclusion:

Although the 2017 Hemorrhagic Disease outbreak significantly affected deer numbers in many eastern Kentucky counties, KDFWR and its Commission responded appropriately by placing more restrictive regulations on the harvest of antlerless deer in Zone 3 and Zone 4 counties. The impacts of regulation changes on game populations typically require several years to adequately measure and evaluate, so KDFWR biologists are continuing to monitor the changes enacted in 2018 before they are evaluated, and refined if necessary.

It should also be noted that in 2020 many forested areas in the Commonwealth produced a good to excellent hard mast (acorn) crop. Acorn production is inversely related to number of deer observed and harvested in a given year. In other words, when acorns are abundant during fall, deer feed in woodlands more and move less, and therefore fewer are detected by hunters.

Finally, because KDFWR is only able practically to manage deer at the county level through zone designations and corresponding regulations, deer densities within counties will naturally vary for many reasons including habitat types and conditions, forestry and agricultural practices, hunting pressure and hunter harvest in localized areas. Private landowners and hunters exercise maximum management control at the local level through access and harvest strategies. KDFWR and its Commission fully acknowledge that landowners and hunters often know best the dynamics of deer in their immediate areas, and encourage them to regulate hunting and harvest as needed to achieve desired population levels on their particular properties, and in cooperation with neighboring landowners to achieve common goals as mutually desired a larger scale in their local areas.

Attachments:

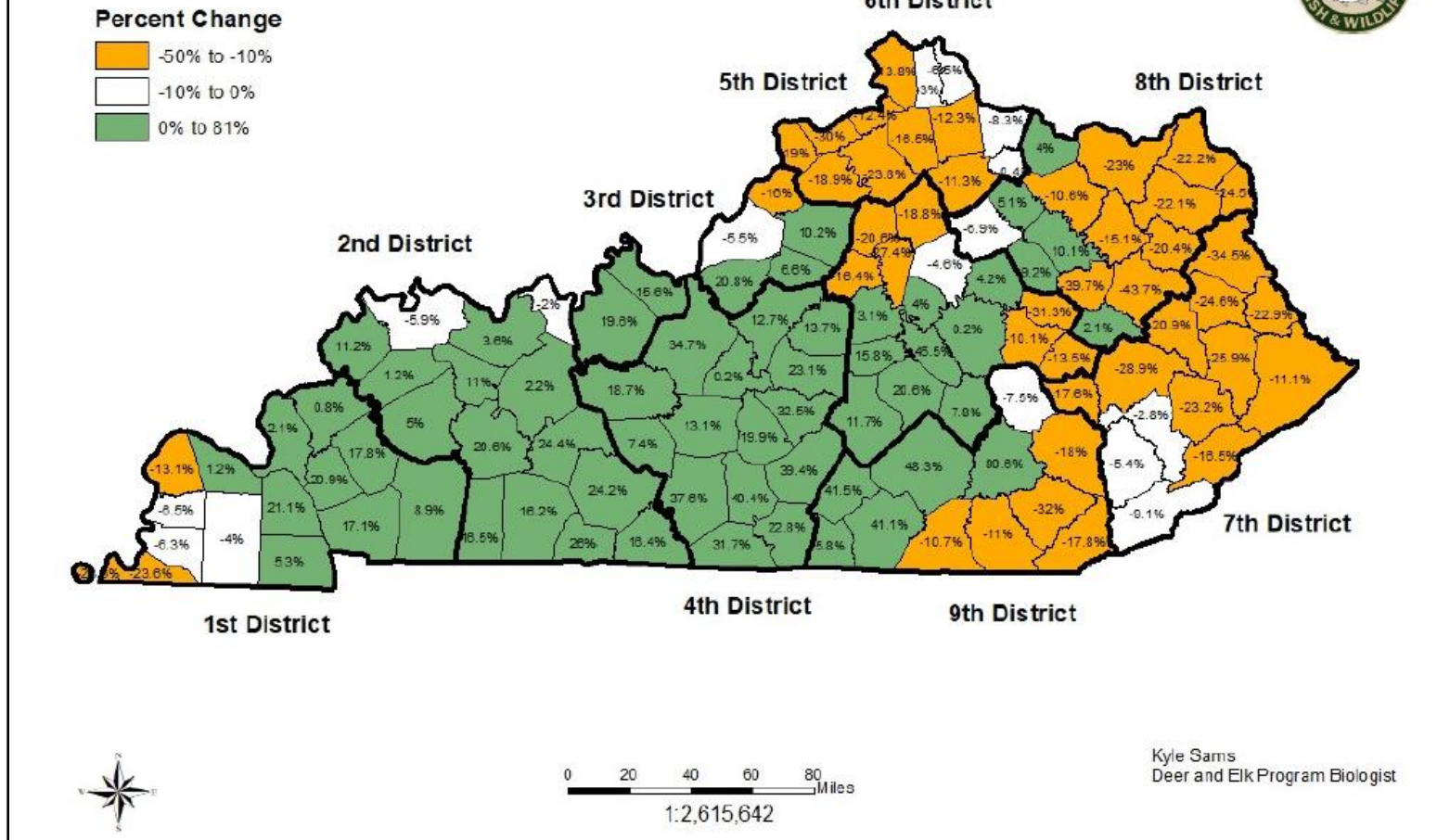
Map 1 - Hemorrhagic Disease Reports 2017

Map 2 – Changes in Average Annual Deer Harvest by County: 2018-2020 vs. 2013-2017

Map 3 – Percent Change in Deer Per Square Mile of Available Habitat, 2017 to 2018

Map 4 – Percent Change in Deer Per Square Mile of Available Habitat, 2018 to 2019

Changes in Average Annual Deer Harvest by County: 2018-2020 vs. 2013-2017



Map 2: Percent change by county in average annual deer harvest from the 2013-2017 seasons, vs. that of the 2018-2020 seasons. The bag limit reduction in Zone 4 counties enacted in 2018 (in response to the Hemorrhagic Disease outbreak) predictably resulted in a reduced harvest, as intended to allow the deer population to rebound.

