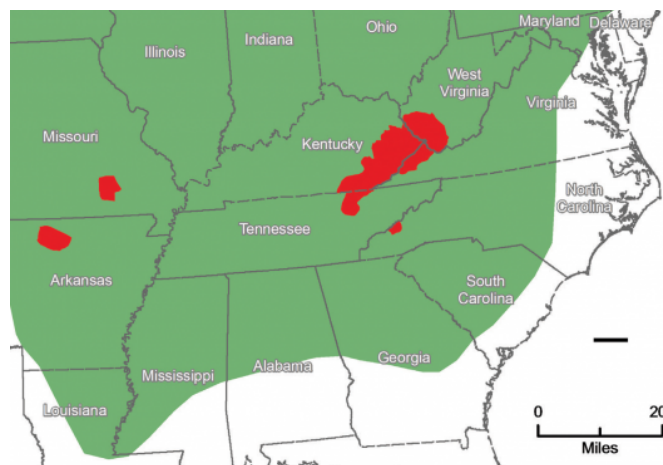


## Returning Elk to the Southeast: A 20-year Retrospective

Elk (*Cervus elaphus*), one of the largest members of the family *Cervidae*, was the most wide-ranging of the deer family, roaming throughout most of the continental United States. However, the colonization and westward expansion of Europeans brought with them unregulated market hunting and significant landscape-level habitat changes that resulted in the extirpation of elk from the East. Prior to restoration attempts, the last known native elk harvested in the eastern United States was likely taken in the late 1800s.

The establishment of game laws followed by the creation of modern state fish and wildlife agencies led to restrictions on the excessive harvest of many wildlife species, and in 1842, the Supreme Court Decision in *Martin v. Waddell* solidified into law that wildlife of the United States belonged to all the people and the stewardship of that wildlife was entrusted to the states. While these actions formed the foundation of the North American Model for Wildlife Management, they occurred too late to help the eastern elk. However, the influx of funding in the form of sportsmen's license dollars and excise taxes on firearms and ammunition allowed



the state agencies to hire trained and qualified professionals to not only conserve the remaining species, but to also restore many of those that had been lost.

**Figure 1. Current (red) and historic (green) elk populations in the southeastern United States.**

Tennessee Wildlife Resources Agency 2018-2027  
Strategic Elk Management Plan

Many states successfully restored or augmented wildlife populations including white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), wild turkey (*Meleagris gallapavo*), peregrine falcon (*Falco peregrinus*), river otter (*Lontra canadensis*) and many others. By the late twentieth century, the practice of restoring populations of native wildlife species was by no means unprecedented. While several early attempts at elk restoration in the eastern United States had been initiated, with one notable exception (Pennsylvania), none were at a scale that would establish viable populations and restore their ecological function, and all were deemed failures.

Starting in the 1980s, several southeastern states began to examine the possibility of re-establishing elk into their former range. Successes in previous species restorations, increasing public demand for elk hunting and viewing, and contemporary land management (producing what appeared to be suitable elk habitat) all collided to stimulate state agencies to evaluate the possibility of restoring an iconic species. While some of these evaluations were waylaid by politics, lack of funding, or internal staff resistance, others flourished. The first few that took hold, paved the way for many others to follow.

## Arkansas

Arkansas' first attempt to restore elk began in 1933 with the introduction of 11 elk from Oklahoma. This population increased to around 200 by the mid 1950s, then abruptly vanished. In 1981, the Arkansas Game and Fish Commission (AGFC) initiated the first modern elk restoration project in the Southeast. From 1981 to 1985, AGFC released 112 elk from Colorado and Nebraska near the Buffalo National River in north-central Arkansas. In 1998, the AGFC established a hunting season framework to manage the elk population. The herd is currently estimated at about 450 animals, with hunters taking 10-15 percent of the population annually. Currently, Arkansas's elk range covers 492.2 mi<sup>2</sup> (315,000 acres), 27percent of which are public lands.

## Kentucky

In 1997, increased interest in reestablishing an elk herd in Kentucky led the Kentucky Department of Fish and Wildlife Resources (KDFWR) to conduct a habitat feasibility study and stakeholder listening sessions to determine the biological and sociological implications of restoring a free-ranging elk population. The habitat feasibility study

identified the eastern coalfields in eastern Kentucky as having an adequate land base with low potential for human-wildlife conflict (low road density, low human population density, minimal agriculture). There was also widespread public support for the restoration. From 1998 to 2002, Kentucky began an elk restoration that would be the largest ever attempted, with sources of elk from six states – Arizona, Kansas, North Dakota, New Mexico, Oregon, and Utah – supplying more than 1,500 elk to the project.

Sixteen counties situated on the Cumberland Plateau in eastern Kentucky make up the restoration zone and are adjacent to elk restoration projects in Tennessee, Virginia, and West Virginia (Figure 1). In 2001, Kentucky established its first hunting season for elk. The population is currently estimated to be about 11,000 animals, with hunters harvesting 3-7 percent of the population annually. Currently, Kentucky's elk range encompasses around 6,563 mi<sup>2</sup> (4,100,000 acres), 13 percent of which are public lands.

## Tennessee

In 1997, the Tennessee Wildlife Resources Agency (TWRA) proposed an elk restoration project in the area around Land Between the Lakes (LBL) in West Tennessee that failed due to opposition from the agricultural interests. However, public support for an elk reintroduction strengthened over time; especially in the Cumberland Mountains of East Tennessee, and in 2000, TWRA proposed a restoration for the North Cumberland Plateau. The restoration area was selected due to its adjacency to Kentucky's elk restoration zone, low human population, potential elk hunting and viewing opportunities, and comparatively low acreages of agricultural crops. Their proposal called for the reintroduction of 400 elk with a population goal of 1,400 to 2,000 elk.

From 2000 to 2002, TWRA released the first 136 elk into their elk restoration zone that were sourced from Elk Island National Park (EINP) in Alberta, Canada. In 2003, an additional 31 elk were sourced from a captive herd at LBL (which was originally sourced from EINP). In 2008, TWRA received an additional 34 elk from LBL, bringing the total number stocked to 201. All of these elk were the Manitoban subspecies. Tennessee initiated their first elk season in 2009. The population is estimated at around 350 elk, but the confidence intervals associated with that estimate range from 195.9 to 636.1 animals. Five permits were drawn for the initial 2009 season, and TWRA currently draws 15 hunters annually, with hunters experiencing high levels of success. Currently, the elk range in eastern Tennessee is approximately 1,047 mi<sup>2</sup> (670,000 acres), 29.2 percent of which are public lands.

## North Carolina

In 2001 to 2002, the National Park Service initiated an elk restoration in the Great Smoky Mountains National Park (GSMNP) when they released 52 elk sourced from LBL into the Cataloochee Valley in North Carolina. The current estimated elk population in the GSMNP

exceeds 150 animals, although some animals have been reported outside the GSMNP boundary. In 2008, the NPS declared the experimental stage of the restoration complete, transferring all management responsibilities for elk outside the GSMNP to the North Carolina Wildlife Resources Commission (NCWRC).

The expansion of elk outside of the GSMNP presented additional recreational opportunities for residents and tourists but also increased human-elk conflicts as well as administrative burden for the NCWRC. Because elk were designated a Species of Special Concern in North Carolina, only the Executive Director has the authority to issue depredation permits.

To address these challenges and responsibilities NCWRC initiated a feasibility study of managing the elk population outside of GSMNP in North Carolina with regulated hunting, which included an integrated biological and socioeconomic analysis that considers the needs of elk and the potential positive and negative impacts to human stakeholders and other wildlife species, including economic impacts, costs, and benefits. Estimates indicated that approximately 70 elk spend at least part of their time on non-federal lands. The 2014 study examined five study areas (three occupied and two unoccupied) within a 24-county region of western North Carolina. They determined that the three occupied areas could sustain slow growth of elk, reaching carrying capacity in a minimum of 30 years, with extinction probabilities of less than 5 percent in 25 years. The two unoccupied areas were determined to be unsuitable to support an elk population long term (e.g. they would go extinct within 15 years). They also determined that the harvest of 4-6 male elk per year on the most favorable site would not impair the sustainability of the elk herd. In 2016, the NCWRC passed a resolution establishing a framework for an elk hunting season, subject to permits issued by the NCWRC until such time as the harvest is considered sustainable.

## Missouri

From 2011 to 2013, the Missouri Department of Conservation (MDC) initiated an elk restoration project in south-central Missouri. The source of elk for the restoration was the recently-established herd in eastern Kentucky, where 108 elk were captured, disease-tested, and transported to the Peck Ranch Conservation Area in south-central Missouri, which established a base for elk restoration in parts of Carter, Shannon, and Reynolds counties. MDC has a population goal for the restoration of 400-500 animals, and they have established benchmarks to trigger consideration for an elk hunting season, which include a population of 200 animals, 10 percent annual growth rate, and 25 bulls with at least 100 cows. However, significant calf mortality, likely due to meningeal worm (*Parelaphostrongylus tenuis*) infection, has kept the population below several of those benchmarks. The current population of elk in Missouri is between 150 and 200 animals and the total elk restoration range in Missouri encompasses approximately 346 mi<sup>2</sup> (221,440 acres).

# Virginia

From 1997 through 2002, Virginia experienced spillover from the fast-growing herd associated with the KDFWR restoration in Kentucky. By the mid-2000's, the Virginia Department of Game and Inland Fisheries (VDGIF) began to consider the prospect of restoring elk to Virginia, largely due to public interest. From 2012 to 2014, VDGIF relocated 75 elk from southeast Kentucky into Buchanan County, Virginia. These included 71 elk captured in Kentucky and 4 calves born in quarantine. By 2015, Virginia's restored elk herd was estimated at 120 individuals. In 2014, two herds of non-translocated elk were seen in Wise County that were likely natural immigrants from Kentucky. Other elk that were not a part of the "official" VDGIF restoration have been documented in Wise, Buchanan, Dickenson, Russell, Lee, Tazewell, Bland, Scott, and Washington counties. VDGIF allows the harvest of elk outside the three-county restoration zone (Buchanan, Dickenson, Wise), but will only establish a hunting season within the restoration zone when numbers reach a sustainable level. They are currently developing a management plan, and if all three counties are included in their entirety, the total elk restoration range in Virginia will incorporate approximately 1,236.5 mi<sup>2</sup> (791,360 acres).

## West Virginia

West Virginia developed its first elk restoration feasibility study in 1972 and partnered with the Rocky Mountain Elk Foundation to perform a second one in 2005. The proximity of the successful Kentucky elk restoration project elevated the need for a West Virginia elk management plan, which was initiated in 2011 and provided guidance over the next five years (2011-15). In 2015, during the West Virginia legislative session, the West Virginia Division of Natural Resources (WVDNR) was tasked with developing an active elk restoration program and given the authority to promulgate rules to establish and define the program. In their 2016-2020 draft elk management plan, the WVDNR established a population goal of 1 elk per mi<sup>2</sup> of restoration area for a total of 2,845 elk. This draft also defines an approach for a hunting season when the population reaches a sustainable level. The restoration area itself encompasses approximately 2,845 mi<sup>2</sup> (1,820,800 acres), 5.4% of which are public lands.

## What does success look like?

Over the past 20 years, seven states – Arkansas, Kentucky, Tennessee, North Carolina, Missouri, Virginia, and West Virginia – have worked diligently to restore an iconic species to the Southeast (see Figure 1 for a map of existing populations). Balancing pressures, both positive and negative, from hunters, wildlife watchers, biologists, legislators, governors, as well as conservation and preservation groups has been no small lift. Ecological concerns regarding population sustainability, disease transmission, impacts to other native wildlife, habitat alteration, competition for source animals, and minimum

population viability have been no less daunting. However, these states have faced those challenges and changed the landscape for the better.

Collectively, "elk range" in the Southeast encompasses more than 12,500 mi<sup>2</sup> or just under 8 million acres. Much of this land is incorporated into elk management plans that necessitate the establishment and maintenance of early-successional habitat, which are being lost at alarming rates throughout the region. The loss of early-successional habitat carries with it significant and alarming declines in both game and non-game species. Restoring early-successional grass and shrublands on a landscape level will be necessary to maintain elk populations established by state agencies. But it will also provide tremendous benefits for countless species of other wildlife that depend on it.

Our hats are off to these agencies for taking the bold steps to restore this large, iconic herbivore to the landscape, but the work has only begun. Wildlife Management Institute currently partners with a number of state, federal, and private entities in both the Northeast and the Midwest with our [Young Forest Initiative \(http://www.youngforest.org/\)](http://www.youngforest.org/) to develop and maintain needed acreage of early successional habitat at a landscape level. We are committed to bringing this approach to the Southeast, to capture the momentum started by the southeastern "elk" states and to work collaboratively with our partners towards improving our natural world.

Author: Jonathan Gassett |

Photo Credit:

Tennessee Wildlife Resources Agency 2018-2027 Strategic Elk Management Plan  
| March 14, 2019



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[Board of Directors \(/about/board\)](#)

[What we do \(/about\)](#)

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[2025 Conference \(/conference\)](/conference)

[Registration \(/conference/registration\)](/conference/registration)

[Schedule \(/conference/sessions-schedule\)](/conference/sessions-schedule)

[Lodging and reservations \(/conference/lodging\)](/conference/lodging)

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