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# SCIENCE HELPS SAVE THE DEER:

## THE GREATEST CONSERVATION SUCCESS STORY IN NORTH AMERICA

One hundred years ago, the wildlife species of North America were in deep trouble. Unregulated harvest by market hunters and individual landowners had decimated the continent's once-teeming herds of bison, deer, elk, moose, pronghorn, black bear, and grizzly bear. The devastation was not limited to big game alone: wild turkeys, beaver, many songbirds, and numerous species of waterfowl were also in serious decline. Two bird species, the Carolina parakeet and the passenger pigeon, had become extinct with the death of the last individuals in zoos in 1918 and 1914, respectively. Other species, such as the ivory-billed woodpecker and the California condor, were already teetering on the brink. Conditions were so bad for American wildlife overall that the Boy Scouts of America launched a campaign, with the blessings of professional members of the Boone and Crockett Club, to conserve the eastern gray squirrel, *Sciurus carolinensis*. "Save Silver-tail!" proclaimed the pamphlets and leaflets circulated among conservation-minded individuals and the general public.

Our native deer species were also in dire straits. In 1912, Boone and Crockett Regular Member William T. Hornaday conducted the first game census of the United States, sending surveys via mail to members of the Boone and Crockett Club and other wildlife enthusiasts who reported on the condition and population status of wildlife species in their geographic area. Hornaday's shocking conclusion was that numerous wildlife species had been severely impacted by unrestricted hunting. Whitetail deer, mule deer, and moose had each been more or less completely extirpated from six states. Whitetail deer had disappeared across the Midwestern states, including Illinois, Indiana, Kansas, and Ohio. Mule deer had been largely extirpated across the Plains states of Kansas, Minnesota, Nebraska, North Dakota, Nebraska, and South Dakota. And moose had vanished from Massachusetts, New Hampshire, New York, Pennsylvania,

nia, Vermont, and Wisconsin.

Concerted action was needed to bring back these species. Boone and Crockett Club members led the way in advancing legislation that would ban unregulated harvest and unsporting hunting practices. Beginning with Pennsylvania, individual states established game commissions and regulatory agencies that would help provide scientific management of the diminished wildlife herds and enforce restrictions on illegal or unsustainable harvest. New fields of science, such as wildlife management, range management, and forestry, were developed by leaders in the Boone and Crockett Club and their friends and colleagues to help provide the scientific knowledge necessary to manage these valuable natural resources.

Boone and Crockett Club Professional Member Aldo Leopold famously led the first science project sponsored by the Club—an investigation of the status of the

The Lacey Act of 1900 put a stop to market hunting of America's once-abundant big game resources.



## The recovery of North America's whitetail deer population stands as one of the most remarkable achievements in the history of global wildlife conservation.



Kaibab mule deer herd. Leopold's investigations and observations provided the basis for the scientific management of this herd and its associated ecosystem, and many of the research questions he pursued continue to drive the scientific investigation of deer biology and management to this day. In particular, Leopold was among the first to investigate the concept of "overabundance" in deer herds and the complex interactions between deer populations and their predators.

In Iowa, Boone and Crockett Club Honorary Life Member Jay "Ding" Darling founded the first of a series of cooperative wildlife research units, collaborative partnerships between state and federal wildlife managers, universities, and the non-profit Wildlife Management Institute. In 1935, federal legislation expanded the program, which has continued to grow to the present day where 43 units provide science to inform wildlife management in 41 states while providing world-class graduate education and technical assistance. Studies of whitetail deer and other hunted

and harvested game species have formed the core of the scientific work of these units since their foundation 90 years ago.

From the 1930s on, science from the Coop Units and new university departments of wildlife and natural resource management was readily applied by the state fish and wildlife agencies in their new roles as public trustees of wildlife species such as whitetail deer, which were now publicly owned and managed resources. License sales and excise taxes from the sale of hunting equipment helped fund conservation science and the applications of scientific research studies on the ground by the state agencies and their cooperators. Scientific studies at the Coop Units and universities covered all aspects of game species biology, including nutrition, habitat requirements, seasonal movements, weather impacts, population status and trends, predation, abundance, and overabundance. Field studies helped managers gather important information about preferred habitats for deer and other big game, allowing management

units to be more accurately defined and hunting and harvest regulations to be tailored to the requirements of specific herds. The science of adaptive management helped managers learn from their actions, evaluating the success or failure of particular conservation actions to improve the status of wildlife species and their habitats.

The result of these actions on the game species of North America has been nothing short of spectacular. In the case of whitetail deer, recent studies have concluded that the number of whitetails in North America is approximately the same as before European colonization. In other words, the precipitous decline in their populations documented in the early 20th century has been reversed. Few other wildlife species have suffered such decimation, followed by a complete recovery within such a short period. The recovery of whitetail deer population numbers must stand as one of the most remarkable achievements in the history of wildlife conservation. Several key facts stand out in reviews and

discussions of this tremendous conservation success story in the scientific literature.

**The importance of hunting as a tool for conservation management.**

Although unrestricted and unregulated hunting was responsible for the initial decline in whitetail deer, properly managed hunting has become an effective tool for managing wild deer populations. It continues to provide enjoyment, outdoor recreation opportunities, and an important source of wild meat and nutrition for millions of outdoor enthusiasts.

**The importance of funding mechanisms that support species management and applied scientific research.**

License sales in individual states and federal excise taxes on hunting equipment and ammunition are critically important resource engines that support the management of game species and their habitats.

**The value of science for informing the management of species and their habitats.**

The recovery of whitetail deer would not have been possible without the hundreds of scientific studies investigating every aspect of the species and its biology. This gave managers the information they needed to manage populations and set harvest and hunting regulations at local, regional, and state-wide scales.

**The importance of habitat management, both active and passive.**

Whitetail deer populations have benefited from a wide array of habitat management activities, including establishing wildlife management areas and other conservation areas that protect overwintering grounds, movement corridors, food plots, and other essential habitat features for this species.

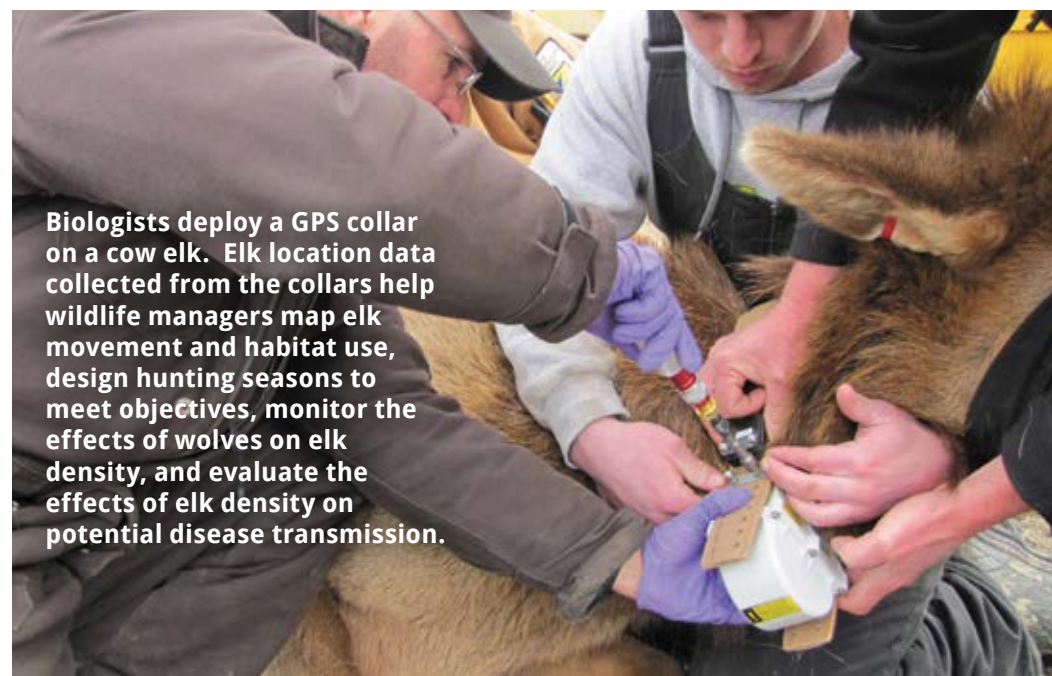
Additionally, whitetail deer populations have undoubtedly benefited from larger landscape-scale changes, such as the expansion of suburban and exurban developments and regional changes in farming and timber harvesting practices across eastern North America.

Scientific research continues to inform the conservation and management of deer and other big game species in North America. For example, at the Wyoming Cooperative Fish and Wildlife Research Unit, Dr. Matthew Kauffman uses high-tech GPS satellite collars to map the movements of individual mule deer, elk, and pronghorn within herds of these species to identify broader migration corridors for each species. Mapping these corridors helps state and federal wildlife and land managers minimize impacts on these species during crucial movement times and enables managers to address potential impacts to overwintering and calving areas for these species.

At Michigan State University, Michigan Cooperative Fish and Wildlife Research Unit scientist Dr. Brett DeGregorio and Boone and Crockett Professional Member Dr. Sonja Christensen are using new approaches to help address Aldo

Leopold's age-old questions about deer population size and overabundance. These researchers are actively investigating new ways to analyze data from standard trail cameras—commonly used by private citizens and landowners—to improve our estimates of deer population size in an area and determine what constitutes “overabundance” in deer populations.

Finally, the Cooperative Fish and Wildlife Research Unit Program has recently hired a new genomics expert whose talents and training will help us unravel some of the thorniest questions in deer taxonomy and population status. Some 30 or so subspecies taxa have been proposed in North American whitetail deer, and the status of these populations is very much in need of a rigorous re-evaluation. Modern genomic techniques can help trace the ancestry and evolutionary history of individual deer populations, identifying past genetic bottlenecks and more recent events such as intermixing or translocation of individuals from one population to another. By doing so, we can help align our management prescriptions and units more closely with actual biological populations of deer and identify those populations in need of conservation assistance before the status of these



Biologists deploy a GPS collar on a cow elk. Elk location data collected from the collars help wildlife managers map elk movement and habitat use, design hunting seasons to meet objectives, monitor the effects of wolves on elk density, and evaluate the effects of elk density on potential disease transmission.

populations becomes critical.

Science has played an important role in the recovery of whitetail deer and many other big game species around the globe. The Boone and Crockett Club can be proud of its role in fostering the scientific research needed to recover and manage our most iconic big game species. Working together, the Club's regular and professional members and the broader scientific community can help ensure a bright future for wildlife. ■

A group of mule deer crosses a stream in spring 2020 on the Red Desert to Hoback Corridor in Wyoming. Such stream crossings are natural bottlenecks, where disturbances and barrier effects can be magnified.



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