



More questions than answers on climate

By Mike McKibbin
NWCO Hunting Guide

Deer and elk herds in northwestern Colorado might be affected by climate change at some point, according to biologists in Colorado and elsewhere studying how warming temperatures, weather events and other factors affect wildlife and plant species. However, no effects have been attributed to it at this time.

Climate change is included in the 2016 State Wildlife Action Plan and knowing what could happen is also important economically with big game hunting a large part of the state's economy, especially in northwestern Colorado.

Colorado Parks and Wildlife noted in a 2017 economic study that hunting in northwest Colorado produced \$136 million in economic output, \$50 million in salaries and wages for 1,488 workers, \$9 million in state and local taxes, \$12 million in federal taxes and \$77 million in gross domestic product contributions. The study also noted big game is the most popular hunting activity in Colorado, and the northwest region had the most big game hunters by a fairly large margin.

Bill de Vergie, area wildlife manager in Meeker, noted the difficulty in gauging impacts from

climate change among the area's big game animals.

"We know we are seeing changes, but we don't have a way to measure it to say it was definitely caused by climate change," he said. "There's also things like other recreation uses, disease, loss of habitat that probably have more of an impact right now and can be measured."

The latest statewide deer and elk herd estimates are 418,500 deer and 277,750 elk, de Vergie added.

The northwest region deer herd is estimated at 167,000 (approximately 40 percent of the statewide herd) and the Area 6 deer herd at 75,000 (approximately 18 percent of the statewide herd). The northwest elk herd is estimated at 133,500 (approximately 50 percent of the statewide herd), while the Area 6 elk herd is estimated at 81,000 (approximately 30 percent of the statewide herd).

The northwest region includes the northwestern quarter of the state, from Grand Junction (north half of Grand Mesa) east to Frisco and Silverthorne (Continental Divide), north through North Park (Walden) to Wyoming, west to Utah and south to Glade Park. Area 6 covers all of Rio Blanco and Moffat and portions of Routt and Garfield counties, including the towns of Meeker, Rangely and Craig.

Tony Byrne is a fish and wildlife biologist with Eco Resource Solutions in Arvada and a big game hunter in Colorado. He noted a significant decline in the state's mule deer population since the 1990s, especially on the West Slope. However, he was unsure climate change could be tied to that drop.

"Elk numbers have been fairly stable, probably because elk are a more hardy animal," Byrne added. "And whitetail deer numbers in Eastern Colorado are up. It's just hard to apply anything directly to climate change at this time when it comes to big game animals."

David Inouye, a biology professor at the University of Maryland, has followed seasonal events for many years at the Rocky Mountain Biological Laboratory, a high-altitude biological field station near Crested Butte in the West Elk Mountains.

"I can tell you we've seen animals like foxes and moose up here that we didn't see before," Inouye said. "The deer seem to be doing OK right now."

Andrew Jakes is a wildlife biologist in the Colorado office of the National Wildlife Federation with a focus on big game species migration in Montana and Canada. He recalled a 95 percent winter mortality rate among pronghorn antelope and mule deer in Montana and Saskatchewan

in 2010-11, mostly due to heavy snowfall.

Jakes also said he has observed changes in what he called “surfing the green wave” by some bird species. In other words, they altered their migration from historical routes to be able to find food.

“In 2009, we had the first set of pronghorns in Edmonton that far north because they had followed the green wave,” Jakes added.

Big game animals will be affected, Inouye stated, especially if winter frosts damage the plants they forage on.

“Any future problems for both pollinators and plants could affect the forage base for all wildlife,” Inouye added.

Pollinators have been moving up in altitude while wildflowers seem to be declining, he said.

If deer, elk, moose and other large mammals are forced to higher elevations on the same range, that could add to overgrazing, Inouye stated, while insects such as mosquitoes that carry the West Nile virus might move up and cause more disease among wildlife.

“We’re already seeing ticks at 9,500 feet pretty regularly,” Inouye said, which could affect big game animals as well.

WILDLIFE PLAN INCLUDES VULNERABILITY ASSESSMENT

The state wildlife action plan helps identify priority species and habitats that need conservation efforts and describes potential conservation actions to address threats to species and habitats. Including climate impacts in the plan was also specifically called for in the Colorado Climate Plan. Wildlife action plans are revised every 10 years to continue receiving federal wildlife grants, which significantly support several conservation projects, according to Parks and Wildlife.

Parks and Wildlife, Colorado’s Natural Heritage Program at

Colorado State University and the U.S. Department of the Interior North Central Climate Science Center updated the plan using best available science on climate information, outlined in a habitat-based climate change vulnerability assessment.

“Climate projections for Colorado are generally in agreement that the state will experience temperature increases between 2-5 degrees by mid-century,” researchers wrote in the assessment. “Projections for future precipitation are variable, ranging from very dry to approximately 10 percent wetter than current conditions. How climate change will ultimately manifest in Colorado, as well as potential impacts to wildlife species and habitats, is largely unknown at this point.”

Researchers wrote in the assessment that mountainous areas will warm slightly less (0.4-0.5 degrees) than elsewhere. Temperatures in northeastern and northwestern Colorado are projected to increase by around 4.3 degrees, with increases of around 3.6 degrees in central parts of the state.

Winter temperatures show a similar pattern, with the greatest potential warming (4.7-5 degrees) projected for non-mountainous areas in the northern half of the state. Under the warmest scenario, cold summer nights below freezing in most of Colorado’s alpine areas would be mostly eliminated in many parts of the state.

Precipitation changes could be positive or negative, researchers stated. Under projected wetter conditions, mountain areas are most likely to see increased winter precipitation.

Warmer temperatures are likely to include more heatwaves, fewer cold snaps and generally extended frost-free periods, researchers wrote. Although these conditions could benefit many species if precipitation remains adequate, the warming trend is likely to be accompanied by drier

conditions in many areas, they added.

“Even if Colorado’s precipitation levels at higher elevations are essentially unchanged, warmer conditions will lead to more precipitation falling as rain instead of snow, a decreased snowpack, earlier runoff, and earlier dry conditions in late summer,” researchers stated. “All of these factors may interact with stressors such as fire, forest pests and diseases, drought and evolutionary disturbance that alters a particular habitat.”

Mike Gutzmer is a certified wildlife biologist with The Wildlife Society and New Century Environmental in Columbus, Nebraska, a consulting firm on threatened and endangered species. He noted episodic weather events (droughts, floods, fires, etc.) can sometimes have more impact than subtle climate changes.

“So if you have both short- and long-term climate changes, that can really affect a species,” Gutzmer said.

Changes in climate can cause shifts in water availability, which is critical to big game herds, Gutzmer added. Available forage may be an issue if certain species (nutritious cool and warm-season grasses, fescues, small shrubs, etc.) become stressed or non-existent, he stated. Invasive species could impact population thresholds for native plants and animals. Along with temperature fluctuations that could lead to different diseases affecting the overall condition of deer and elk, fertility and available females for breeding might be issues, too, he added.

Gutzmer said he would recommend big game managers periodically monitor big game animals to help determine vulnerability. Good population data is important, he noted.

“At the end of the day, right now no one really knows what might happen,” Gutzmer said. “We have a lot of models but no real experiences to point to.”