

# Biologists study climate change's effects on elk

■ 'We are definitely concerned,' researcher says

By DICK MASON

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STARKEY — Rocky Mountain elk in Northeastern Oregon may fall prey to climate change.

U.S. Forest Service research biologist Mike Wisdom and Casey Brown, a research biologist with the Oregon Department of Fish and Wildlife, are among a growing number of people who are concerned about the role climate change is playing in nature. Wisdom and Brown are helping conduct a Starkey Project study aimed at determining if climate change will hurt Rocky Mountain elk reproduction.

The study is not complete and intensive data analysis remains to be done, but its preliminary findings indicate that climate change could cause elk populations to decline in Northeastern Oregon and other areas.

"We are definitely concerned," Wisdom said.

The reason for the worry is that rising temperatures resulting from climate change are reducing the amount of time quality vegetation is available to elk.

"The nutrition window for elk is shifting," Wisdom said. "It is more compressed."

## Climate change's impact

Wisdom said cow elk now have less time in the spring and early summer to build up fat reserves, which are critical for having successful pregnancies and producing the milk needed to raise their calves.

"Lactating females have higher energy demands and thus are more sensitive to climate change," he said.

Brown said that in the past the most nutritious vegetation available to elk, grasses and

forbs flush with new growth, were available in Northeastern Oregon from early spring to early summer. This vegetation is now available on a less nutritious — but still valuable level — from early summer to mid-summer, followed by a brown period when there is little precipitation, from mid-July through the fall, a time when most of the vegetation available is dried out and offers little nutritional value.

Today, the best forage for elk is available for about two fewer weeks than before, and the "brown" periods runs three to four weeks longer.

"There is now a more pronounced period of low precipitation during the summer and fall," said Wisdom, co-project leader of the Starkey Project with Darren Clark of the Oregon Department of Fish and Wildlife.

Brown anticipated, when she and research biologist Priscilla Coe started their plant study at Starkey in 2015, that they would find less forage was available to elk than three decades ago. But she was surprised by how much it had decreased.

"It was greater than I thought it would be," she said.

Rising temperatures are impacting vegetation growth for a number of reasons, Brown said. Snowpacks in mountains are melting earlier and faster

each winter and early spring. Previously, snowpacks would melt slowly, allowing rivers and streams to maintain strong flows longer.

"Winter snowpacks before provided a steady, slow delivery of water to the region during the spring and summer," Wisdom said.

Slow melts of winter snow meant that moisture needed for the growth of grasses and forbs was available longer, giving cow elk more time to consume them and develop fat reserves needed for successful pregnancies and lactation.

Another climate change factor that may be hurting elk is that much more of the precipitation the region is receiving is now in the form of rain rather than snow. The change is hurting elk because rain runs off faster from the region in streams and rivers, unlike snowpacks, which slowly disperse moisture as they melt.

"Replacing snow with rain is not good for elk," Wisdom said.

## Groundbreaking work

Biologists understand how changing weather patterns impact the growth of grasses and forbs because of extensive studies conducted at the Starkey Project site in the 1990s by Coe and research biologist Bruce Johnson, now both retired.



Jim Ward/Contributed Photo

A Starkey Project study is helping to determine if climate change is hurting Rocky Mountain elk reproduction by leaving less time in the spring and early summer to build up fat reserves, which are critical for having successful pregnancies and producing the milk needed to raise their calves.

The biologists measured plant growth at plots there throughout the year and determined how changes in temperature and precipitation in the region impacted it.

Wisdom admires how forward thinking Coe and Johnson were when they did their study in the 1990s.

"It took a lot of foresight," he said. "This was before climate change was a major issue."

The plant study conducted in the 1990s by Coe and Johnson was followed by Brown and Coe's study from 2015 to 2019. Brown and Coe measured plant growth at the same plots used in the 1990s study.

The Starkey Project, based at a 25,000-acre fenced facility, is a joint wildlife research project conducted by the Oregon Department of Fish and Wildlife and the U.S. Forest Service

at the Starkey Experimental Forest and Range, 28 miles southwest of La Grande.

The project is designed to measure the population response of deer and elk to the intensively managed forests and rangelands of the future. Research at the Starkey Project began in 1989.

Research done at the Starkey Project is one reason scientists understand how critical it is for cow elk to develop fat reserves needed for successful pregnancies and to raise their young. The Starkey Project site is one of the places that body fat levels of cow elk were measured during a breakthrough study by John and Rachel Cook, a husband and wife team of biologists who were working for the National Council for Air and Stream Improvement.

The Cooks compared levels

of body fat in cow elk to their pregnancy rates and their lactation levels. They did this with elk that were easy to handle because they were comfortable around humans after being raised at the Starkey Project site by the Cooks.

"They did groundbreaking work," Wisdom said.

Mountains of animal, plant and atmospheric data have been collected at the Starkey Project site the past three decades. It includes temperature statistics indicating that in the past three decades the average monthly temperatures there have risen 2½ to 3 degrees. Such temperature jumps are concrete and disturbing evidence of a changing world, Wisdom said.

"Climate change has already occurred," he said. "It is not hypothetical."



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A Starkey Project study is helping to determine if climate change is hurting Rocky Mountain elk reproduction.



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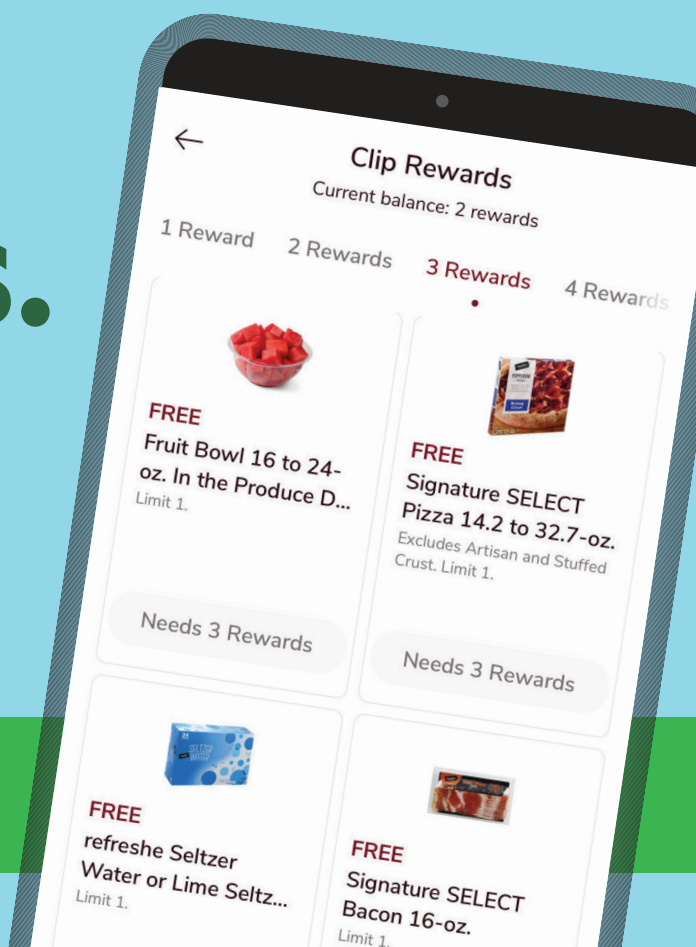
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