

A changing season means a changing diet for bison, study finds

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An American bison grazing. Credit: J Schmidt / NPS

North American bison adjust their diet seasonally in order to take full advantage of the growing season when grasses become less nutritious, a new study led by researchers at the University of Colorado Boulder has

discovered.

The findings, which were recently published in the journal *PLOS ONE*, indicate that [bison](#) are not entirely reliant on grass for their nutritional needs and can selectively expand their foraging to include [woody shrubs](#) and [flowering plants](#) during the spring and fall.

The study sheds new light on variations in the large herbivore's eating habits and may have future implications for management and conservation of bison in Colorado and across the American West.

"We wanted to know if bison might change what they eat as the season goes on and how that affects the microbial composition of their gut," said Gaddy Bergmann, a doctoral candidate in the Department of Ecology and Evolutionary Biology at CU-Boulder. "This study shows that it may be beneficial for the species to have other plants, bushes, and trees available to browse from."

The 166-day study conducted in 2011 sampled a herd of roughly 300 bison living in the Konza Prairie Biological Station in the Flint Hills area of northern Kansas. Bison were reintroduced to the protected native tallgrass sanctuary in 1987.

By sequencing the plant and bacterial DNA found in the bison's fecal samples, researchers at CU-Boulder were able to identify the types of plants that the bison were consuming over time. The researchers found that the bison are willing and able to consume higher quantities of woody shrubs in the early spring and in fall when their preferred menu item—fresh grass—is less available.

The researchers then identified benign gut microbes present in the bison's lower digestive tract and traced how the abundance of those microbes changed over time. Some bacteria became more abundant

during the growing season as the bison switched to more energy-rich foods in the summer and autumn.

Other grazing animals throughout the world, such as elk and wildebeests, migrate over long distances in order to follow their food supply. Historically, bison did so as well, but are more sedentary in their range today, making them more susceptible to seasonal changes in vegetation.

While an estimated 20 to 30 million bison once roamed the North American landscape, hunting and habitat encroachment reduced the population to just a few thousand by the end of the 1800s.

More information: Gaddy T. Bergmann et al. Seasonal Shifts in Diet and Gut Microbiota of the American Bison (*Bison bison*), *PLOS ONE* (2015). [DOI: 10.1371/journal.pone.0142409](https://doi.org/10.1371/journal.pone.0142409)

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