



National Bison Association

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Seth Meyer
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Office of the Chief Economist
U.S. Department of Agriculture
1400 Independence Ave., SW
Washington, D.C. 20250

RE: Docket No. USDA-2021-0003
Submitted via www.regulations.gov

Dear Mr. Meyer and All,

The National Bison Association, representing 1,200 ranchers, processors and marketers in 49 states, offers these comments in response to the *Request for Public Comment on the Executive Order on Tackling the Climate Crises at Home and Abroad*.

North American bison are in the crosshairs of changing climate, but our national mammal can also play a vital role in addressing this crisis.

The complex quilt work of grassland ecosystems historically covered between 20 percent and 40 percent of the North American landmass, depending upon how those grasslands were defined.^{1,2} Grassland ecosystems around the world evolved over thousands of years under the influence of periodic droughts, fire and grazing animals.³ In North America, bison were the keystone grazers that sculpted these grassland ecosystems.

Grasslands are inherently effective carbon traps with up to 343 billion metric tons of organic carbon stored to a depth of one meter. These grasslands sequester large amounts of soil organic carbon (SOC) because of a high belowground carbon allocation, root turnover, and rhizodeposition.⁴

In a sense, grasslands are the equivalent of the North American rainforest. In fact, in 2018 the University of California at Davis released a study entitled *Grasslands May be More Reliable Carbon Sink than Trees in California*. Because significant levels of the carbon captured by trees is largely stored aboveground, increasing instances of wildfires have turned those forests from carbon sinks to

¹ Nunez, C (2019) Grasslands, explained, National Geographic, Washington, D.C. March 15.

<https://www.nationalgeographic.com/environment/article/grasslands>

² Andres, C (2019) Grasslands: A Lot More than Just Flyover Country, World Wildlife Fund, February 5.

<https://www.nathab.com/blog/grasslands-a-lot-more-than-just-flyover-country/#:~:text=They%20are%20the%20America%20of,%20of%20the%20original%20grasslands%20remain.>

³ Anderson, R (2006) *Evolution and origin of the Central Grassland of North America: climate, fire and mammalian grazers*, The Journal of the Torrey Botanical Society, October 1. [https://bioone.org/journals/the-journal-of-the-torrey-botanical-society/volume-133/issue-4/1095-5674\(2006\)133%5b626%3aEAOOTC%5d2.0.CO%3b2/Evolution-and-origin-of-the-Central-Grassland-of-North-America/10.3159/1095-5674\(2006\)133\[626:EAOOTC\]2.0.CO;2.full](https://bioone.org/journals/the-journal-of-the-torrey-botanical-society/volume-133/issue-4/1095-5674(2006)133%5b626%3aEAOOTC%5d2.0.CO%3b2/Evolution-and-origin-of-the-Central-Grassland-of-North-America/10.3159/1095-5674(2006)133[626:EAOOTC]2.0.CO;2.full)

⁴ Lorenz, K; Lal, R (2018) Carbon Sequestration in Grassland Soils. Carbon Sequestration in Agriculture Ecosystems, pp 175-209, Springer, June 1. https://link.springer.com/chapter/10.1007/978-3-319-92318-5_4

carbon sources. Grasslands, meanwhile, store higher levels of carbon belowground. That carbon remains sequestered even during periods of fire.⁵

As noted above, grasslands cannot thrive in a vacuum. Interaction with grazing ungulates is vital to maintaining the health of those ecosystems. Bison are equipped by nature to serve as the most efficient “gardeners” of the grasslands.

However, the accelerating degree of climate change now underway threatens the future of this species and the economic sustainability of the North American bison business. The impacts are manifold:

- Climate change impacts, specifically temperature rise, are predicted to decrease plant production in much of the American West.
- Drought and flooding events are expected to intensify and become more frequent.
- Higher temperatures combined with more intense and frequent severe weather events will continue to naturally decrease the overall productivity of grasslands and rangelands, resulting in reduced carrying capacity for bison and other livestock.

Additionally, a growing body of research is documenting that steadily warming temperatures are causing a reduction in the body size and reproduction rates in bison, as well as contributing to an increase in parasitism and stress-related diseases.

Research conducted by Dr. Jeff Martin and Dr. Perry Barboza found that, over the last 50 years, bison at Wind Cave National Park have lost on average 115 kg per 1°C rise in local mean decadal temperature and lost an additional 16 kg per unit increase of Palmer Drought Severity Index (≈harshness).⁶ Given that climate change in the Great Plains of North America is expected to raise local temperatures by an additional 2-5°C under various projection scenarios, that would essentially decrease the average body mass of bison by 22-46%, in large part due to increasing thermoregulatory demands in hotter, drier climates.⁷

Providing voluntary, market-based incentives for bison ranchers and other livestock producers to protect, expand and restore healthy grasslands can provide vital components of Climate-Smart Agricultural Policies.

Five specific components are vital for the success of this type of voluntary, market-based approach:

1. Establish Accredited Third-Party Verification of Carbon Sequestration

The landscape for measuring and verifying carbon sequestration in soils resembles the variation in organic certification practices prior to the implementation of the National Organic Standards in 2002. Like the National Organic Standards, USDA should implement a system of Accredited Carbon Sequestration Certifiers, who would adhere to uniform standards and

⁵ Dass P, et al (2018) *Grasslands May Be More Reliable Carbon Sinks Than Forests in California*, Environmental Research Letters, University of California at Davis.

[file:///C:/Users/Owner/Dropbox/My%20PC%20\(DESKTOP-SQC2V6A\)/Downloads/Grasslands may be more reliable carbon sinks than .pdf](file:///C:/Users/Owner/Dropbox/My%20PC%20(DESKTOP-SQC2V6A)/Downloads/Grasslands%20may%20be%20more%20reliable%20carbon%20sinks%20than.pdf)

⁶ Martin, J. M., and P. S. Barboza. (2020a.) *Decadal heat and drought drive body size of North American bison (Bison bison) along the Great Plains*. *Ecol. Evol.* 10:336–349. doi:10.1002/ece3.5898. Available from:

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ece3.5898>

⁷ Martin, J. M., and P. S. Barboza. (2020b) *Thermal biology and growth of bison (Bison bison) along the Great Plains: examining four theories of endotherm body size*. *Ecosphere*. 11:e03176. doi:10.1002/ecs2.3176. Available from:

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ecs2.3176>

practices. Any producer wanting to voluntarily participate in a market-based carbon credit program would be required to use some of these accredited certifiers.

2. Increase Financial Rewards for Participants

Although financial incentives have been expanding in recent years, those incentives often do not offset the practices producers can implement to enhance carbon sequestration. We recommend a value-share arrangement in which qualified participating producers would receive additional financial rewards in addition to any market-based revenue from selling carbon credits.

Incentive programs must also recognize that producers' capacity to capture carbon varies due to different soil types, climatic conditions and other factors. Those programs should provide adequate incentives for participation among all producers, regardless of their soil potential.

3. Expand Technical Assistance

Several programs administered by the Natural Resources Conservation Service, such as the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program (CSP), target resources to projects that demonstrate protection of soil and water resources. Carbon sequestration should be added as a factor in determining eligibility for these programs.

Expanded focus on research and extension will help producers incorporate carbon sequestration practices in their operation. Funding provided through the National Institute for Food and Agriculture (NIFA) should allocate additional resources to support research into carbon-friendly agricultural practices. In addition to working with individual land grant universities, including 1890 and 1994 institutions, NIFA should give funding priority to centers of excellence such as the Center of Excellence for Bison Studies in Rapid City, SD.

Cooperative Extension must be challenged to provide the outreach that will help producers incorporate those practices in their own operations. Grant funding should be made available as well for producer organizations to provide educational outreach services to their constituents.

4. Reward Early Adopters

Across the country, many bison ranchers and other livestock producers have been implementing carbon sequestration and other climate friendly practices for many years. Any incentives developed to encourage producers to adopt new practices should include those ranchers and farmers who can demonstrate their commitment over the past five years.

5. Include Producer Input in Developing and Implementing Programs

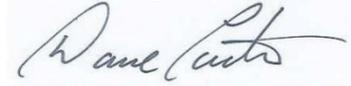
The Growing Climate Solutions Act now under consideration in the United States Senate includes the establishment of a Producer Advisory Council to assist the Secretary in developing and implementing programs to sequester carbon and to reduce greenhouse gas emissions. The legislation specifies that the council should meet no less than annually. We feel that it is imperative that this council meet at least twice each year to develop recommendations, and to receive public input in a manner similar to the operation of the USDA National Organic Standards Board.

As noted in the request for comments, USDA is demonstrating a commitment to assure that programs, funding and financing capacities, and other authorities are available to all landowners, producers and communities.

Tribal producers and Tribal lands provide a strong opportunity for advancing carbon sequestration and other carbon-friendly agricultural practices. The National Bison Association and the InterTribal Buffalo Council operate through a formal Memorandum of Understanding to collaborate on programs and policies to increase bison herds on Tribal lands. Grant funding and technical assistance provided through USDA can support the expansion of these types of interorganizational collaborative programs.

We hope that these comments provide useful input as USDA develops new initiatives and incentives to promote a climate-smart agriculture and forest strategy. The National Bison Association is willing to provide any additional information or guidance regarding the information in these comments.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Dave Carter", is placed over a light blue rectangular background.

Dave Carter

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