Oversight Hearing on "Increasing Carbon Soil Sequestration on Public Lands."

Wednesday, June 25, 2014 at 2: 00 p.m. in room

Subcommittee on Public Lands and Environmental Regulation

1324 Longworth House Office Building, Washington, D.C. 20515.

Statement of John Wick, Rancher, Nicasio, California

Thank you for convening this important meeting and inviting me to share our research and experience with soil carbon sequestration on grazing lands. My name is John Wick and I am a rancher from Northern California, speaking today on behalf of the Marin Carbon Project. The Marin Carbon Project is a consortium of ranchers and land managers, researchers, extension specialists, non-profits, and local and federal agencies working on improving rangeland productivity and sustainability (see attachment 1 for a list of members and their affiliations). One way that our group differs from some others is that we work closely with researchers and extension from some of the country's best universities to take a rigorous scientific approach to measure changes in soil carbon from management. While there are a lot of claims of management approaches increasing soil carbon, many of these do not turn out to be true when you actually measure the soil. This is a key important point, as poor management can have long lasting detrimental effects on the health and productivity of public lands, and has resulted in soil carbon losses (Lal 2004, Bai et al 2008).

Research <u>does</u> show that increasing the carbon content of rangeland soils improves the drought resistance, decreases erosion, and increases forage production (Havstad et al. 2007, DeLonge et

al. 2014). It also, by the way, is better to store carbon in soils than in the atmosphere where it apparently wreaks havoc with the climate.

I want to start by answering the question: **Can management sequester carbon in rangeland soils? The answer is YES.** Every year I produce more than 50,000 pounds of grass-fed beef on land that was once considered heavily degraded. We restored the productivity of our land by replenishing the soil carbon content. Under the guidance of Dr. Jeffrey Creque, a rangeland ecologist and Dr. Whendee Silver a biogeochemist from UC Berkeley, I have implemented a management approach that stimulates grass growth. Those grasses use carbon from the atmosphere, and feed animals that produce food and fiber. Some of the carbon from the plants ends up in the soil, primarily through the production of more root biomass (Ryals and Silver 2013), and can stick around for decades to centuries (Ryals et al. 2014a). Research by Dr. Silver and her group showed that rangelands grazed by dairy and beef cattle had much more carbon, on average 50 metric tons more per hectare; 22 (US short) tons per acre to one meter depth, when the ranchers applied manure or compost to the soil (Silver et al. 2010). In our region, we dispose of manure from feedlots and dairies by spreading it as a thin surface dressing on the land. The material works its way into the soil and acts as a slow release fertilizer, growing more grass and increasing soil carbon. However, spreading manure can have a host of pollution and public health issues; it can also produce a lot of greenhouse gases (Davidson 2009). If you compost it before you spread it, it is pathogen free, and produces a lot less greenhouse gas.

After a one-time ½ inch compost application in 2008 to my ranch, we have measured a 50% increase in forage production for the last 5 years (Ryals and Silver 2013, additional data

available upon request). This is also true for other ranches where this was tested. The soil gained an additional ton of carbon per hectare each year (Ryals et al. 2014a). That represents over half a ton of extra forage and one and a half tons of CO_2 captured per acre per year.

Models showed that this will likely continue for decades as the compost continues to slowly break down, with all the co-benefits associated with increased soil carbon, including drought resistance and less erosion (Ryals et al. 2014b). Scaled to just 5% of California's grasslands each year, this practice would offset all of the state's annual agricultural and forestry emissions (DeLonge et al. 2013). **All of this has been published in peer-reviewed scientific papers over the last 3 years, and those papers will be provided to the committee.**

We have now expanded onto several local dairy and beef operations to further explore the opportunities to scale up this practice. The potential is big. A report to the California Air Resources Board showed that if California, the biggest dairy producer in the US, were to capture the organic waste stream, it would have enough compost to apply to a quarter of the state's rangelands at regular intervals. We have recently created a market protocol for this practice being review by the American Carbon Registry (provided with supplementary material), providing land managers an opportunity to participate in carbon trading to help support carbon sequestration in rangeland soils.

In closing, I would just repeat that peer-reviewed rigorous science shows that it is indeed possible to increase soil carbon sequestration on grazed lands, and that doing so initiates a cascade of beneficial effects that improves the value of public lands. We have used compost, but

there are likely other approaches that work well. It is absolutely critical however, that we use rigorous science to support our management decisions. That will in turn support our public lands and the livelihoods of the people who depend upon them.

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