George Monbiot

Meatwashing

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Claims that cattle ranching sequesters carbon and restores ecosystems have been used in highly effective marketing campaigns by the livestock industry. Just one problem: they're greenwash.

By George Monbiot.

This is an extract from my book Regenesis: feeding the world without devouring the planet. *I've been prompted to publish it here by a new phase in the cattle lobby's campaign to persuade us that its products are green.*

In recent years a new front in the public relations war has opened, promoting a remarkable claim: if managed in a particular way, animal farming can restore the living world and reverse climate breakdown.

Such assertions had been made for three decades. But they remained obscure until, in 2013, TED published a 20-minute talk by the rancher Allan Savory[1]. He maintained that by raising the numbers of cattle, sheep and goats kept on drylands – in one case by 400% – and using "planned grazing" in a "holistic management" system, he could reverse soil erosion and the spread of deserts, restore lush vegetation, bring back wildlife and even undo climate change. He showed before-and-after photos that appeared to provide spectacular proof of his claims.

His talk has now been watched 11 million times, between the TED site and YouTube[2]. His story was taken up by several documentaries, including the viral Netflix film, *Kiss the Ground*, narrated by Woody Harrelson[3].

I like Allan. When I was diagnosed with cancer, he sent me a kind and charming email. I know he's sincere and believes what he says. But, as soon as I watched his talk, I noticed that at least one of his claims could not possibly be correct. He stated that if we follow his prescription, "we can take enough carbon out of the atmosphere" to "take us back to pre-

industrial levels".

Since 1750, roughly 490 billion tonnes of carbon have been released from fossil fuels, and around 190 billion tonnes by cutting forests, draining wetlands, ploughing soils and other kinds of land use[4]. So, to return atmospheric carbon to pre-industrial levels, grassland soils would need to absorb 680 billion tonnes[i].

Since the dawn of agriculture, roughly 133 billion tonnes of carbon are reckoned to have been lost from the world's soils[5]. Of this, between 70 and 90 billion tonnes has been released from steppes, savannahs and grasslands, the ecosystems Allan is talking about[6]. As the great soil scientist Rattan Lal notes, the carbon lost from the world's living systems is roughly equivalent to the maximum amount they could, in a perfect world, absorb[7]. This means that grassland soils could draw down from the atmosphere a maximum of 13% of the carbon released in the industrial era.

This would still represent a massive contribution towards preventing climate breakdown. But unfortunately what could be done in theory is not the same as what can be done in practice. A study of the global potential for sucking up carbon by changing the way we farm suggests that, at most, 64 billion tonnes could be absorbed this century by agricultural soils[8]. If we assume, again being generous[ii], that two-thirds of this absorption happens on steppes, savannahs and grasslands, this brings the potential down to 43 billion tonnes, or about 6% of Allan's target of 680 billion.

Unfortunately, that's not the end of the matter. For even if Allan's system does cause carbon to be absorbed by the soil, that gain is counteracted by the greenhouse gases cattle, sheep and goats and their manure release: methane and nitrous oxide. A global review drawing on 300 papers found that, in the very best cases, the carbon absorption on grazing lands amounted to 60% of the greenhouse gases the animals on the land release, through burping and defecating[9]. In other words, livestock grazing, even if we make the most generous possible assumptions, cannot wash its own face, let alone reverse historical emissions.

To make matters worse, more recent scientific findings challenge the very notion of storing carbon in soil[10]. The old belief that large, stable carbon molecules (collectively called humus) persist in the soil for long periods appears to have been debunked[11]. Most of these molecules can be broken down by soil bacteria. And, as temperatures rise, increasing the speed at which bacteria process it[12], carbon is likely to be released from soil faster than scientists once reckoned[13]. It now seems wrong to treat any carbon as safely

removed from the atmosphere, if it's lodged in soils in which air circulates. (The carbon in waterlogged soils, such as peat and the mud in marshes, is more stable).

I phoned Allan to ask for evidence. I found his answers rambling and unconvincing[14]. He was unable to direct me to any scientific papers supporting the claims in his talk. But I wanted to be sure I wasn't missing anything. So, after *Kiss the Ground* was released, I set aside a month to read scientific papers about the "holistic" systems that he and other ranchers were promoting.

I discovered that there were similar problems with all his major claims. In a minority of cases, there were some improvements, by comparison to ordinary grazing, in soil quality and plant production, on ranches using his methods[15],[16],[17],[18]. But, as one paper notes, "the vast majority of experimental evidence does not support claims of enhanced ecological benefits", even by comparison to other kinds of grazing[19]. Even a review of the few scientific papers approved by Allan's organisation, the Savory Institute, found that his system performed no better than conventional but well-managed grazing[20]. A global review of the scientific evidence for Allan's system of "holistic planned grazing" found that there is no difference, on average, in plant growth between ranches following his methods, and ranches managed conventionally[21]. There seems to be plenty of evidence that his methods can inflict severe damage on ecosystems.

In his TED talk, Allan described the "crust of algae" that often grows on desert soils as "the cancer of desertification". Trampling by cattle destroys this "cancer", and allows a dense sward to grow in its place. In reality, the crust is a rich ecosystem of bacteria, fungi, algae, mosses and lichens, that prevents erosion and absorbs carbon and moisture[22],[23]. These crusts are often extremely fragile, and are quickly destroyed by cattle, often with devastating and irreversible consequences for ecosystems, as invasive, exotic plants can then colonise the land, replacing native species[24]. Trampling by livestock, which Allan claims improves the soil and helps it to store carbon, in most cases has the opposite effect, compacting and eroding it[25],[26],[27].

Intense grazing of the kind Allan promoted in his talk damages the vegetation on riverbanks, the crucial habitat for many species in drylands and deserts[28]. Drylands that livestock have never entered tend to have a greater range and abundance of native plants than those used for any kind of grazing[29]. As a general rule, the best way of ensuring that dryland ecologies recover is to remove the farm animals[30],[31],[32].

So what do the famous photos in his talk show? They purport to show bare, eroded land

miraculously springing back to life when his grazing regime begins: thick grass and shrubs surge from the naked ground and erosion gullies re-fill with soil. But is that really what they depict? Because they are either unlabelled or mislabelled[33], it's hard to tell. But at least a couple of them appear to show the opposite of what he claims: the survival or recovery of the ecosystem was caused not by introducing livestock, but by taking them away[34].

Sadly, scientific findings have not prevented some of the world's biggest meat companies from using false claims about the alleged benefits of pasture-fed beef in their advertising[35],[36]. Worse still, a new market has developed[37], in which companies such as Microsoft buy carbon credits from ranches practising holistic grazing[38], on the mistaken grounds that this offsets their emissions[39]. By making ranching more economically viable, this money is likely to accelerate climate breakdown, as land that might otherwise be rewilded continues to be grazed. In other words, the companies investing in these schemes ignore the opportunity costs of livestock farming. You might as well buy carbon credits from a coal mine.

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[i] The paper I've cited draws on figures that are 9 years old. So I've added to its total at the average emissions rate since then (roughly 9 billion tonnes of carbon a year).

[ii] In reality, the study suggests that pastures could absorb just 40% of the total.

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[1] Allan Savory, Joseph Geni (translator), 2013. *How to fight desertification and reverse climate change*. TED: Ideas Worth Spreading. https://www.ted.com/talks/allan_savory_how_to_fight_desertification_and_reverse_climate_change/transcript?language=en#t-1119536

[2] Allan Savory, 2013. *How to green the world's deserts and reverse climate change*. YouTube (TED), 4 March 2013. https://www.youtube.com/watch?v=vpTHi7O66pI

[3] Kiss the Ground. *Awakening people to the possibilities of regeneration*. https://kisstheground.com/

[4] Rattan Lal, 2018. *Digging deeper: A holistic perspective of factors affecting soil organic carbon sequestration in agroecosystems*. Global Change Biology, volume 24, issue 8, pp. 3285-3301. https://doi.org/10.1111/gcb.14054

[5] Jonathan Sanderman, Tomislav Hengl, and Gregory J. Fiske, 2017. *Soil carbon debt of 12,000 years of human land use*. Proceedings of the National Academy of Sciences, volume 114, issue 36, pp. 9575-9580. https://doi.org/10.1073/pnas.1706103114

[6] Rattan Lal, 2018. *Digging deeper: A holistic perspective of factors affecting soil organic carbon sequestration in agroecosystems*. Global Change Biology, volume 24, issue 8, pp. 3285-3301. https://doi.org/10.1111/gcb.14054

[7] Rattan Lal, 2010. *Managing Soils and Ecosystems for Mitigating Anthropogenic Carbon Emissions and Advancing Global Food Security*. BioScience, volume 60, issue 9, pp. 708–721. https://doi.org/10.1525/bio.2010.60.9.8

[8] Rolf Sommer and Deborah Bossio, 2014. *Dynamics and climate change mitigation potential of soil organic carbon sequestration*. Journal of Environmental Management, volume 144, pp. 83-87. https://doi.org/10.1016/j.jenvman.2014.05.017

[9] Tara Garnett et al., 2017. *Grazed and confused? Ruminating on cattle, grazing systems, methane, nitrous oxide, the soil carbon sequestration question – and what it all means for greenhouse gas emissions*. Food Climate Research Network, University of Oxford. https://edepot.wur.nl/427016

[10] Gabriel Popkin, 2021. A Soil-Science Revolution Upends Plans to Fight Climate Change. Quanta.

https://www.quantamagazine.org/a-soil-science-revolution-upends-plans-to-fight-climate-change-20210727/

[11] Johannes Lehmann and Markus Kleber, 2015. The contentious nature of soil organic matter. Nature 528, 60–68 (2015). https://doi.org/10.1038/nature16069

[12] Jennifer Soong et al, 2021. Five years of whole-soil warming led to loss of subsoil carbon stocks and increased CO2 efflux. Science Advances, volume 7, issue 21. https://doi/10.1126/sciadv.abd1343

[13] Andrew Nottingham et al, 2020. Soil carbon loss by experimental warming in a tropical forest. Nature volume 584, 234–237. https://doi.org/10.1038/s41586-020-2566-4

[14] George Monbiot, 4 August 2014. *Eat Meat and Save the World?*

https://www.monbiot.com/2014/08/04/eat-meat-and-save-the-world/

[15] W.R.Teague et al., 2011. *Grazing management impacts on vegetation, soil biota and soil chemical, physical and hydrological properties in tall grass prairie*. Agriculture, Ecosystems & Environment, volume 141, issues 3–4, pp. 310-322. https://doi.org/10.1016/j.agee.2011.03.009

[16] Oliver Jakoby et al., 2014. *How do individual farmers' objectives influence the evaluation of rangeland management strategies under a variable climate?* Journal of Applied Ecology, volume 51, issue 2, pp. 483-493. https://doi.org/10.1111/1365-2664.12216

[17] Christopher L. Crawford et al., 2019. *Behavioral and Ecological Implications of Bunched, Rotational Cattle Grazing in East African Savanna Ecosystem*. Rangeland Ecology & Management, volume 72, issue 1, pp. 204-209. https://doi.org/10.1016/j.rama.2018.07.016

[18] Matt Barnes and Jim Howell, 2013. *Multiple-Paddock Grazing Distributes Utilization Across Heterogeneous Mountain Landscapes: A case study of strategic grazing management*. Rangelands, volume 35, issue 5, pp. 52-61. https://doi.org/10.2111/RANGELANDS-D-13-00019.1

[19] David D. Briske et al., 2014. *Commentary: A critical assessment of the policy endorsement for holistic management*. Agricultural Systems, volume 125, pp. 50-53. https://doi.org/10.1016/j.agsy.2013.12.001

[20] Maria Nordborg and Elin Röös, 2016. *Holistic Management – a critical review of Allan Savory's grazing method*. Swedish University of Agricultural Sciences (SLU), Centre for Organic Food & Farming (EPOK) & Chalmers. ISBN: 978-91-576-9424-9. https://publications.lib.chalmers.se/records/fulltext/244566/local_244566.pdf

[21] Heidi-Jayne Hawkins, 2017. *A global assessment of Holistic Planned Grazing™ compared with season-long, continuous grazing: meta-analysis findings*. African Journal of Range & Forage Science, volume 34, issue 2, pp. 65-75. https://doi.org/10.2989/10220119.2017.1358213

[22] Jayne Belnap et al., 2001. *Biological Soil Crusts: Ecology and Management*. U.S. Department of the Interior, Technical Reference 1730-2 2001, BLM/ID/ST-01/001+1730. https://www.ntc.blm.gov/krc/uploads/231/CrustManual.pdf

[23] Merlin Sheldrake, 2020. *Entangled Life: How Fungi Make Our Worlds, Change Our Minds and Shape Our Futures*. Bodley Head, London, page 95.

[24] John Carter et al., 2014. *Holistic Management: Misinformation on the Science of Grazed Ecosystems*. International Journal of Biodiversity, volume 2014, article 163431. https://doi.org/10.1155/2014/163431

[25] Liming Lai and Sandeep Kumar, 2020. *A global meta-analysis of livestock grazing impacts on soil properties*. PLoS ONE, volume 15, issue 8, e0236638. https://doi.org/10.1371/journal.pone.0236638

[26] D. Cluzeau et al., 1992. *Effects of intensive cattle trampling on soil-plant-earthworms system in two grassland types*. Soil Biology and Biochemistry, volume 24, issue 12, pp. 1661-1665. https://doi.org/10.1016/0038-0717(92)90166-U

[27] S. D. Warren et al., 1986. *Soil Response to Trampling Under Intensive Rotation Grazing*. Soil Science Society of America Journal, volume 50, pp. 1336-1341. https://doi.org/10.2136/sssaj1986.03615995005000050050x

[28] John Carter et al., 2014. *Holistic Management: Misinformation on the Science of Grazed Ecosystems*. International Journal of Biodiversity, volume 2014, article 163431. https://doi.org/10.1155/2014/163431

[29] Norman Ambos, George Robertson and Jason Douglas, 2000. *Dutchwoman Butte: a relict grassland in Central Arizona*. Rangelands, volume 22, issue 2, pp. 3-8. http://dx.doi.org/10.2458/azu_rangelands_v22i2_ambos

[30] D.P. Fernandez, J.C. Neff and R.L. Reynolds, 2008. *Biogeochemical and ecological impacts of livestock grazing in semi-arid southeastern Utah, USA*. Journal of Arid Environments, volume 72, issue 5, pp. 777-791. https://doi.org/10.1016/j.jaridenv.2007.10.009

[31] Liping Qiu et al., 2013. *Ecosystem Carbon and Nitrogen Accumulation after Grazing Exclusion in Semiarid Grassland*. PLOS ONE, volume 8, issue 1, e55433. https://doi.org/10.1371/journal.pone.0055433

[32] W. W. Brady et al., 1989. *Response of a semidesert grassland to 16 years of rest from grazing*. Journal of Range Management, volume 42, issue 4, pp. 284-288. https://journals.uair.arizona.edu/index.php/jrm/article/viewFile/8383/7995

[33] aspidoscelis, 15 March 2013 at 7:32 pm. *Comment on thread – TED Talk: spreading bullshit about the desert*. FreeThoughtBlogs.com. Comment 25 on thread. https://freethoughtblogs.com/pharyngula/2013/03/15/ted-talk-spreading-bullshit-about-the-desert/#comment-580202

[34] David D. Briske et al., 2013. *The Savory Method Can Not Green Deserts or Reverse Climate Change*. Rangelands, volume 35. pp. 72-74. https://doi.org/10.2111/rangelands-d-13-00044.1

[35] Nicholas Carter and Dr. Tushar Mehta, January 2021. *Another Industry Attempt to Greenwash Beef*. Plant Based Data. https://plantbaseddata.medium.com/the-failed-attempt-to-greenwash-beef-7dfca9d74333

[36] Jessica Scott-Reid, 27 October 2020. *How Grass-Fed Beef Is Duping Consumers, Again*. Sentient Media. https://sentientmedia.org/how-grass-fed-beef-is-duping-consumers-again/

[37] James Temple, 3 June 2020. *Why we can't count on carbon-sucking farms to slow climate change*. MIT Technology Review. https://www.technologyreview.com/2020/06/03/1002484/why-we-cant-count-on-carbon-sucking-farms-to-slow-climate-change/

[38] Shan Goodwin, 29 January 2021. *Microsoft buys carbon credits from NSW cattle operation*. Farm Weekly. https://www.farmweekly.com.au/story/7105542/microsoft-buys-carbon-credits-from-nsw-cattle-operation/?cs=5151

[39] Robert Paarlberg, 22 January 2021. *President Biden, Please Don't Get Into Carbon Farming*. Wired. https://www.wired.com/story/president-biden-please-dont-get-into-carbon-farming/

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