Moo-Tualism

Grazing in the sea and on the range.
Words & photos by Dan Dagget.

One of the most common objections to the idea that grazing can benefit nature and the environment is: "How can cows eating grasslands make them healthy? Haven't you heard of overgrazing? Why not just get cows off and let the land become healthy by returning to nature?" The fact is there are a number of actual, real-world confirmations that animals benefit the plants they use at the same time they are benefited by being fed by those plants. This is one of the ways that nature works.

Take hummingbirds and wildflowers, for instance. As hummingbirds fly from one flowering plant to another feeding on nectar they pollinate those plants, enabling the plants to seed and reproduce and thus feed more hummingbirds. The same thing happens with bees. They also pollinate the plants on which they feed, helping them to reproduce and feed more bees. The term for this is mutualism.

One of my favorite examples of this kind of mutualism involves squirrels and nut trees. Squirrels eat most nuts they harvest, but they bury some for later use. When nut season is over, they dig up and eat some of the nuts they've stored, but leave others to sprout, grow, and produce more nuts for their squirrel "managers."

Recently I ran across an interesting example of this kind of mutualism that involves grazing animals and grasslands. What makes it so out-of-the-box is, first of all, it happens on the bottom of the ocean rather than on rangeland; and, second, its applicators (grazers) more closely resemble whales or dolphins than the hoofed herd animals we typically associate with grazing.

These ocean grazers are dugongs, the world's only vegetarian marine mammal, which can grow up to 10 feet long and weigh over 900 pounds. Dugongs (related to manatees) live in the shallow coastal waters of the Indian Ocean and the western Pacific and have a symbiotic relationship with seagrass, which they rely on for food. Seagrasses grow across large undersea meadows which resemble the grasslands on the earth's surface.

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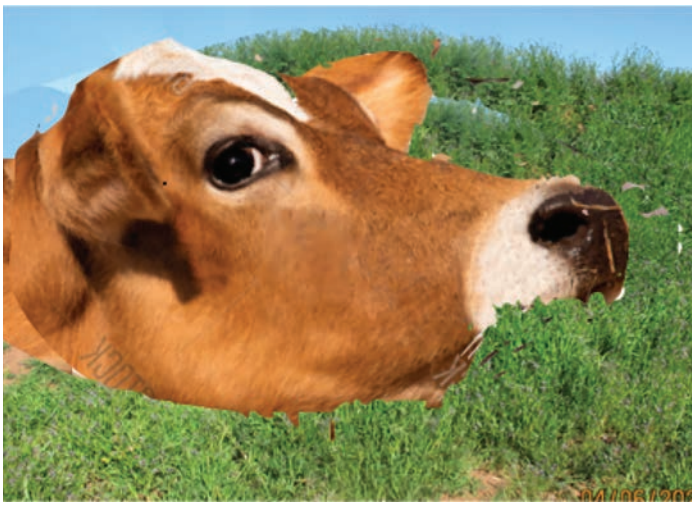


ABOVE: Sea cow. BELOW: Moo-cow.

Dugongs graze this underwater plant, eating it down to its roots, and, frequently, even pulling up the roots and consuming them too. According to a variety of sources this heavy-duty consumption actually benefits the plants in a couple of ways. First, even after being grazed down to their roots and more, the plants sprout new shoots and regrow. Add to this the fact that, as the dugongs swim around to graze, their dung spreads seagrass seeds over large distances. By sustaining and in some cases increasing the large undersea meadows of which they serve as managers, dugongs have become known as sea cows as well as "farmers of seagrass."

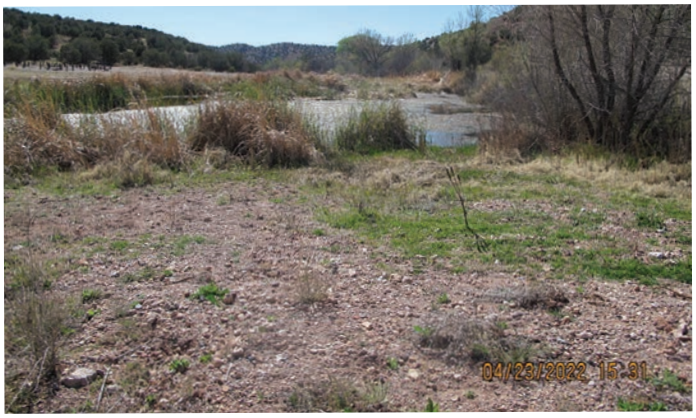
This mutualistic relationship between sea cows and seagrass provides valuable benefits to a number of species in addition to the two main participants. In some cases the beneficiaries even include humans. For one thing, underwater meadows sustained by dugongs provide habitat and breeding grounds for a variety of other marine species such as shrimp, shellfish and finfish. Millions of people depend on these species for food and livelihoods.

Going a step further on the scale of importance to humans (and other species), according to Christina Shaw in "Dugongs and their Seagrass habitat," as seagrass is grazed and regrows it sequesters carbon into its undersea habitat to the extent that it accounts for 10 percent of the annual carbon sink capacity of the Earth's oceans. Actually, it has been estimated that a hectare of the most effective seagrass meadows exceeds by ten-fold the carbon sink capacity of the same area of pristine Amazonian forest. According to K. Sivakumar of the Department of Endangered Species Management of the Wildlife Institute of India, "It can capture carbon from the atmosphere up to 35 times faster than tropical rainforests."

This serves as evidence that, under the sea or on the land, the mutualistic interaction between grazers and grasslands diminishes the increase in carbon that a number of people, including scientists and politicians, say is currently causing the globe to warm and the climate to change.

Unfortunately, in spite of the impressive list of benefits dugongs provide to the earthly ecology, their numbers are decreasing because of human activities such as coastal development and industry-caused water pollution along with being struck by boats, captured in fishing nets, and hunted by humans (which is forbidden in a number of areas). For that reason, a number of environmental groups, including the World Wildlife Fund, the Audubon Society, The Nature Conservancy, the Sierra Club, and more, have initiated campaigns to protect these "farmers of sea grass."

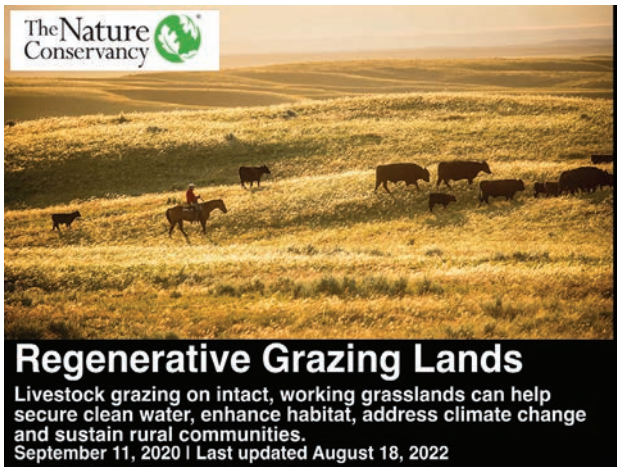
Associating moo-tualism with mutualism, most dugong-supporting groups are also partnering with ranching communities to increase regenerative grazing practices that create some of the same beneficial effects on

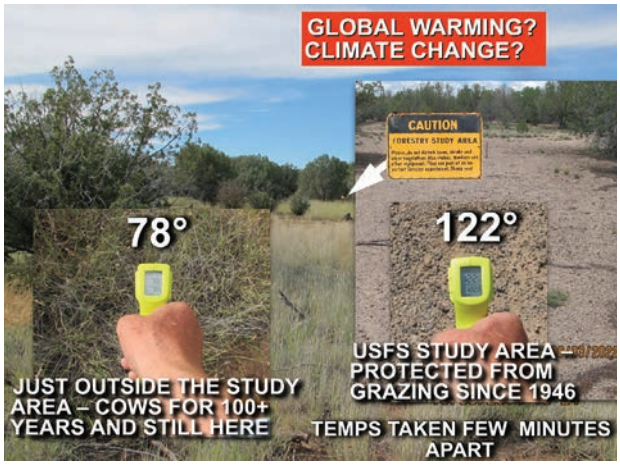


ABOVE: Grazed until this photo was taken in 2016, this land along the Verde River in Arizona confirmed the results of regenerative grazing: conserving biodiversity, sustaining water flow, sequestering carbon, sustaining rural communities, and more. And then (above right), five years after grazing was removed in 2017...these are the results. BELOW: The Nature Conservancy agrees that managed grazing does a lot of good.

rangeland that dugongs achieve on seagrass meadows. After range grass is grazed, if given the opportunity to sprout new shoots and regrow, it sequesters carbon just as seagrass does. Also, as hoofed animals graze and move they spread seeds as well as nutrients with their feces, and as they move they fracture the soil crust, enabling more effective absorption of both nutrients and water. This makes rangeland more effective at sequestering carbon in the same way as sea meadows grazed by dugongs.

Rangeland invigorated by this mutualistic interaction also provides a more vital habitat for a diversity of other species. As the World Wildlife Fund puts it in its Sustainable Ranching Initiative: "Grasslands evolved to be grazed. The feeding activities of herbivores provide patches of vegetation across the landscape which wildlife utilizes.... Intact grasslands not only conserve biodiversity, but ensure cleaner streams and more carbon stored in the soil." The Nature Conservancy Regenerative Grazing Lands website states, "Livestock grazing on intact, working grasslands can help secure clean water, enhance habitat, address climate change and sustain rural communities." Researching an article for *RANGE* magazine ("Fake Green vs. Real Green," Winter 2020)" provided confirmation of this for me, showing, among other things, that some of the largest known populations of some native species, including a few fish and birds that have become rare (even endangered), can be found on a ranch in New Mexico.





ABOVE: A U.S. Forest Service study plot confirms that grazing regeneratively cools the land surface by covering it with grass. The temperature readings shown here were taken within a few minutes and a few feet of one another. One on regeneratively grazed land and one on land fenced from grazing for more than 70 years.

Some environmental groups have also realized that grazing in a mutualistic manner can help prevent wildfires, reduce their size, and heal the damage they cause.

The clear ecological benefits of mutualistic grazing on land as well as sea make it difficult to understand why environmental groups working to keep dugongs grazing seagrass are working to halt grazing on grasslands. The Center for Biological Diversity, for instance, has participated in filing a lawsuit opposing the construction of a new U.S. military base in Okinawa, Japan, because it would pave over some of the habitat of endangered Okinawa dugongs. At the same time, the CBD, allied with other like-minded environmental groups, has initiated a long list of lawsuits to cease and prohibit grazing on millions of acres of rangeland from Arizona to Oregon.

Why would environmentalists so committed to protecting one species of environmentally beneficial grazing animal (dugongs) be so committed to removing other species of environmentally beneficial grazing animals (cattle) that create the same ecological benefits?

Sounds like the right question to ask. ■

Dan Dagget is a freelance writer and speaker, a Pulitzer Prize nominee, and a redirected eco-radical. He was selected by the Sierra Club as one of 100 environmental heroes on the occasion of the group's centennial celebration and was one of the earlier members of Earth First! before changing direction to help ranchers and environmentalists work together. Check rightwaytobegreen.com. His most recent book, "Gardeners of Eden, Rediscovering Our Importance To Nature" is available in print and as an e-book from the University of Nevada Press.