

Triage Time in the Desert

**A Conversation with Chad Boyd
Research Leader for USDA-ARS at
Eastern Oregon Agricultural Research Center
Burns, Oregon**

**by
Ellen Waterston**

Heading south out of Burns on Highway 205 (aka Frenchglen Highway), you're likely focused on scouting big game hunting units near the Malheur National Refuge. Or adding to your life-list of raptors and water birds along the Blitzen River. Maybe tracking down wild mustangs in the Steens Mountain area. How about hustling a replacement power wheel back to your ranch outside of Diamond to get the gosh darn swather up and running again. So you'd be forgiven if you sped past the cluster of nondescript beige structures five miles out of town. But only just this once. Here's why.



The work taking place in and around these buildings is dedicated to ensuring that all who enjoy the high desert, in a myriad of ways, can count on its ecosystem staying healthy. This maze of offices, laboratories, and outbuildings anchors the 640-acre campus of the [Eastern Oregon Agricultural Research Center \(EOARC\)](#). It's run cooperatively by EOARC, [Oregon State University](#), and the [Agricultural Research Service of the United States Department of Agriculture \(USDA-ARS\)](#) who share the mission of providing “science that underlies sound land and livestock management.” The complex serves as the headquarters of EOARC’s ranch-like operation where hay is raised on its meadowlands to winter-feed 250 mother cows, complemented by 16,000 acres of federal rangeland for summer and fall pasture, home to juniper, sagebrush, grasses and forbs. Ten-plus full-time scientists are constantly monitoring the livestock, rangeland, wildlife, watershed and forest both in the field and in the campus laboratories to optimize production and conservation in the face of ecosystem change.

What has these rangeland scientists working overtime is a three-headed monster, an exponentially growing triple threat: the spread of invasive annual grasses that propagate fire; the rapid colonization of the high desert rangelands by native conifers; and an increase in wildfires. The name given to the strategic approach being implemented is apt: threat-based land management. It's triage time on the high desert.

"We want people to understand how the sagebrush ecosystem works. We use our science and that of others to expedite that understanding."

- Chad Boyd, Research Leader for USDA-ARS at EOARC

On a good day, the glue that holds the high desert's sagebrush ecosystem together is perennial bunchgrass. It's that shrub-steppe grass that has Research Leader Chad Boyd's attention. Fires, drought, and historical overgrazing have, in combination, dramatically compromised the bunchgrass population in many areas and, as a result, an insidious annual grass-fire cycle is gaining momentum. Drought-tolerant and fire-friendly species, such as cheatgrass and medusahead, are all too happy to move in on high desert ground laid bare by fire. This is a range war of a very different sort and, according to Boyd, there's a limited window to work it out. He emphasizes that "immediate establishment of native bunchgrasses following fire events determines eventual success in the plant community...not patience and time. We are losing 1.3 million acres per year of sagebrush habitat due to ecosystem failure." Boyd cautions this is not the occasion for finger pointing. "If we divide, at the current rate of loss, we're screwed. One thing we can't do is forget we have common enemies: cheatgrass, fire, and conifer expansion."

Working collaboratively, the re-establishment of bunchgrasses is goal number one for EOARC and its partners, including [The Nature Conservancy](#), which maintains a presence on the campus. Some scientists are developing new types of delayed germination bunchgrass. Others, such as Boyd and his team, are focused on getting existing native grasses back up and running. What they've come up with is a carbon-based seed coating. It protects perennial seeds that have been drilled into the ground from the effects of a pre-emergent herbicide applied to kill competing cheatgrass. Critical to the success of this approach is a synchronized one-pass system, according to Boyd, accomplished using a seed drill loaded with the carbon-coated seeds followed by a sprayer that targets the emerging downy brome.

The plant lab at EOARC is illuminated by the cotton candy glow radiating from grow lights suspended over tidy rows of small pots. Detailed chart notes are kept on each perennial sprout that has (or hasn't) emerged unscathed after the herbicide has been applied on its unwanted pot-mate, cheatgrass. The sense of shared purpose, teamwork, and optimism among everyone in the lab is palpable. When asked about how excited he must be, Boyd replies, in characteristic modesty, "I understand what the sagebrush ecosystem can do if we meet it halfway." He is quick to credit the teamwork by all the entities on that nondescript campus five straight miles outside of Burns, Oregon.

But the science and research Boyd does as a rangeland scientist is only half of the equation. The other half is education and outreach. "Science is not telling you what to do. Science gives you

information so you can decide what's best to do." Boyd puts it another way, "Science doesn't make decisions. People make decisions. Science simply helps people to make more informed choices. The highest and best use of science is helping people to think. Science should not be used as a cop-out. Do not use science to quit thinking. Promulgate that part of the brain to think in more depth."

Boyd approaches education and outreach efforts with the same energy and commitment he displays in his research work. "It's not 1850. We must realize we now have novel ecosystems so we can't just reflect on how we did things in the past." With his approach to teaching based on where we're going, not on where we've been, any given month of the EOARC year could include programs for students, classes for adults, presentations across the region and the state, publication of scientific papers, field days, or important stakeholder meetings to review current science findings. And then there's the [EOARC website](#) offering copious information on the challenges and hoped-for solutions facing the high desert's range, including many varied opportunities for engagement. "We want people to understand how the sagebrush ecosystem works. We use our science and that of others to expedite that understanding."

Originally from a Texas ranching family, Boyd did his undergraduate work at Texas Tech in Range, Wildlife and Fisheries Management, received his Master's in 1993 from Utah State in Rangeland Science, and a PhD in Rangeland Ecology and Management from Oklahoma State University in 1999, the same year he accepted a position at EOARC. That means the community of Burns and, more broadly, the high desert, has been his family's home for over two decades. He wouldn't have it any other way. He cites the continuity of cultures—Indigenous, Basque and buckaroo—evident in Harney County, the relative lack of change, the ability to fish, hunt, be alone and in silence. He treasures the fact that he can see mountain goats within fifty miles of his house and can readily access Steens Mountain where he feels he is "on a different planet." It's a unique ecosystem, one that Boyd is dedicated to fighting for as well as helping others understand and appreciate.

His ambition is that the high desert holds on to what it has, from an ecological and a cultural standpoint. He's the first to acknowledge the obstacles ahead and the need to learn from the good and the bad of our past management efforts, but, as Chad Boyd says, "Even in a mistake is a kernel of learning." As it turns out, that kernel just might be a carbon-coated seed.

Photo by Ellen Waterston