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Re-Vegetating with Mediterranean Annual Grasses – I Hope I am Wrong About This

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I was born and raised in Texas but trained as an ecologist and botanist in California. I recall returning home for holiday with just enough botanical knowledge to be dangerous, not to mention a nuisance to my family, and stepping on a "sticker" and wondering "what in the heck is that, really?" I was empowered by the discovery that the stickers on stickers are modifications of floral bracts.

Fast forward beyond graduate school and a post-doc, more years than I would like to admit, when I take my first real job in Texas and discover that someone had messed with Texas. My first impressions were what you might expect from a botanist returning home to the heart of the Lone Star State. Biodiversity had been reduced. Perennial grasslands and our roadsides had been homogenized by purposely introduced, non-indigenous, invasive species. Even stickers were not as common as they used to be! And it seemed like very few people noticed the changes. It is hard to complain as there is great job security for an invasive species specialist like me in this contemporary, novel world. But, when I realize what we have lost without documentation I better understand Aldo Leopold's question "Is education possibly a process of trading awareness for things of lesser worth?"

Spikelets of Lolium, sp.
Credit: missouriplants.com
Photo taken 5/26/03

Nonetheless, having done my PhD work in California where vast perennial grasslands were replaced by non-indigenous, annual grasses from the Mediterranean, I was comforted by the fact that our grasslands were still dominated by perennial, C_4 grasses, even if much of the biomass came from the invasive sorts. This C_4 grass exchange for other C_4 grasses acted as a sort of "creeping normalcy"

for me when I began to see Mediterranean, annual grasses as part of long-established roadside plant communities and lawns in San Antonio.

Bluebonnets in the shadow of Bastard Cabbage (Repistrum regosum).
Credit: Ralph Barrera, Statesman.com, 4/23/10

As many of you know, Mediterranean annual grasses are often recommended for re-vegetation as quick and reliable soil stabilizers. The common belief is that these species disappear once more desirable species establish. Indeed, the Texas Department of Transportation uses them in their mixtures. I suspect, however, that our milder climate as of late has allowed these grasses to complete their cycle of reproduction and persist in the soil seed bank over the winter. They then germinate and sprout with our C_3 (cool-season) grasses, such as Texas wintergrass, and persist among highly competitive, invasive species, such as Bermuda grass and Old World bluestems.

Further fueling this concern is the introduction and spread of bastard cabbage and Malta and yellow star thistle, other Mediterranean annuals recently introduced to central Texas. Furthermore, these invasion trends are documented in Australia and South America as well. A tough winter might be enough to remove these species from our soil seed banks (assuming this is the mechanism that determines persistence) but I am not sure what a tough winter looks like anymore.

I therefore invoke another Leopoldian concept - the precautionary principle. Are the benefits of short-term soil stabilization worth the risk of converting Texas perennial grasslands to annual grasslands?