

Restoring zombie ecosystems: An interview with Craig Dremann

Doug Johnson, Executive Director, Cal-IPC

"From my own experience restoring grasslands, there's no reason we can't restore a grassland to 100% native cover — with biodiversity — within ten years. When we're already spending money to restore a grassland, it's outrageous that we don't have this as our measure of success. We still have a lot of native diversity in the grassland soil seed bank, like a time capsule in the ground. We may be the last generation with an opportunity to revive it."

Sixty-five-year-old Craig Dremann, a native of San Mateo County on the San Francisco Peninsula, is dedicated to grassland restoration. By his count, he has restored some 800 acres of grassland since 1992, and he is currently working on 100 new acres on 12 properties from Aptos to the Capay Valley north of Winters.

But his approach, and he himself, are admittedly unorthodox. He is not an academic, and he feels that private entrepreneurship can be more innovative than academia when it comes to on-the-ground restoration. His restoration work has occurred mostly on private property and his work has never made it far into the mainstream. But the time may have come for public land managers to give his methods a closer look.

Dremann takes an empirical approach, trialing a range of seed and soil combinations in small plots and tracking the results. "If it doesn't work in a 3-foot by 6-foot test plot, it's not going to work over acres," he says. From his perspective, many grassland management projects over the last 50 years have failed because they decided on an



Craig Dremann monitoring a grassland on the San Francisco Peninsula. Photo: Sue Dremann

approach without initial experimentation, essentially turning the entire project into one big test plot.

Dremann focuses on rebooting the native seedbank rather than "wasting resources on the exotics treadmill" of removing one or more weed species only to see new weeds move in. His approach



Native tidy tips bloomed this April from the seedbank in a Woodside preserve that had been covered by wild oats for four or five decades. Last year, Dremann mowed the wild oats once a month between March and June to get all re-sprouts before seeds matured. Photo: Craig Dremann

employs two simple techniques: mowing with a string trimmer and fertilizing. According to Dremann, this stops production of weed seeds and replaces soil nutrients lost over two centuries of cattle and sheep grazing.

Mowing happens monthly for the first 3-4 years. Dremann explains: "You can start with a solid ocean of wild oats and yellow starthistle, and in the second year you'll begin to notice islands of natives popping up, maybe a few *Stipa* in the spring and perhaps some tarplants and Spanish clover in summer. By the fourth year, you will have an ocean of natives with islands of weed grasses and scattered yellow starthistle. You need to keep coming back to make sure none of your exotics are allowed to make new seeds, and at the end of the season in early October make sure all the weed thatch is cut down to 2-3 inches (but no closer than 2 inches) so it will decay quickly and allelopathic effects will be reduced."

According to Dremann, each plant species has its own unique soil nutrient threshold for seedling survival. He adds fertilizers to increase soil nutrients for the native species he is targeting for recovery. He uses a \$50 soil test from Waypoint Analytical in San Jose to measure soil properties and relies on small demonstration plots to assess what will work best. For instance, comparing soil samples from around a reproducing stand of native grasses to samples from a nearby weedy area can indicate low nutrient levels that are limiting native plant seedling survival.

One of Dremann's most satisfying projects is the revegetation of a 100-mile