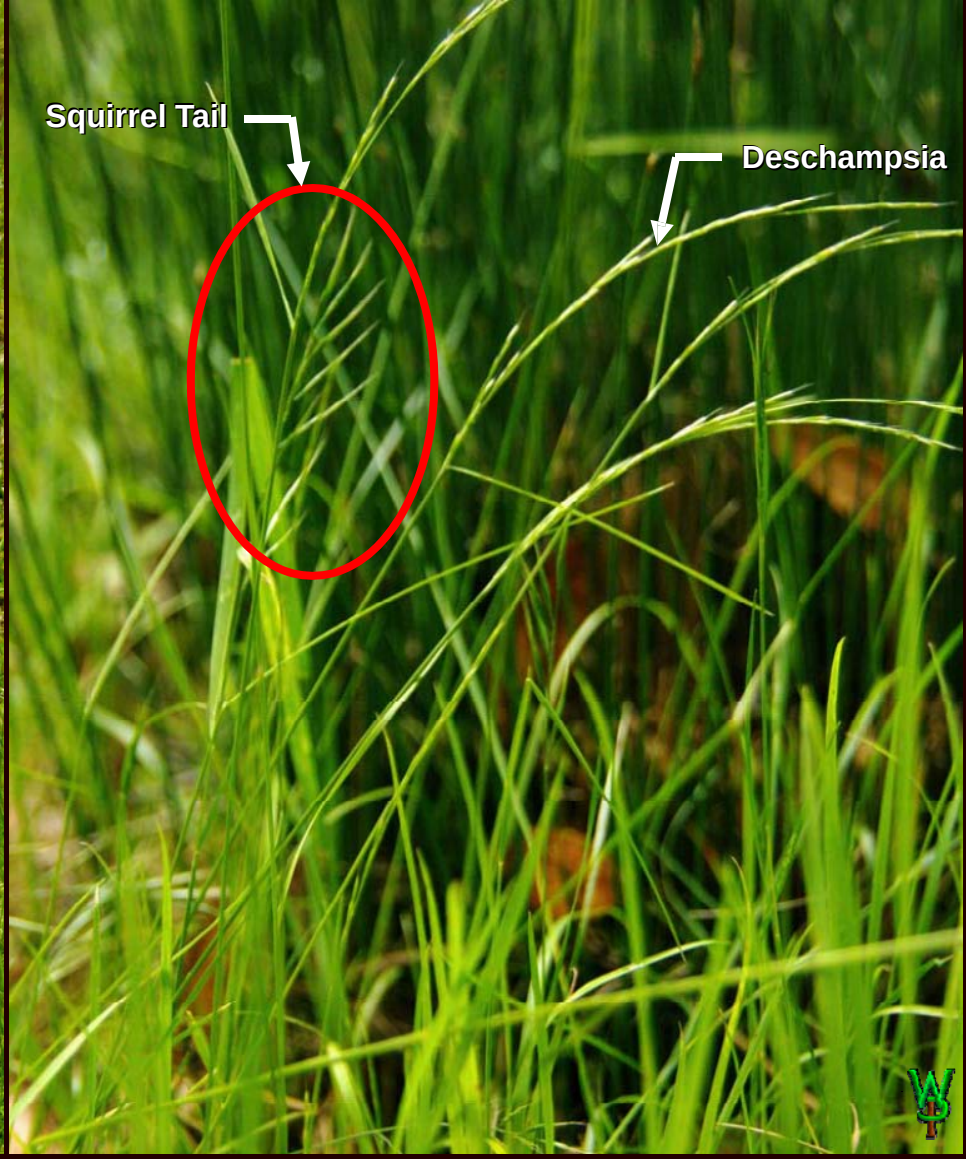
Hide and Seek

Besides airborne weeds and the weed bank, seed comes in on animals as mud on feet, poop, or burs in hair. The most numerous were annual grasses, which take about 6-7 years to control. The challenge was when they infested native perennials with similar visual attributes. Here amid perennial slender hair grass *(Deschampsia elongata)* are annual rat-tail fescue *(Vulpia myuros)* and squirrel tail fescue *(V. bromoides;* neither are true fescues*).*



Early distinction between native Vulpia and Deschampsia can be difficult until the seed heads appear (right). The appearance of seed makes for easy separation, but it is too late to control the annual Vulpia over large areas because removal takes so long. The problem is that weed seeds accumulate over a number of years before suddenly germinating in huge numbers under favorable weather conditions (as they did in 2010). So, after weeding the Vulpia for years, what I did was use pre-emergence herbicides (chapter to come) that kill only the seed as it *attempts* to germinate. That reduces the tendency for the weeds to suppress later germination of their own kind, which cleanses more of the weed bank in any one year. This is one reason why I use disturbance (such as burning) to force weed germination. It also favors perennials until the annual weed is brought under control.

Here I must weed exotic annuals from native perennials of the same genus. This photo is toward the end of the season. Before there is seed, the differences are far more subtle, shape, color and texture being chief. To cover acres, they must be distinguished rapidly. Early on, I need be only 70% accurate, because that is good enough to reduce the problem to a manageable level at the end of the season when everything is maturing rapidly and I have little time to get the few remaining exotics before they seed. With seed on them, those exotics that do remain are more obvious than if there were a lot of them. I call this the “sore thumb effect.”

Do not let the color difference fool you; they'll both be red in a matter of days. In fact, Spanish brome *(Bromus madritensis)* is also known as "red brome." Each of these brome patches must be inspected almost bi-weekly to get enough bad stuff out to make it possible to see the exotics amid the natives. The annuals mature so rapidly that if I waited, the more mature would be dropping seed before the later germinators even headed out. That is why the native is redder; the red brome here germinated late.

Most botanists regard keying grasses as difficult. My elder daughter was dubbed “a grass wizard” and got her first job because she knew how to recognize some of our local varieties. Botany books identify most plants, including grasses, by their reproductive attributes. Yet recognizing grasses by their inflorescences (bundles of seeds on stems), spikelets (the seed bundles themselves), or by seed alone is relatively useless for the purpose of managing them. The problem with it is that by the time a grass heads out, one often has as little as a day or two before that seed drops. That leaves very little time for detection and removal if it is a weed, meaning that it is fruitless to control them identifying them that way. Obviously, I could rely upon a method that weak to achieve what we have here. So I had to learn how to identify grasses by their “vegetative” features.

Interestingly, documenting how to recognize grasses by their leafy parts was the original request that was part of the reason I began this project. Unfortunately, I needed better lenses to get such photos in total, but I did get some easy ones now that I know better how to portray the distinctions than when I was first documenting the grass species on the property. Now that cell phone cameras are finally capable enough to get them, I’ll give it a go in 2014-15. While many of these weed grasses are now rare here (making them harder to photograph), given that the decent photos I have are so few, and the amount of descriptive text needed with which to make the distinctions clear will be so great (particularly among brome grasses), this will probably be a large chapter in the future. I will get to it; because weeding will always be necessary, certainly to catch that first exotic invader before it breeds. The bulk of my now 20 eradications have come by means of early detection.

The key (pun intended) to rendering the job of identifying quickly exotic grasses from local natives is to make the distinctions local, thus minimizing the number of species one must distinguish. Here at the Wildergarten, I must separate some 26 native grasses from about as many exotics. Statewide, there are 258 native and 177 exotic grass species. Hence keeping it local is critical to identifying features that are both more distinct and definitive. Some keys here involve texture, a quick and powerful signal when weeding, others are by color chrominance, leaf twists, the amount and length of hair, the shape of the bunch at the base, in-rolled leaves, the height of the first joint, or a “fan-shaped” bunch. Then there re non-visual keys, for example most native grasses are scabrous, meaning that they feel faintly like sand paper. Some weed grasses here (particularly *Briza minor*) are so variable that they need to be treated as separate species when weeding, even though they are the same species.

Remember: unlike a botanist, I do not need to identify the specific weed; I only need to know whether or not I want to kill it. That simplifies detection greatly. Nor do I need 100% accuracy in early detection; indeed, I can easily afford to pull many a native and still come out ahead over the years given the seed they produce. Nor do I need to remove ALL of the weeds in any one spot early in the year. Looking for the last one takes too long. Speed is everything in this kind of work. The goal is to be putting as many weeds as possible into the bag as fast as possible. I’ll be back to get the rest of the weeds later when they are likely to be even easier to distinguish, as there are fewer to stand against the background and I will be suffering less from visual fatigue.

So, when in doubt, I kill it. This is hard to make oneself do. Nobody wants to spend their entire time killing. The human desire is to make things grow. Nor is anyone really looking for unnecessary plants to pull when already removing over a million weeds per year. But this is the job and it must go as fast as possible so that when the last few are all that are left, they stick out like sore thumbs, and it does feel good to know that there are only a few and one is getting the last of it. So here follow some easy ones.

Early germination, erect, shiny, usually with very few and long tubular leaves, therefore either *Vulpia bomoides* or *V. myuros*. Kill them both. I take native V. microstachys as well, because I cannot afford the time to make the distinction at this point.

This is a Festuca rubra, which although listed as native was introduced here and is therefore removed. The leaves are fine and round, dark, and red near the base. It branches early radially symmetrical and not quite erect. The roots are tough.

Early germination, small, yellow-green, shiny, smooth texture, decumbant, no twists, therefore *Poa annua*.

Poa annua again, showing the classic decumbant curl as it grows toward a more erect form.

Highly twisted,fleshy, almost rubbery in texture, pale green, therefore *Briza minor*.

Note how this grass comes up in the shape of a flat fan, with its leaves staying in a plane.
This is “nit grass” *(Gastridium ventricosum),* probably the best name for a weed ever. It is the only grass here that does that.

This is the job**:** Clear the soil of weed seed by using up the "weed bank" while native annuals propagate. It's the hard way, but until I had developed some other techniques, it was all I had. Besides, it beat sterilization and seeding with collections, in part, because we just didn't know what might be there and we had so little native seed. The visual demand of weed control is intense, especially when spot-spraying (it takes so much concentration that after a few hours, you want to run for the exits, drained).

In this picture are (weeds in red)**:** mouse-ear chickweed *(Cerastium glomeratum)*, the few-flowered clover *(T.oliganthum), pinpoint clover (T. gracilentum), Notch leaf clover (T. bifidum),* little hop clover *(T. dubium)***,** small-flowered lotus *(L. micranthus)*, Spanish lotus *(L. purshianus),* California brome *(B. carinatus)* which I had been pulling here until I got the foundation put back. Brome grasses have a fairly powerful allelopathic chemistry that excludes other plants. Also present are small-flowered needle grass *(N. lepida),* rat-tail fescue *(Vulpia myuros)*, pop-weed *(Cardamine ogliosperma* (supposedly native, but I hate it*),* wall bedstraw *(G. parisiense)*, two non-native vetches *(V. disperma and V. tetrasperma)*, slender madia *(M. gracilentum),* and coast tarweed (*M. sativa,* of disputed origin). The worst are the wall bedstraw and the rat-tail, but the chickweed is not far behind. We're getting rid of the chickweed first, because it is the earliest to germinate and set seed.

So, is this just an aesthetic exercise for a would-be intellectual with nothing better to do? Are the non-natives really so bad? After looking at this and the other picture books, I hope you share my opinion that the damage weeds do is far beyond the mere aesthetic. If exotic species are truly responsible for one third of all extinctions in North America, and I promise you, THEY DO NOT STOP SPREADING ON THEIR OWN, then this is the most critical environmental issue we face. If all the activists in your area can offer is futility, they need to be shamed, loudly and publicly. It is time to take the moral high ground away from the organized environmental movement and let people get to work, making meadows.

May 2010

Now find them in here! This isn't like weeding in a suburban backyard; this is serious work requiring intimate attention by an educated person. This is mostly California brome interspersed with a clover/lotus groundcover.

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