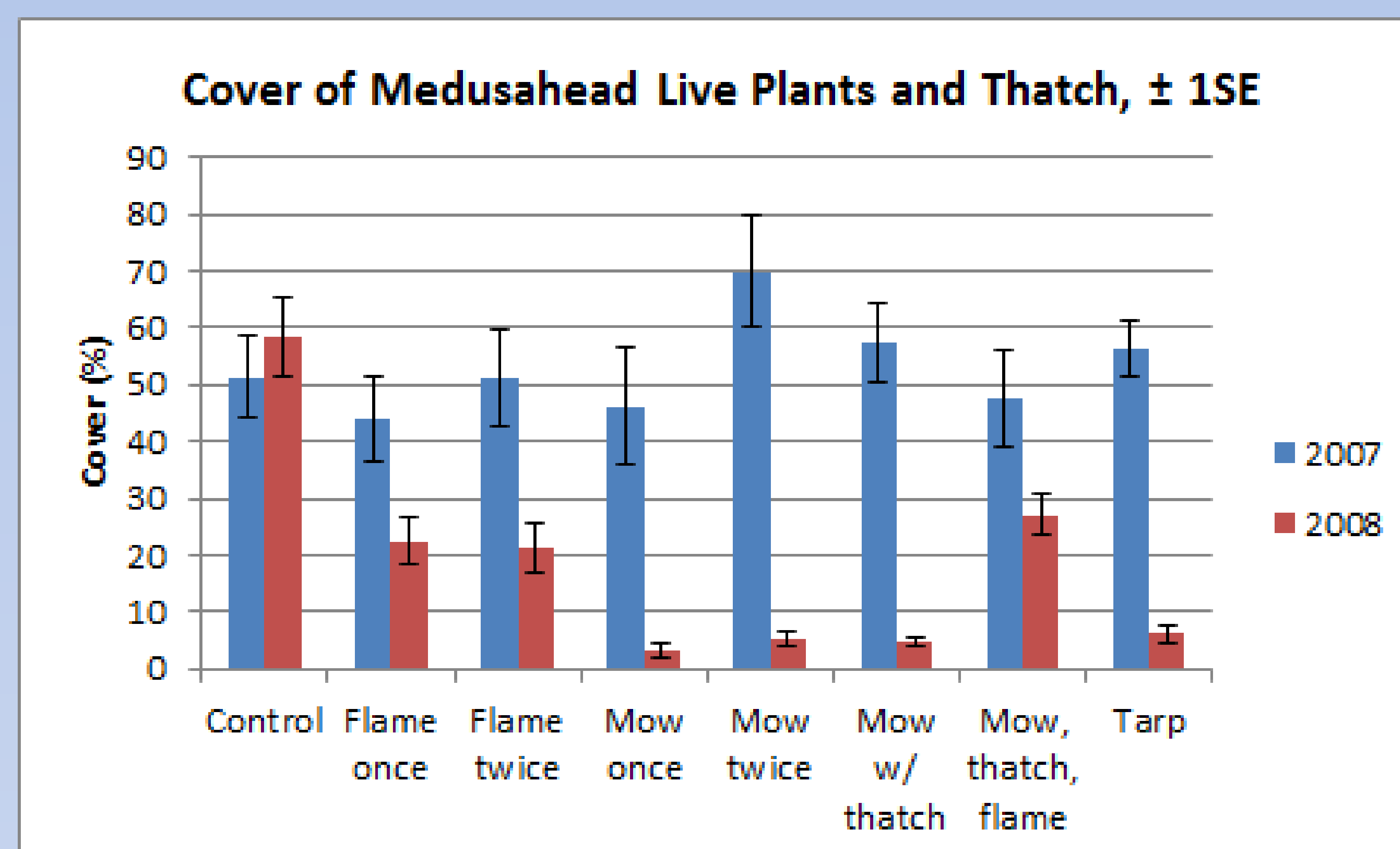


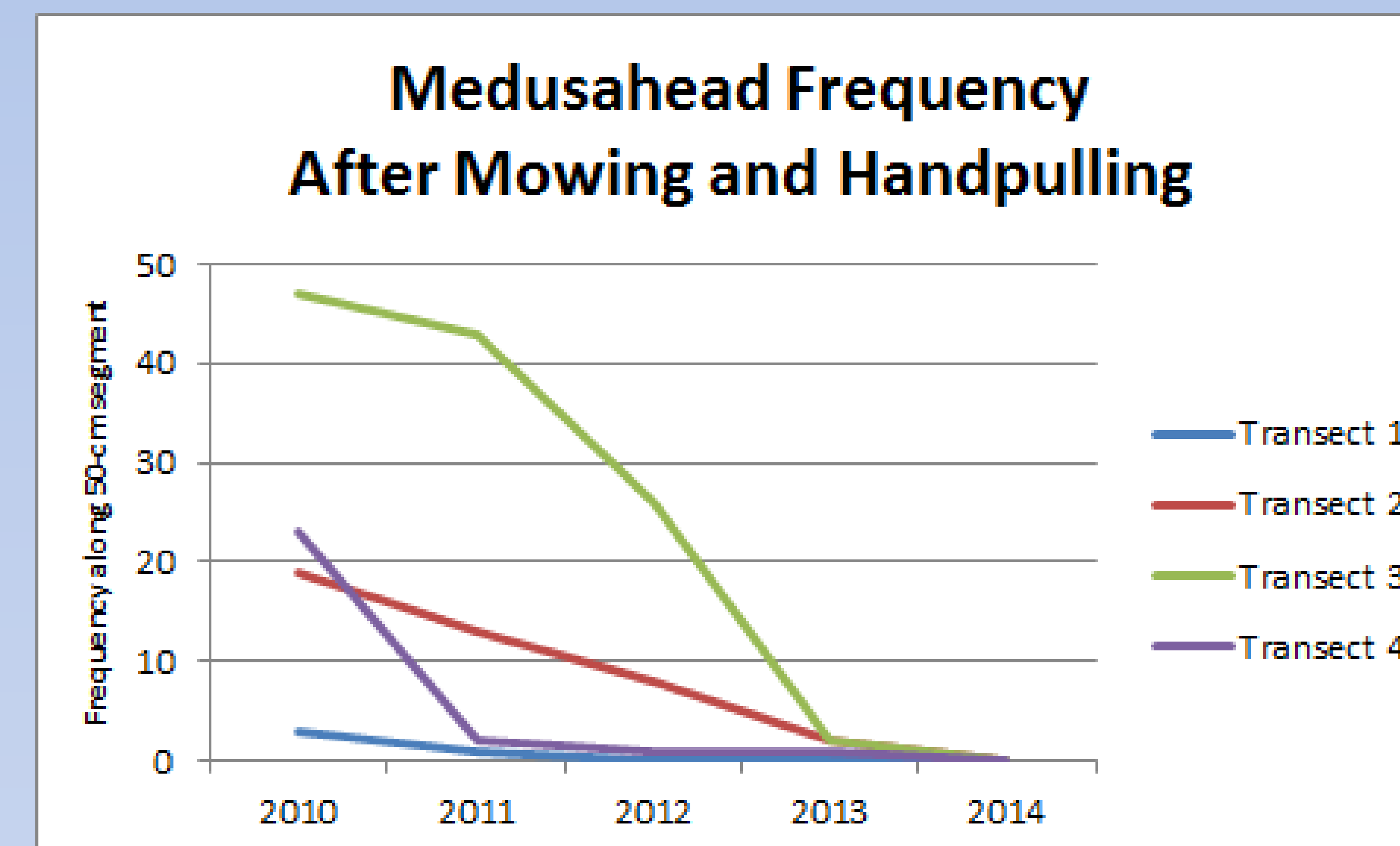
Why try to eradicate? Edgewood grasslands are home to many sensitive species, including federally threatened Bay checkerspot butterfly (*Euphydryas editha bayensis*), federally- and state endangered San Mateo thornmint (*Acanthomintha obovata* ssp. *duttonii*), federally- and state threatened Marin dwarf flax (*Hesperolinon congestum*), federally- and state endangered white-rayed pentachaeta (*Pentachaeta bellidiflora*), and CNPS 1B2 fragrant fritillary (*Fritillaria lileacea*). The serpentine grasslands offer an amazing wildflower display in spring.

Eradication is the total elimination of a weed infestation. This is a much more difficult goal than control, which just aims for a significant reduction. In 2007, a 5.5-acre population of medusahead (*Elymus caput-medusae*) was targeted for eradication at Edgewood Natural Preserve in Redwood City, CA. Eradication was selected as a goal due to the presence of many sensitive species within the preserve grasslands, the relatively small infestation, and the lack of an obvious adjacent seed source.

The infested site is a nonserpentine grassland dominated by nonnative species, but with many native elements including stands of purple needlegrass (*Stipa pulchra*) and California oatgrass (*Danthonia californica*). Experiments testing flaming, string cutting with and without thatch removal, and tarping were conducted on 1-m plots, n=8. All treatments were effective means of reducing cover, and all had similar effects on nontarget invasives such as yellow starthistle (*Centaurea solstitialis*) and Italian thistle (*Carduus pycnocephalus*). String cutting/mowing was identified as the most pragmatic and economically feasible treatment for this site.

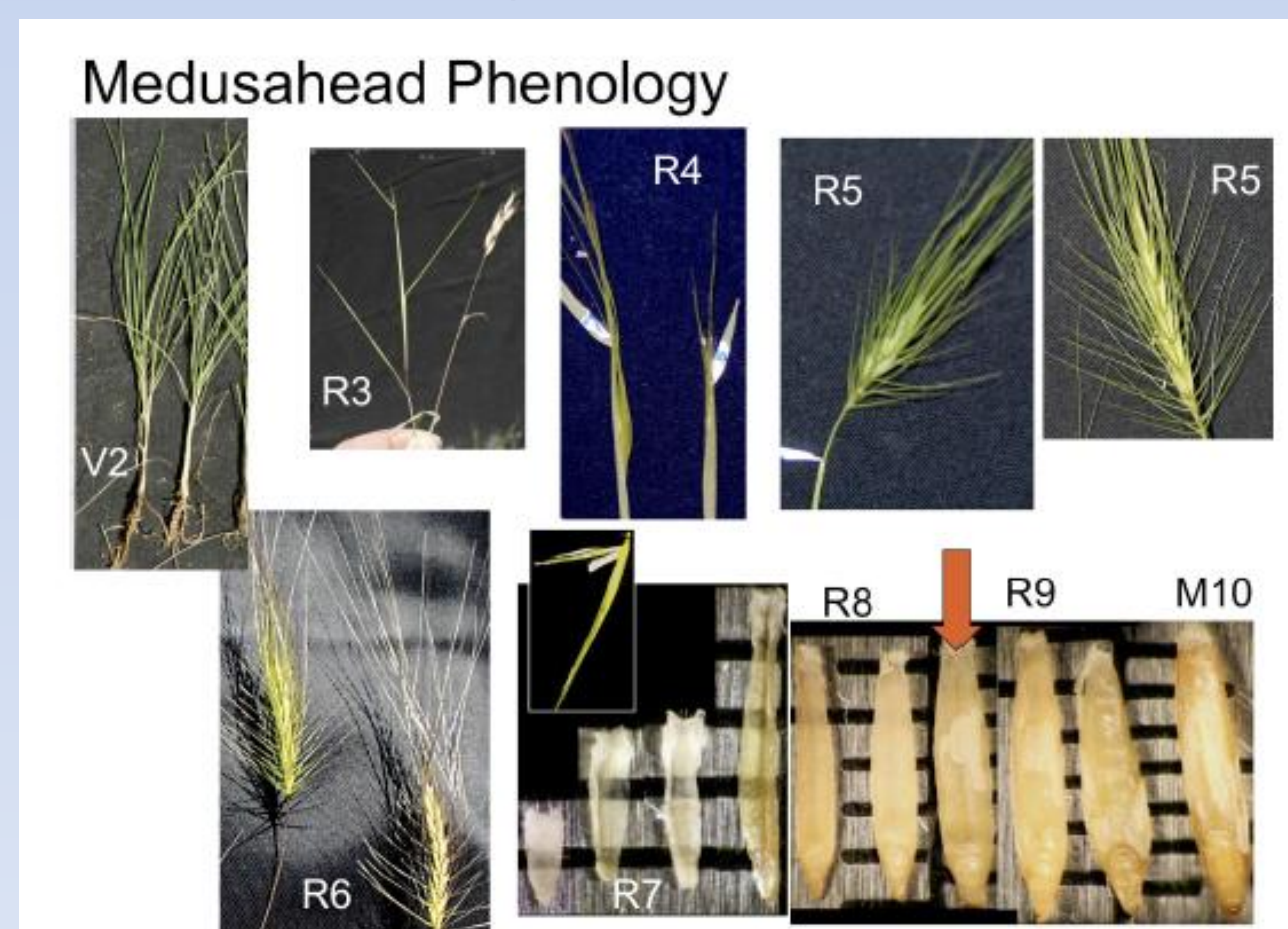


After two years of string cutting /mowing with hand followup, medusahead was down to 1.5% cover. The monitoring protocol switched to line intercept frequency in order to detect further decreases. Initial frequency ranged from 3 to 47 hits. After another four years of mowing, no medusahead was found on or even near the monitoring transects.



Approximately 12 plants were seen in the 5.5-acre mow zone in 2014. Two new small infestations were found in adjacent areas.

Mow at the right time.



V2 early vegetative; R3 emergence of awns; R4 full emergence of seedhead; R5 opening of florets, anthesis, visible anthers; R6 closure of florets, beginning of kernel formation; R7 kernel elongation to full length; R8 full length kernels in milk stage; R9 seeds in dough stage; M10 all seeds are mature and hard

Source: Laca, E. A. Grazing strategies to control medusahead in California. 2010 Project final report. Western Sustainable Agriculture and Education Program. Online publication: <http://mysare.sare.org/mySARE/ProjectReport.aspx?do=viewRept&pn=SW06-038&y=2010&t=1>

Timing is critical for controlling any annual grass. Mow too early, and plants have the resources to resprout. Mow too late, and you scatter viable seeds, potentially making the problem worse.

Creekside aims to mow in the R6 to R7 stage, which is early kernel or seed development. Anthers and stigmas are no longer present. Seeds are still very soft, and may not have matured to their full length. R8 may be effective, especially at dry sites.

It is important to open up florets on dozens of individuals dispersed throughout the mowing zone to properly time the mowing. Not all individuals will be at the same stage, so if you're mowing only once you need to know when the majority of plants are at the right stage. Each site and each year will bring different timing challenges, so do not rely on a standard calendar date to mow.

Check your work. Go back to the site in a week and open up cut florets. There should be no hard, viable seeds, only drying chaff.

Treatments are VERY successful, but can we eradicate this plant?

The next steps toward eradication bring up additional issues.

- This species is cryptic. It is difficult to find a small population, or individuals of one grass species within a larger grassland.
- Costs do not decrease as we reduce cover.
- Due to the cryptic nature of this plant, we believe focused searches are likely to miss individuals. Therefore, in our aim to eradicate, we are still mowing the same amount of area, plus we are searching for outliers.
- Switching the goal to maintaining low cover might be cheapest, but this would need to continue indefinitely.
- With density of this cryptic plant so low, the costs of aiming for eradication may seem high, especially on a per-plant basis. Is it worth spending the money to find the last few plants?
- Is eradication even possible?
- This area is heavily patrolled by volunteer weed pullers, who could alert us to increasing cover or new colonies.
- With control measures so successful to date, eradication is still an attractive goal. It feels like we are close!

Conclusions

- Frequent and widespread checks of seed maturation are key to well-timed mowing.
- Well-timed mowing (and string cutting), especially with hand followup, is very effective for reducing medusahead cover.
- The goal of eradication should be carefully considered, especially with cryptic species. The benefits of eradicating a problem weed should be balanced with the cost of finding and treating the last few plants.