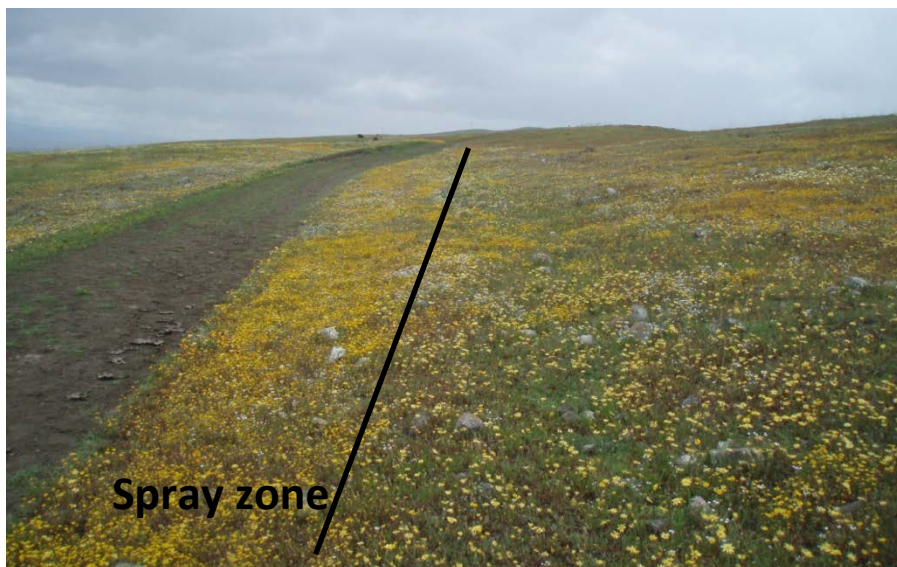


Barbed Goatgrass Control Coyote Ridge, San Jose, CA

Barbed goatgrass (*Aegilops triuncialis*) was first observed on Coyote Ridge in 2005, the core population for federally threatened Bay checkerspot butterfly. Invasion by nonnative annual grass is the main threat to the butterfly, its host plants and nectar sources, and other rare plants on the serpentine ridge. Moderate cattle grazing remains the critical management tool for controlling the grass and maintaining high quality habitat. Due to its silica-rich awns, barbed goatgrass is generally unpalatable to cattle. After years of treating this weed, we offer strategies and techniques to guide the most effective treatment.



Well-timed Envoy application gives excellent results in serpentine

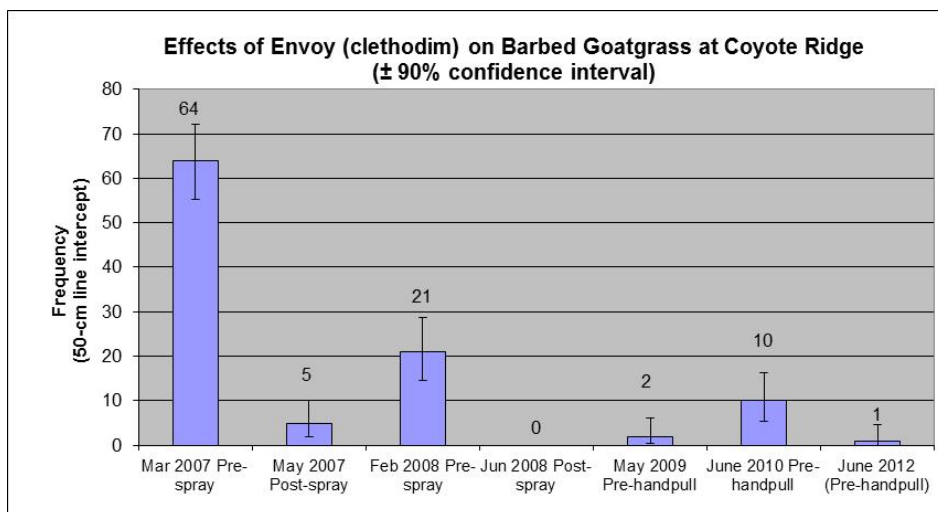


Our best results have come through using Envoy, a grass-specific herbicide appropriate for rangeland use. Reducing grass cover favors forbs, including Bay checkerspot host plants and nectar sources.

The area about 2 meters out from the road pictured at left was heavily infested with goatgrass, which was likely being spread through vehicles and road repair. Note the wildflowers, all native, are especially dense in this area where the goatgrass has been sprayed two years in a row. Several of these wildflowers are used by the threatened Bay checkerspot butterfly as nectar sources.

There is very little goatgrass left in this area, and it is now managed through handpulling.

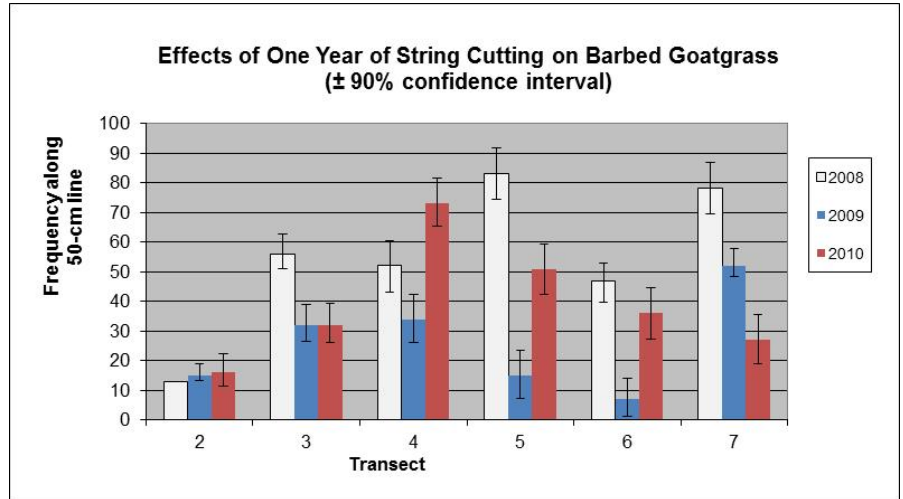
We have few nonnative forbs on this serpentine site. Grass-specific herbicides could cause problems where thistles or other troublesome forbs are present. Application timing is critical. Plants must have germinated but not have bolted, usually late winter.



Well-timed string cutting reduces frequency

Goatgrass frequency decreased significantly after a single treatment, but largely rebounded without followup. Timing is critical for stringcutting or mowing to be effective. If you mow too early, plants have enough resources to flower again. Mowing too late only scatters viable seeds. Individual grass flowers must be opened to determine appropriate timing. Plants should have

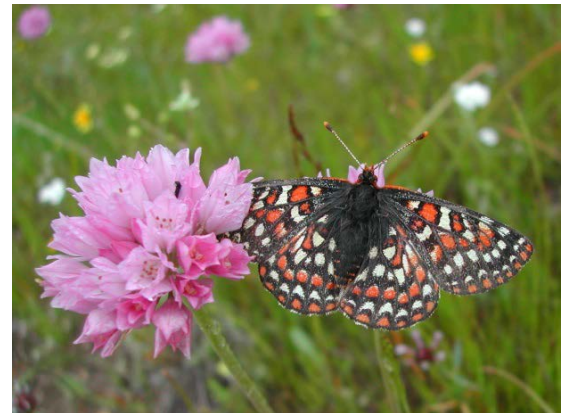
some soft seed growth, easily punctured or squished. Anthers should have dropped, and the ovary should have elongated into seed. Seed should not be hard or dry. Aim for most plants being at the appropriate growth stage, maybe about three weeks after most plants are just starting to flower. Hotter and drier years will see a quicker maturation and a shorter appropriate window for mowing, but mowed plants will be less likely to have the resources to resprout.



Burning may be a useful treatment



A hot burn two years in a row has had excellent results at other sites. Our grazed pastures at Coyote Ridge have not had enough fuel to carry a hot enough fire. Removing cattle to allow the fuel load to build will be necessary, and a different treatment in subsequent years may be needed if fuel doesn't quickly recover. Fire is logistically difficult to conduct in the Bay Area, but may be considered in the future, especially for large infestations.



Prevention

Use best management practices to prevent spread, including avoiding driving through infested areas during the wet season; cleaning vehicles, boots, and tools before and after entering infested sites; and minimizing livestock movement between infested and uninfested areas.

Strategic control

Basic strategies include prioritizing obvious vectors such as roads and trails; targeting high quality habitats and outliers before they spread further; and treating the largest of the infestation last. Follow up will be necessary for at least five to ten years. Because barbed goatgrass is cryptic, it may be impossible to eradicate the plant. Determine your goals for reducing cover. While barbed goatgrass control can be difficult, with long-term, strategic treatments it can be reduced.

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