

# Artichoke Thistle Control and Endangered Species Habitat in Preserved Land at the Ridge Top Wildlife Conservation Bank

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## Callippe Silverspot Butterfly (CSB)

The Federal-endangered CSB (*Speyeria callippe callippe*, FT, ST) is believed to be extant in only two to five areas in the Bay Area, including Ridge Top Ranch in Solano County.

Ridge Top Ranch hosts several special status species, including golden eagle and the Federal Threatened California red-legged frog (CRLF).



All photos: WRA, Inc.

CSB exclusively uses California golden violet as the larval host plant. Hilltops and ridges are considered essential components of their breeding habitat.

Ridge Top Ranch contains more than 662 acres of suitable habitat for CSB, including 13 acres of golden viola (*Viola pedunculata*).

Grazing is a key part of the management strategy to maintain biotic diversity at the site.

## Issues:

The site is threatened by invasive artichoke thistle (*Cynara cardunculus*), which forms monotypic stands, reducing available grazing lands and crowding out CSB habitat. Artichoke thistle also affects CRLF, which requires open grassland for upland and dispersal habitat.

The Bank is within a CRLF critical habitat unit, which prevents the use of many common herbicides due to an EPA injunction. Historically herbicides were sprayed via helicopter and then applied with a towed 50-foot boom. Indiscriminate pesticide application is harmful to native plants and wildlife. Spot-spraying is more sensitive but also more time-consuming.

The Bank Development Plan requires that artichoke thistle populations are controlled at less than 5% density in golden viola habitat and 25% everywhere else.



## Methods:

WRA biologists surveyed the entire property in spring 2012 and 2013. Thistle populations were mapped using GIS and their densities estimated. High-density populations were targeted for control efforts.

In May 2012 and 2013 these areas were spot-sprayed with the herbicide Milestone during the spring growing season, combined with limited mechanical removal. Milestone is an herbicide that is in compliance with the 2006 Federal Court order regarding herbicide use near CRLF habitat areas.

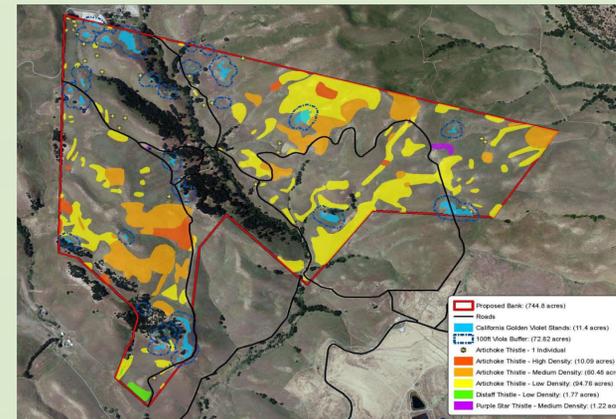


Pre-herbicide spring 2013

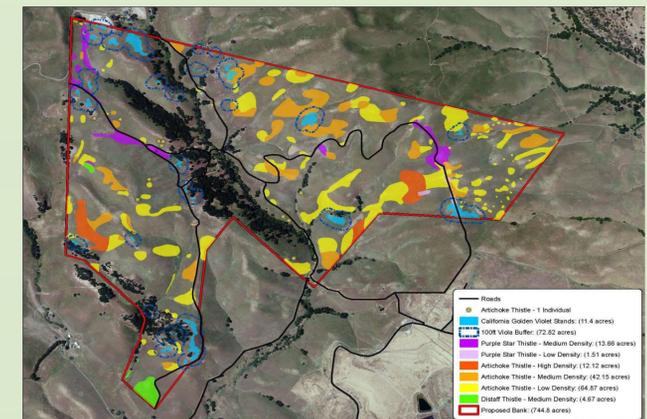


Post-herbicide summer 2013

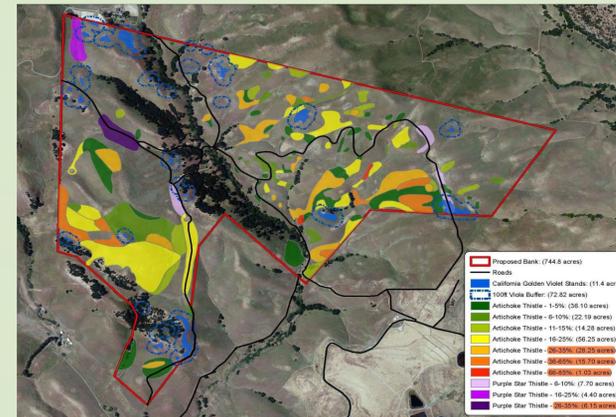
## Spring 2012



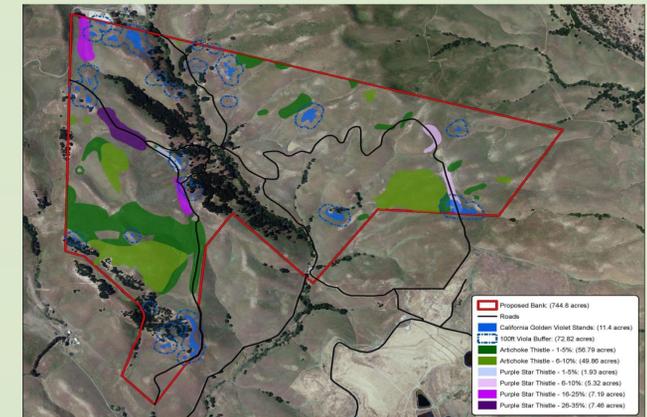
## Fall 2012



## Spring 2013



## Fall 2013



## Results:

According to August 2013 mapping efforts, no artichoke thistle exceeds 25% cover on the Bank property. Furthermore, no artichoke thistle exceeds 5% cover in areas supporting viola or within 100 ft. of viola habitat. Therefore 100% of the CSB habitat already meets the criteria for invasive artichoke thistle performance standard.

Purple star thistle (*Centaurea calcitrapa*) will need to be monitored— although it is a nectar source for CSB, it has the potential to expand further into grazing lands and viola habitat.

WRA also developed Cowpacity, a carrying capacity GIS model, to help Ridge Top Ranch and other properties schedule livestock grazing to maximize weed control and invasive species management.

You can find out more about Cowpacity and other projects at Ridge Top Ranch at:

[www.wra-ca.com](http://www.wra-ca.com)