

## California Silvopasture Producer Case Study: *Silvopasture for Blue Oak woodland conservation and restoration*



Bobcat Ranch

**Producers:**

Dash Weidhofer, Ranch Manager,  
Bobcat Ranch, Audubon California

**Location:**

Winters, Yolo County, CA

Bobcat Ranch is 6,800 acres of predominantly annual grassland and Blue Oak woodland owned by Audubon California and managed by ranch manager Dash Weidhofer. The Ranch is located west of the town of Winters in Yolo County, California, in a dry-summer Mediterranean climate zone, with annual average precipitation ranging from 24 to 30 inches. The site has been grazed since the mid-19<sup>th</sup> century. Today, approximately half of the ranch (3,650 acres) is managed as silvopasture.

Audubon California acquired the ranch in 2007 as part of its ongoing effort to support and encourage the conservation and restoration of Blue Oak woodland and rangeland in California. At that time, a conservation easement was placed on the property, which preserves oak trees and other habitat features while still allowing for leased grazing operations on the land.



Photo: D. Weidhofer *Bobcat Ranch landscape, a mix of annual grassland and Blue Oak woodland.*

The acquisition and ongoing management of the ranch has helped Audubon California understand the challenges and opportunities for managing rangeland in a way that is both economically and ecologically sustainable, which in turn informs the organization's programs and advocacy efforts.

## Motivation

Grassland birds are declining at an alarming rate, and the habitats they depend on are some of the most threatened habitats in the world, including Blue Oak woodlands and grasslands. Audubon California's interest in conserving and restoring Blue Oak woodlands is a direct response to this decline and desire to raise awareness and develop a methodology (cattle grazing, prescribed fire, etc.) to successfully protect this critical habitat.

Silvopasture plays a dual role in advancing Audubon California's goals for Bobcat Ranch: The practice helps to maintain the ecosystem that currently supports existing Blue Oaks (conservation) and the conditions needed for establishing new Blue Oaks (restoration). As the ranch manager, Dash Weidhofer uses silvopasture as a tool to experiment with how best to both conserve and restore these unique ecosystems, recognizing that grazing provides an ecological disturbance that is essential to healthy grasslands.

Bobcat Ranch is a formal demonstration site for the Audubon Conservation Ranching (ACR) program in California and the first property in the state to become ACR certified. By offering beef producers the opportunity to certify their products and market using the ACR label, the program hopes to provide incentives for grassland stewardship that advances wildlife conservation.



## Management

The practice of silvopasture at Bobcat Ranch was established by incorporating livestock into oak savanna and also incorporating trees into annual grasslands that were already being grazed.

Approximately 250-300 animals graze the ranch each year, predominantly cattle and lesser numbers of sheep and goats specifically to target the invasive species star thistle. The majority of the livestock are managed by a lessee selected through a competitive bidding process.

In recent years, the impacts of climate change have become more evident at Bobcat Ranch, which has faced persistent drought while supporting greater numbers of wildlife in search of scarce resources. Recognizing that prior assumptions about carrying capacity might not apply under such stress, Weidhofer has shifted from a year-round cow-calf operation to a seasonal operation, incorporating some stocker-steers.



*Ranch Manager Dash Weidhofer*

Photo: D. Weidhofer

Currently, the animals rotate through a series of pastures at Bobcat Ranch over an average of five and a half months from January to June, depending on the rainfall received in November and December. After grazing at Bobcat Ranch, the livestock are transported off the ranch for summer pasture.

Thus far, the impacts of this new management – both in terms of the organizational management and the ecosystem impacts – have been positive, and the plan is to continue this seasonal grazing pattern, mimicking how native ungulate herds would have likely grazed the area in drought conditions.



## Tree establishment process

Planting usually happens between December and February using a precise recipe for tree establishment that Weidhofer has fine-tuned during his seven year tenure managing the ranch.

1. Auger deep holes: 3.5 ft deep and 8-10 inches in diameter.
2. Pre-water with 5 gallons of water.
3. Backfill hole up to one foot from opening.
4. Plant oak seedling.
5. Apply heavy mulch (4-6 inches) of wood chips or sheep fleece, which is effective and abundant locally.
6. Water five additional gallons.
7. Assemble tree cage and tree tube.



Photo: D. Weidhofer

*Student volunteers help maintain a Blue Oak planting.*

The ten total gallons delivered manually are the only irrigation that the seedlings receive. As a result, Weidhofer expects a lower survival rate (between 40-60%) than if he were continually irrigating the seedlings. However, to Weidhofer this is ultimately advantageous because the seedlings that survive are better adapted for the long dry seasons. Additionally, forgoing water infrastructure (such as drip or sprinklers) has helped to keep restoration costs lower and balance out the expense of replanting. The cost of establishment ranges from \$45-50 per tree for materials and fuel, not counting labor. Over 400 trees and shrubs have been established since Audubon California acquired Bobcat Ranch in 2007. Weidhofer aims to establish at least 25-50 additional or replacement trees and shrubs per year.



Photo: D. Weidhofer

## Tree protection

As pictured, Blue Oak seedlings are protected by a triangle formation of three T-posts that is caged with sheep/goat mesh affixed to the T-posts with wire.

The seedlings are also protected by plastic tree tubes that are buried a few inches into the soil and staked with a bamboo post that is tied to the outer cage. Burying the tree tube helps deter squirrels and secure the tube against winds.

*<< A Longhorn cow passes safely by a Blue Oak seedling.*

**Animal species:**

Cattle: Dexter, Angus, Longhorn

Sheep: Finn

**Tree species:**

Blue Oak (*Quercus douglasii*)

In addition, Weidhofer has planted a minor amount of dwarf citrus for personal consumption and plans to plant olive trees as well. In terms of incorporating edible perennial crops into silvopasture, he has found that edible native plants, citrus, and olives show promise, but other species end up being eaten by wildlife.

**Benefits and challenges of silvopasture for Blue Oak restoration:**

Blue Oaks are challenging to establish and grow very slowly, especially without irrigation; Weidhofer has observed growth rates of 2-12 inches per year at Bobcat Ranch. As a result, restoration has been difficult and has included numerous setbacks, all of which have influenced Weidhofer’s management.

Challenge	Management Response
Persistent drought	1. Incorporated deep augering of planting holes, pre-watering method, and thick mulching of seedlings. Only water at establishment to encourage selection of drought-hardy seedlings. 2. Shortened grazing from year-round to seasonal. 3. Select planting sites that are away from dry creek beds, which lower the water table and can pull water away from the young trees.
Fires	Changed location of restoration projects and gave up on initial site because it proved to be too fire prone. (The initial planting was destroyed by fire.)
Remote nature of planting sites and large area	Don’t use drip irrigation because it is prone to single point of failure and requires frequent monitoring. Instead, now only irrigate at planting and accept higher seedling loss.
Livestock damage	Incorporated a third T-post into tree cage design to make cage more resistant to rubbing by cattle. Use of mesh around T-posts protects trees from smaller livestock.

Despite these challenges, Weidhofer has begun to see the benefit of silvopasture at Bobcat Ranch. Beyond supporting the Blue Oaks, grazing of the silvopasture appears to be helping manage biomass to reduce fuels for fires, while improving habitat for native birds and other wildlife.

**To learn more about Bobcat Ranch visit: <https://ca.audubon.org/about-us/bobcat-ranch>**

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