

Songbird Research in California Vineyards

If you build it, they will come

Tree Swallows and Western Bluebirds are familiar Napa Valley songbirds that will nest in simple wooden boxes placed in vineyards. In our project, adding nest boxes increased bird numbers in just one year—bringing more bluebirds and swallows, fewer insect pests, and the welcome sound of birdsong to Napa's vineyards!



Deploying nest boxes

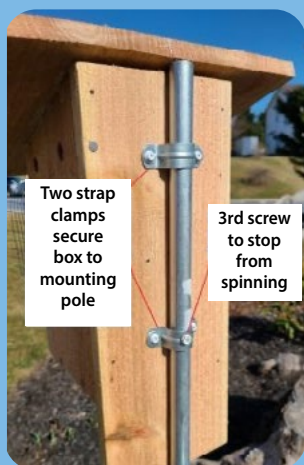
Spacing nest boxes 50 yards+ is optimal, but a higher density may be warranted at sites with high songbird abundance. Mounting nest boxes individually on poles is best because it is difficult for snakes, cats, and other predators to climb. If predation becomes a problem, installing predator guards (below) may be necessary.

Deploying them at the end of vine rows will provide enough open habitat immediately around nest boxes that both species prefer. Avoid placing boxes near high human activity, busy roads, and outdoor cats. See the North American Bluebird Society for more details.

Optimal placement near trees

In Napa Valley, bluebirds can use nest boxes placed anywhere in the vineyard, but higher occupancy tends to occur within 30 feet of a tree or isolated wooded patch. They generally prefer open areas with less than 20% woody tree cover within 75 ft. Placing nest boxes closer to single trees or small forest patches can reduce heat stress on nestlings and adults while minimizing predation risk from animals that use larger patches of more heavily wooded habitat.

For swallows, occupancy is highest at the end of vine rows and on vineyards with an open water source (reservoir or river) within ¼ mile.

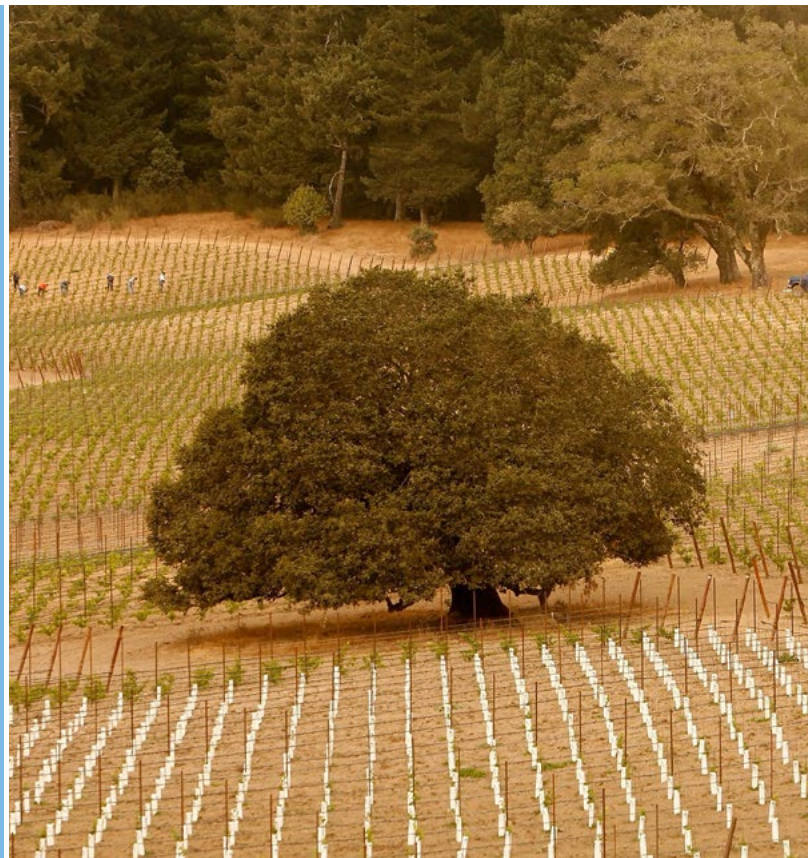


Two strap
clamps
secure
box to
mounting
pole

3rd screw
to stop
from
spinning



Predator Guards



Inviting birds to
your vineyard
(5 min video)



A simple
\$20 nest box



Free plans to
build your own



Genetic methods to identify bird diet (3 min video)



Living with birds on a farm (10 min video)



A high protein diet for hungry nestlings

Adult bluebirds and swallows catch high-protein insects during the nesting season and may visit their nests up to 150 times each day to feed their young. Nestlings grow quickly, becoming free flying birds in ~21 days! Swallows typically raise one brood per year in May and June, while bluebirds can sometimes raise two broods from April-June. Using genetic analyses, this project demonstrated for the first time that both bluebirds and swallows eat major vineyard pests, including sharpshooters, three-cornered alfalfaoppers, leafhoppers, and even vine mealybugs. Overall, ~20% of fecal samples from adult and nestling bluebirds and swallows had evidence of these pests!



Birds reduce pests, especially in vineyard interiors

By counting insects on sticky cards deployed before and after installing new nest boxes, we found that songbirds significantly reduced the abundance of insect pests, especially in vineyard interiors further away from wooded riparian habitat. There was no significant effect of birds on beneficial insects such as parasitoids & lacewings. Installing nest boxes between vineyard blocks at the end of vine rows, especially in areas with isolated trees nearby, may help increase the impact of natural pest control in vineyard interiors.

Helping birds avoid stressors

We followed adult bluebirds with GPS trackers to determine how they respond to heat waves and excessive noise. While bluebirds usually foraged within vineyards, heat waves caused them to retreat to the shade of nearby natural areas. As a result, bluebirds fed their nestlings less often during heat waves, lowering nestling growth and overall nesting success. Maintaining isolated trees and/or small natural areas near nest boxes may help birds cope with a warming climate.



Likewise, a noise experiment showed that bluebirds avoided foraging in noisy areas and fed their nestlings less often when exposed to noise. To increase success, avoid placing nest boxes in noisy locations, such as within 80 ft of high-traffic municipal roads.

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