

Nesting Structures for Beneficial Songbirds on the Farm APRIL 2022





170,000 INSECTS EATEN AT A VINEYARD Pinkowski (1978) observed Eastern Bluebird parents bringing food to one nest box about 170 times per 15-hour day (equivalent to approximately once every 5 minutes). Using this data, it was estimated that at Ridge Vineyard, shown on cover, Western Bluebirds living in nest boxes needed to eat about 170,000 insects from the vines and surrounding habitat during the nesting period. This is based on 50 broods raised in the boxes for about 20 days.

What Birds Need Nearby for Successful Nesting

FOOD

Birds occupy nest boxes and other structures more often when their needs are met close by. Consider that most adult songbirds are constantly searching for insects throughout the day when raising their young. The insects many beneficial birds eat are detailed in Table 1.

COVER

It is essential for the parents to have cover near the nest for roosting, loafing and watching over their young. Cover will also help protect the fledglings from predation until they learn to move stealthily through their new environment, and it will buffer wind, rain, snow and sunlight.

WATER

Birds not only need to drink water; they also need it to keep their feathers clean. Well-maintained feathers insulate them from the cold. Whether a pond, wetland, creek or stream is present, or if water is intentionally dripping from an irrigation system, having water around increases the chances of birds nesting on the farm and providing pest control benefits.

Nest Boxes

WHICH BIRDS USE BOXES AND WHERE

One Size Box Fits Many Songbirds

The nest box for Western Bluebirds works well for several other native bird species of a similar size or smaller. In the West, the same size box could support a couple of species of Swallows, Chickadees and Wrens, as well as individual Flycatcher, Titmouse and Nuthatch species (see Table 1).

Which Birds Live in Your Region

Another factor determining the birds that will use a box is what birds are naturally present in your area. The Cornell Lab's All About Birds will clarify which birds are in



Nest box spacing depends upon how territorial birds are. Ash-throated Flycatchers are more than some other species and won't nest in boxes within about 200 feet of each other.



The same size box and entrance hole quard used for this Western Bluebird female can be used for several other songbird species.

your area; search for the birds that typically use Western Bluebird boxes (see Table 1 for the list again) and then look at the "Range" and "Sightings" maps.

Different Birds Prefer Different Foraging and Nesting Situations

Songbirds feed predominantly insects to their young during the nesting season. To have successful nest box occupancy, the box needs to be placed in the habitat the birds prefer so that they can have optimal foraging. For example, Western Bluebirds prefer open habitats in vineyards, diverse farmscapes and grasslands where they can forage in the lower canopy vegetation and on the ground (see Table 1).

Number and Spacing of Nest Boxes To Install

Some birds are very territorial and others not so much. Western Bluebirds may not nest in boxes within about 215 feet of each other, while Tree Swallows, on the other hand, can tolerate nest boxes as close as 30 feet from each other, on average (see Table 1). All of the above considerations and those listed in the Concerns section below help to determine how many boxes to install so that the birds will be successful at raising families.

Concerns When Placing a Box

It is better to never attract birds if their safety and that of their young is compromised.

IF KNOWN PREDATORS ARE AROUND

If cats live on your or a close neighbor's farm, avoid placing boxes in cats' territories. Chicks can be noisy when begging for food, and cats are excellent at keying in on those signals.

The rotting ingredients for compost piles can attract rats, raccoons and other predators. Bird feeders can attract raptors that hunt songbirds. Riparian areas can serve as wildways for many types of predators on the move. See suggestions in Tables 2 and 3 for actions to take to reduce these risks.



Predators like this raccoon are tenacious. It is better to never attract birds if predators become an issue and you haven't improved the situation (see Table 2).

IF THERE'S MUCH HUMAN ACTIVITY

It is best to avoid placing nest boxes in areas where there is a lot of human activity, such as next to pedestrian traffic or near noisy roads, pumps and generators. Birds are more likely to get hit by cars when their boxes are near roadways.

IF PESTICIDES ARE USED

Unless you are using practices such as IPM to tolerate insects up to economic threshold points, insecticides may reduce insect numbers such that bird populations are no longer supported, making avian pest control ineffectual. Herbicides also reduce the food birds eat and may discourage their presence. Many types of pesticides can cause short-term impairment, long-term effects, or death of birds. If boxes are placed near where organic or least-toxic pesticides are used, it is best to angle them away from the direct line of the spray. We recommend using caution when applying pesticides.

IF IT IS TOO HOT OR COLD DURING NESTING SEASON

Heat from the sun can be reduced by orienting the box in an easterly to northeasterly direction and positioning it to have afternoon shade. The boxes may be painted white or fitted with solar shields (see references). To reduce cold winds from chilling the nestlings, orient the box away from the prevailing wind direction.

Box Characteristics

UNTREATED, WELL-INSULATED, PREDATOR-THWARTING BOX

Whether a box is built or purchased, untreated wood should be used that is 3/4" thick to provide insulation. Ideally, use a rot-resistant wood such as cedar or redwood, although fir and pine boxes can be okay too. The roof should extend out to make it hard for predators to sit on top of the box and reach into it. If you are building the box, see the references for plans and how-to videos.

RESTRICTING ENTRANCE

Placing a hole guard of 1-9/16" around the entrance allows for Western Bluebirds and smaller species to enter, prevents larger non-native European Starlings from using it, and keeps native woodpeckers and squirrels from enlarging the hole.

TABLE 1: WHAT AND WHERE BENEFICIAL SONGBIRDS EAT AND NEST*

Beneficial Birds	Crop Pests Eaten by Birds**	Foraging Areas ²⁶	Preferred Nesting Habitat ^{27, 28, 29}	Nest Box Spacing ³⁰	Eggs	Nesting Material [®]	Nests	
NATIVE BIRDS THAT USE WESTERN BLUEBIRD BOXES								
WESTERN BLUEBIRD (& Mountain)	Western: Wine Grapes: Tortricid moths, sage leaf hoppers, mosquitoes. ^{1,2,3} Orchard Fruit: Beetles, caterpillars, grass- hoppers, stink bugs ⁴	Ground gleaner, lower canopy forager	Western: Prefers semi-open grasslands and scattered trees; vineyards, orchards, diverse farmscapes, riparian, forests Mountain: Meadows inter- spersed in forests	Western: 215' Mountain: 300'		Grasses and/or pine needles		
CHESTNUT- BACKED CHICKADEE (& Black- capped & Mountain)	Chestnut-backed: Apples: Codling moths ⁵ Orchard Fruit: Caterpillars, true bugs. ⁶ Black-capped: Apples: Codling moths ⁷ Pears: Pear psylla ⁸	Lower canopy gleaner, forager	Prefers more wooded and shady sites than W. Bluebird. Mtn: forest, riparian. Ch-backed & Blk-capped: same as Mtn, plus open & forest edges, respectively	Ch-backed: 160' Blk-capped: 650' Mtn: 1 box/ 10 acres		Moss or plant fibers lined with fur or fine plant material		
FLYCATCHER (Ash-throated)	Orchard Fruit: Weevils, wood-boring beetles, stink bugs, shield bugs, leafhoppers, jumping plant lice, aphids, treehoppers, flies, caterpillars ⁹	Catches insects, lower canopy gleaner	Generally, likes the same areas as W. Bluebird. Shrubs, riparian, open woodlands, forest edges	200'	306	Grasses, twigs and strips of bark lined with hair, fur, and feathers	b.	
NUTHATCH (White- breasted)	Walnuts: Codling moths ¹⁰ Pears: Pear psylla ¹¹	Upper canopy, bark gleaner	Generally, likes more wooded locations than W. Bluebird Orchards, open woodland, forest edges, deciduous and/ or coniferous woodlands	1,040'		Fur, bark, dirt lined with fine grasses, shredded bark and feathers		
TREE SWALLOW (& Violet-green)	Violet-green: Orchard Fruit: Leafhoppers, leafbugs, flies, beetles, true bugs ¹²	Air screener, lower canopy gleaner	Prefers wetlands, lakes, creeks, & water/mud for nest building. Tree: Diverse farmscapes, vineyards, marshes, wooded swamps. Violet-green: Open woodlands, forest edges	Tree: 35' Violet- green: 30'		Grasses lined with many feathers		
TITMOUSE (Oak)	Strawberries: Cucumber beetles, lygus bugs, green peach aphids. ¹³ Orchard Fruit: True bugs, black olive scale, leafhoppers, tree hoppers, jumping plant lice, caterpillars, beetles, weevils, ants ¹⁴	Lower canopy forager	Open woodlands, prefers more wooded locations than W. Bluebird	275'		Moss lined with feathers		
BEWICK'S WREN (& House)	Bewick's: Orchard Fruit: Leaf bugs, true bugs, weevils, caterpillars ¹⁵ House: Orchard Fruit: Caterpillars, beetles, true bugs, ants ¹⁶	Lower canopy gleaner, ground gleaner	Prefers more wooded locations than W. Bluebird. Bewick's: Hedgerows, shrubs, open woodlands, riparian, deserts House: Farmyards, open	Bewick's: 450' House: 100'		Sticks, with an inner cup lined with plant fibers		

woodlands, riparian, forests

UNWELCOME NON-NATIVE BIRD THAT USES WESTERN BLUEBIRD NEST BOXES AND NEST SHELVES

HOUSE **SPARROW** (also called English Sparrow)



Fly larvae, aphids, weevils, grasshoppers, caterpillars¹⁷ Ground aleaner Holes in buildings, nest boxes in open areas, old Barn Swallow nests

Variable



Tall, sloppy, tunnel nest of grasses, possibly with feathers and trash



NATIVE BIRDS THAT USE NEST SHELVES

AMERICAN ROBIN



Orchard Fruit: Weevils, caterpillars¹⁸

Ground gleaner, lower canopy & ground forager

Air

screener

Farmlands, woodlands, gardens and parks

65'

Grasses. twigs, feathers. rootlets or moss with mud



BARN **SWALLOW**



Strawberries: Lygus bugs, seedcorn maggots.¹⁹ Oil seed rape: Cabbage seedpod weevils, pollen beetles.²⁰ Orchard Fruit: Leaf bugs, flies, wasps, beetles²¹

Farmlands, grasslands, riparian, and water/mud for nest building

5'





SAY'S **PHOEBE**



Orchard Fruit: Beetles, ants. wasps, flies, caterpillars, grasshoppers, crickets²²

Fly out to catch insects

Farmlands, grasslands and riparian

330'



grasses, lined



NATIVE BIRDS THAT USE BUILDING EAVES

BLACK PHOEBE



Orchard Fruit: Beetles, wasps, flies, leaf bugs, chinch bugs, stink bugs, leafhoppers, treehoppers, jumping plant lice, aphids²³

Fly out to catch insects. lower canopy gleaner

Grasslands, riparian, and water/mud for nest building No data at this time



Mud lined with plant fibers



CLIFF **SWALLOW**



Orchard Fruit: Wasps, leaf bugs, squash bugs, stink bugs, shield bugs, leafhoppers, treehoppers, jumping plant lice, beetles, flies²⁴

Air screener

Farmlands, pastures, riparian, and water resources for mud nest building

Will nest communally



Mud lined with dried grasses



NATIVE BIRD THAT USES A GROUND NEST

KILLDEER



Beetles, flies, mosquitoes²⁵

Ground gleaner

Cultivated farm fields. heavily grazed pastures, parking areas, trails and paths No data at this time



Add rocks. bits of shell, sticks, and trash



^{*} References and photo credits available at www.wildfarmalliance.org/nesting structures

TABLE 2: BOX INSTALLATIONS WITH NECESSARY ACTIONS, DEPENDING ON THE PREDATOR

PREDATORS	1) Mount on EMT conduit metal pole	2) Hang from tree branch	3) Install on fence	4) Mount on tree
Cats and Raccoons	Attach wobbling baffle guard to pole	No problem	Attach Noel wire guard to entrance hole after eggs have been laid	Attach Noel wire guard or attach flexible plastic sheeting around tree trunk
Mice, Rats and Squirrels	Attach wobbling baffle guard to pole	Extend roof eave over entrance hole	Move to pole with baffle	Move to pole with baffle
Snakes	Attach wobbling baffle guard to pole	Move to pole with baffle	Move to pole with baffle	Move to pole with baffle

^{#1} and #2 offer the most safety for the birds.

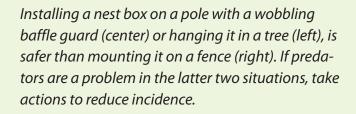
TABLE 3: BOX MANAGEMENT WITH NECESSARY ACTIONS DEPENDING ON THE THREAT

Hawks, Jays & Crows	European Starlings, Woodpeckers & Squirrels	House Sparrows	Paper Wasps	Fire Ants	Bumblebees
Attach Noel wire guard to entrance hole after eggs have been laid	Attach hole guard to entrance to keep same size and larger predators out	Remove Sparrow nest inside box, relocate box if they are a reoccurring problem	Wait until cool weather to remove wasp nest inside box, then rub bar soap on ceiling	Place diatomaceous earth in ant nest under box	Consider leaving these Bees in the box, since they are beneficial to the farm

^{#3} might work if boxes are monitored for predators and moved when necessary.

^{#4} is the most risky because predators are often present in trees.









Nest Box Installation

Nest boxes can be installed year-round, but for them to be used in the upcoming the nesting season, they should be placed by the end of January.

POLE MOUNTING OR HANGING A BOX IS PREFERABLE

Mounting a box on a pole with a wobbling baffle predator guard in a location away from branches, fences or other structures that predators could jump from is the safest way to protect bird families. While there are several pole designs (see references), a popular one from Cornell uses a 5' tall, 1/2"-wide metal conduit pole placed over a 4–5' long, 3/8"-wide rebar that has been pounded halfway into the ground. The wobbling baffle can be created by drilling a hole in a plastic 3-gallon garbage can, turning it upside down and supporting it about 6" below the box with a hose clamp around the pole.

Hanging a nest box about 15" below a supporting branch makes it difficult for large predators to jump on the box. The hanger can be fashioned out of a 3/16" metal rod



Taking a photo with a phone, as was done with these six Tree Swallow nestlings, can be a quick way to record nest box occupancy. Learn how to check nest boxes safely by reviewing NestWatch's Code of Conduct, so that parents don't desert the boxes, predators aren't attracted to them, or accidental harm isn't caused.

bent to look like a question mark with a backward hook at its opening, and it can be secured tightly inside the box with a small brace over the twice-bent wire (see references). Snakes, rats and mice can be a problem with a hanging box, and if that is the case, the roof eave should be extended to 5", or the box should be moved to a pole with a wobbling baffle.

PROS AND CONS OF WIRE AND WOODEN FENCE MOUNTINGS

In the short term, mounting a nest box on a fence is less expensive and easier than mounting on a pole, but if there are predator problems, the box should either be moved to a pole with a wobbling baffle, or a Noel wire guard should be attached to the entrance hole after eggs have been laid. A Noel guard is moderately discouraging to birds, so it is best attached after the parents are committed to the box. A wire fence is likely safer than a wooden fence because the latter can serve as a highway for squirrels, rats, cats and raccoons. Predators have also been known to raid a series of boxes along fence lines.

TREE MOUNTING IS PROBLEMATIC

While birds have evolved to nest in tree cavities, there is a higher likelihood that many of their predators who also spend time in trees will find and eat them in tree-mounted boxes compared to a pole-mounted box, hanging box or a box mounted on a wire fence. Predator access may be reduced by placing flexible plastic sheeting around the tree trunk.

Monitoring a Box for Occupancy

CODE OF CONDUCT AT THE NEST

Before you or anyone else on the farm looks inside a box, everyone should first read NestWatch's Code of Conduct and take their quick quiz to become certified. Nest-Watch goes over two different ways to prevent predators from noticing the nest you are checking, five different times when it's best not to check, and how to be quick when you do. Native songbirds are protected by the Migratory Bird Treaty Act, so do not touch eggs or live chicks, which are fragile and could be inadvertently harmed.



AVERAGE TIMETABLE FOR NATIVE BIRD SPECIES THAT USE A WESTERN BLUEBIRD BOX

Looking for nest site: January (in southern states) to mid-March (in northern states)

Nest building: 2-6 days

Egg laying: 5-7 days

Incubation: 12-16 days

Nestling period: 12-24 days

Broods: Many species will raise 1-2 with favorable conditions.

Bluebirds may raise as many as 3!

IDENTIFYING THE BOX

Keep track of your boxes by numbering them, listing them in a chart and making a map of their locations or geotagging them.

CHECKING AT LEAST TWICE

If your time is limited, like most farmers, it is best to check your boxes at least twice per year, once during the nesting season and again in the fall or winter when cleaning out the boxes. The images in Table 1 help identify the eggs, nests and nesting materials of the different species. Keep records of what you find and share with Wild Farm Alliance on the <u>Farmland Flyways</u> portal. Using your phone to take photos of the nest box number and the nest makes recordkeeping easy. If predators are a problem, see Tables 2 and 3 for solutions.

MONITORING THROUGHOUT THE SEASON

If you or a family member has time, monitor the boxes every 3–4 days (or once a week), starting in late-February and continuing through mid-July (up to September for some species). The Cornell Lab's <u>NestWatch</u> program and the <u>California Bluebird Recovery Program</u> make it easy to record your observations online, and later, analyze the data.

OCCUPANCY INCREASES OVER TIME

It may take a few years for your nest boxes to become occupied, especially if there are not many individuals of the species present that would use them. As a few boxes begin to be used and the populations build, the offspring may spread out to the other boxes.

FINDING BUMBLEBEES IN A BOX

Bumblebees will sometimes bury a ball of honey and eggs within old bird nesting material. For optimum survival of these crop-pollinating bees, leave them in the box and install a new bird box nearby.

NATIVE HOUSE WRENS

House Wrens are small birds that occasionally take over the nests of other birds, or they may take over multiple nest boxes with jumbles of sticks, but only end up using



To lessen the chance of having a non-native House Sparrow (above) use a nest box, place it at least 100 yards from bird feeders and livestock areas.

one. Since they are a native, protected species, the best course of action can be to move boxes away from shrubby areas and into more open locations.

NON-NATIVE PROBLEMATIC PAPER WASPS AND FIRE ANTS

To remove Paper Wasp nests without getting stung, wait until the fall or winter when the weather is cold. For further deterrence, rub bar soap on the ceiling of the box where wasps could try to attach another of their nests. To discourage Fire Ants, place diatomaceous earth in the ant nest near the box.

NON-NATIVE, UNDESIRABLE HOUSE SPARROWS

House Sparrows (not to be confused with House Wrens) are the only unwelcome birds that are small enough to use the Western Bluebird nest box if entrance holes are kept to the proper dimensions. These non-native birds can displace native birds, or worse, kill them, destroy their eggs and/or kill their nestlings. If you see House Sparrows using a nest box (see Table 1), remove their nest with eggs or chicks and dispose of them away from the box. Caution: do not remove the nest if you haven't seen the adult House Sparrow using it. These Sparrows are drawn to areas where livestock congregate and to bird feeders, so make sure nest boxes are at least 100 yards away from these food sources.

SIGNS OF PREDATORS AND COMPETITORS

Eggs or nestlings could go missing because of a predator or a competing House Sparrow or House Wren. Cracked eggs, dead chicks, nesting material partially pulled out of the box and/or feathers found on the ground are other indicators of predators or competitors. Install predator guards and/or mount the box on a pole (see Tables 2 and 3), or move the box to a new location away from competing birds.



Allowing birds to nest on your buildings, like these Barn Swallow chicks, will increase the number of insectivorous birds on the farm.

Maintaining a Box

WHY NEST BOXES SHOULD BE CLEANED OUT

Old nests left in place could harbor parasites such as mites, lice and blowfly larvae that attack newly hatched chicks. Allowing birds to build a new nest on top of the old one means the nestlings are that much closer to the entrance hole, making it easier for predators to grab them.

CLEAN BOXES BEFORE SPRING

Nest boxes can be cleaned out between October and the end of January. After that, the birds may start building an early nest on top of the old one, which then should not be disturbed!

WHAT YOU'LL NEED

Mask, gloves, putty knife or spatula, stiff brush, garbage bag, phone (or pen & notebook).

HOW TO CLEAN THE BOXES

Stand upwind and wear a mask and gloves to protect yourself from dusty feces and possible pathogens. Decide what bird species's nest is present and note that (see Table 1). Use a putty knife, spatula and stiff brush to clean the nest. Collect the old nests in a garbage bag and transfer them to a compost pile. If that is inconvenient, dump the nests at least 50' from the boxes to deter predators. If it appears that a mouse was living in the box, soak the nest with water to eliminate dust, then wait 15 minutes before cleaning it out in case the rodent was carrying hantavirus. Wash hands afterward.

ALLOWING NESTS TO BE BUILT ON FARM BUILDINGS

Several insect-eating birds will build their nests on farm buildings when permitted to do so (see Table 1). Some of them, such as Cliff Swallows and Black Phoebes, build mud nests under the eaves of buildings. Others, such as American Robins, Barn Swallows and Say's Phoebes, build either mud or grass nests on shelves or ledges in or outside of buildings. The mud builders need a source of water, which can be easily provided by creating a shallow zone that is kept soaked during the nesting season.



Wild Farm Alliance has several resources about birds in agriculture, including a video about supporting nest birds—the topic of this fact sheet—see Birds Nesting on the Farm video.

When allowing birds to nest inside buildings, make sure their nests are not above where food or its packaging is stored. For keeping non-food items from being affected by the birds, tarps can be rigged under the boxes to catch the detritus.

If you do not want native birds nesting in or on your buildings, you must discourage or exclude them early. Once they have laid eggs, these are protected by the <u>Migratory Bird Treaty Act</u>.

The one bird you don't want to allow in your buildings is the European Starling because they are non-native and can cause crop damage. Starlings can be excluded by placing woven wire over cracks and other small openings in buildings.

Other Nesting Birds

GROUND NESTING BIRDS

Farms often have ground nesting Killdeer in their fields. These birds lay camouflaged eggs that can be easily missed in a small depression in bare ground (see Table 1). When disturbed, the parent will feign being hurt to draw intruders away. If you see this occurring, try to limit human activity in that area.

HABITAT NESTING BIRDS

Non-cavity-nesting bird species use grasses, shrubs and trees as natural sites for locating their nests. If you find a nest in these habitats, follow NestWatch's Code of Conduct to ensure the bird family's safety. The resource section of Wild Farm Alliance's website contains materials for learning more about which native plants birds prefer and how best to install that habitat.

INSTALLING OR PLANTING PERCHES

Songbirds will use perches of wood or metal or living plants. Artificial perches can be constructed like a "T," between 4' and 8' tall, a few feet higher than the crop. Farmers can grow perches, such as rows of sunflowers or sorghum for songbirds to hunt from, and intersperse these plants throughout the fields.



Nest box location matters. For a White-breasted Nuthatch, it should be placed in orchards or nearby naturally wooded areas since they forage on the bark of trees.

Resources (each entry is linked to their website)

BUILDING AND INSTALLING NEST BOXES

Western Bluebird Nest Box Plan – The Cornell Lab's NestWatch

How to Assemble a Nest Box – The Cornell Lab's Video

How to Install a Nest Box – The Cornell Lab's Video

Mounting the Nestbox – Nestbox Builder

Hanging Nestboxes – Nestbox Builder

How to Drill Holes Through EMT Conduit to Make a Telescoping Pole 2019 – Backyard Birds Video

How to Mount a Nest Box on a 10-foot Telescoping Pole Made of Conduit 2019 – Backyard Birds Video

Entrance Hole Guards – Kettle Moraine Woodworking

How to Make a Predator Baffle With a Can & a Duct Pipe 2019 – Backyard Birds Video

Noel Wire Guard – Bluebirds Forever

Solar Shields – Yeager PVC Bird House Heat Shield Kit

MONITORING NEST BOXES

Code of Conduct – The Cornell Lab's NestWatch instructions on being extremely careful when monitoring

How to Check a Nest – The Cornell Lab's Video

California Bluebird Recovery Program – Report monitoring data

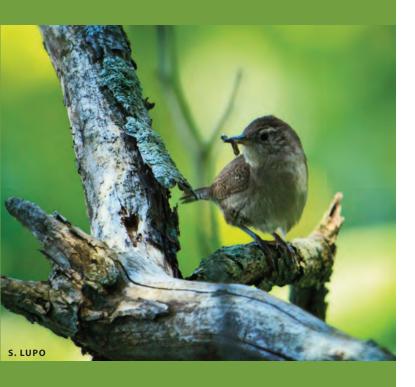
GENERAL WEBSITES

Benefits of Birds on the Farm – Wild Farm Alliance

All About Birds – The Cornell Lab's Online Guide to Birds and Birdwatching

California Bluebird Recovery Program

Nest Watch – The Cornell Lab's nationwide nest-monitoring and tracking program North American Bluebird Society





Bringing Nature Back to Our Farms and Ranches



Our mission is to promote healthy, viable agriculture that protects and restores wild nature.

Sialis Home: Helping Bluebirds and Other Small Cavity Nesters Woodworking for Wildlife in Tennessee

GENERAL WEB RESOURCES

Point Blue Conservation Science

Birds Nesting on the Farm – Wild Farm Alliance's Video
Supporting Beneficial Birds and Managing Pest Birds – Wild Farm Alliance's Booklet
Role of Birds on the Farm – Wild Farm Alliance's Recorded 10 Lesson Course
Being the Best Nest Box Landlord for Songbirds in the West –

Keeping Grasslands Healthy – Point Blue Conservation Science
Keeping Oak Woodlands Healthy – Point Blue Conservation Science
Keeping Riparian Habitats Healthy – Point Blue Conservation Science
Keeping Mountain Meadows Healthy – Point Blue Conservation Science
Structures for Wildlife – USDA. NRCS. California.

Artificial Nesting Structures – Wildlife Habitat Management Institute, USDA. NRCS. 2001.

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