



American Kestrel

(*Falco sparverius*)

The brightly colored American Kestrel is North America's smallest falcon, measuring just 8 to 10 inches in length. They feed primarily on insects, small rodents and sometimes birds. This fierce hunter adapts well to human-influenced habitats and urban settings, but the species' population is declining in many regions of the United States, including Arizona. Tucson Bird Count data show a sharp reduction in numbers locally since 2010. Kestrels suffer from habitat loss and a lack of available nest cavities. Fortunately, this species readily accepts human-crafted nestboxes.



Nestbox programs are currently supporting the American Kestrel around the country. Watch for these birds perching on utility wires or hovering in the sky as they search for prey below. You may hear them calling: *klee-klee-klee*.

HABITAT Kestrels prefer semi-open country of all kinds, especially with available hunting perches providing views of surrounding land. In the Sonoran Desert kestrels frequently nest in flicker holes in saguaros. Kestrels also nest in urban and suburban palm trees, underneath untrimmed fronds.

BOX MOUNTING Boxes should be placed between 10 and 20 feet high with a northern or eastern orientation. They can be affixed to houses, trees or poles. Boxes should not be placed among dense trees or shrubs, an open flight path to the entrance of the box is a must.

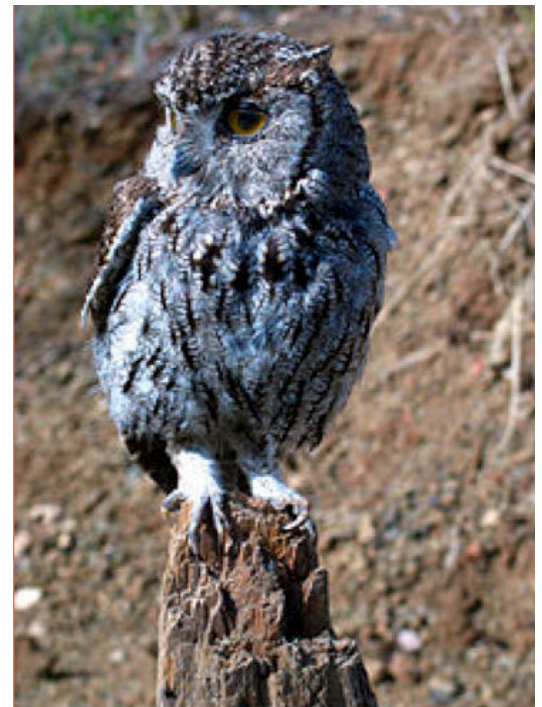
NESTING FACTS Kestrel pairs in Arizona deserts begin courtship in late winter. The male often performs impressive feats of aerial display. As the time for egg-laying draws near, the male provides more and more of the female's daily food. Kestrels lay eggs as early as March, but the peak of the breeding season is in April and May. The birds use no nesting material, laying eggs on debris found naturally in cavities. For nestboxes, we recommend providing wood shavings to cushion the eggs. Kestrels may return to reuse the same nests, year after year. During the winter, kestrels sometimes roost in nestboxes and cavities.



Western Screech Owl

(*Megascops kennicottii*)

Screech-owls are well known for their tolerance of humans, adaptability to semi-urban landscapes, and willingness to nest in boxes. In fact, they often take over nestboxes intended for American Kestrels. Though Screech-owl populations are not immediately threatened, they suffer from loss of habitat and are susceptible to severe decreases, especially in suburban and urban environments. With their intense, bright eyes, fun “bouncing ball” calls, and nocturnal hunting habits, these owls are highly charismatic and can provide a fascinating study of unique avian habits for bird enthusiasts. Owls also provide important environmental services in their roles as rodent predators.



HABITAT Western Screech-owls of the Sonoran Desert prefer stretches of thorn scrub desert, often nesting in woodpecker holes of saguaro cacti. They are common in Arizona suburbs with at least half-acre house lots and natural vegetation.

BOX MOUNTING Boxes should be placed at least 7 feet high, though heights of 10 to 20 feet may prove most successful.



NESTING FACTS Courtship begins for screech owls as early as January and February, when male owls begin calling near their nest sites. Nests may be occupied by mid-February with eggs laid by April. Peak breeding occurs late April through late May. Three to five eggs are incubated for 33 or 34 days. Owlets may be observed peering out of the nest hole about ten days prior to fledging. Avoid disturbance near the nestbox. Nests may be occupied throughout the year for roosting.



Photos (top to bottom): Western Screech-owl US Gov't, Public Domain, TAS web cam

American Kestrel / Western Screech-owl

Nestbox Construction Guidelines

Kestrels and Screech-owls use the same size nestbox

RECOMMENDATIONS:

- 1" ($=\frac{3}{4}$ ") thick lumber
- Rough surface inside (if smooth, add footholds for chicks to climb out = hardware cloth or chiseled ladder)
- Sloping roof for rain to run off
- Extended roof (2 to 5" lip) to protect from driving rain, sun, wind, predators
- Floor set above side bottoms at least $\frac{1}{4}$ " for water to drip off
- Detachable roof / pivoting side for monitoring of nest and cleaning
- Ventilation holes or spaces in sides for rising heat to escape
- Drainage holes in floors, or cut corners for any moisture to escape

LONG-TERM CONSIDERATIONS:

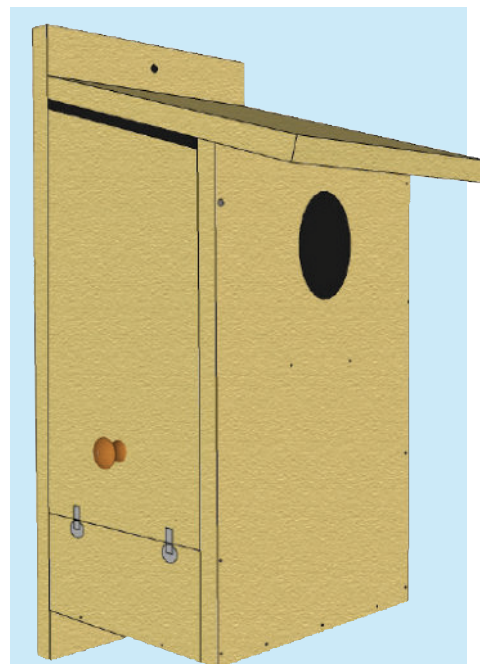
- Many birds return to the same nest site year after year; $\frac{3}{4}$ " lumber will endure 10 years
- Some birds will roost in boxes during winter
- Kestrels and owls do not build a nest. It is important to provide 2-3 inches of wood chips or shavings (not dust) to cushion the eggs
- Clean out old nests and replace wood shavings once a year in fall or winter

LUMBER RECOMMENDATIONS:

- White pine (most affordable and durable); cedar and fir (expensive but very durable)
- Exterior plywood is treated with carcinogen formaldehyde; may be used for roofs
- Finished lumber: 1" x 4" = $\frac{3}{4}$ " x 3 $\frac{1}{2}$ " / 1" x 12" = $\frac{3}{4}$ " x 11 $\frac{3}{4}$ "

Photo by Bruce Taubert. Nestbox plan by Art Gingert.
Text by Keith Ashley, Olya Weekley

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Notes on Materials

- A great choice for lumber is Type EWP, 1x12 “rough one side” white pine, which is not only easy to work with, lightweight and quite aesthetic, but also inexpensive. It is most often found in a thickness of 13/16”. Approximately 10’ of 1x12 EWP lumber is needed per box, allowing for minimal waste and avoidance of knots, cracks, etc. Cedar is also a good choice, but pricier, and oak, though durable, is heavier than needed. Avoid using 1” rough-cut sawmill pine, which is much harder to work with and creates a heavy, unwieldy nestbox which can be unsafe to deal with while up in a tree.
- For fasteners, GRK screws (2” x #8 **Trimhead type) are superb; strong, easy to use with a cordless drill, look good, and most importantly, they will not split the lumber near the ends of pieces (which may happen with standard GRKs, decking screws or nails). Approximately 35 screws per box.
- The use of a light bead of high quality wood glue on all joined edges guarantees a strong, weatherproof box with tight joints.
- Do not paint or otherwise treat with a wood preservative. The EWP pine will weather to a warm gray color naturally and last in all weathers and seasons for several decades, if well constructed.



Construction Notes

- Quality carpentry in construction is important for many reasons—for durability, appearance, weather “tightness” and ultimately the safety of the bird species which may use the box.
- A radial arm saw is quite useful for cutting out nestbox pieces, especially for the bevel and angle cuts, and for incidental trimming. Use a table saw to trim some 1x12 stock to 9 5/8” as needed (see plans).
- If a number of boxes are needed, it is helpful to make a “jig” with support rails to assist in securing the *back* of the box to the *fixed side*, which is the first step in construction. Drawing a short guideline 3 1/2” down from the top of the *back* is helpful for positioning these two pieces, which ensures adequate space (2 1/2”) at the top and bottom of the *back* for the lag screws used when mounting the box.
- The *floor* piece is inset upwards 1/8” in order to keep rainwater from seeping into the joints. Be sure to test the fit of this piece against the two sides, for both width and depth, since it may need to be trimmed slightly. Nip off 3/8” square from each corner before securing the *floor*. This ensures that however the box is mounted, any rainwater entering the box will find its way out at the lowest corner & drainage hole.
- A small *perch* piece is very useful, secured horizontally inside the box, centered 2 to 2 1/2” below the entrance hole. A bead of construction adhesive on the *perch* helps it stay in place while the *front* is turned over and the *perch* screwed in place from the outside (using 2 screws, 8 1/4” down from roof, 4” in from each side of box). No perch outside as it may provide access to predators.
- When securing the *front*, carefully align it with the *fixed side*. Trim bottom edge of *front* if necessary.
- The *roof* is best secured by working from the back of the box. Apply a thick bead of construction adhesive to the beveled edge of the *roof* and use some force to squeeze the *roof* tightly against the *back*, creating a totally weatherproof seal which is quite durable in the field. A high quality caulk (like clear Lexel) could also be used with this step. Start by securing *roof* to *fixed side*. Make sure to put several screws through the *back* and into the rear edge of the *roof* piece.
- Cut the 45° bevel across the *hinged side*, with the cut edge of the upper part overlapping the lower part (shingle-like). Check for good fit, leaving a 3/8” space below the *roof* edge to allow for “hinging” and ventilation. If the *hinged side* is tight and needs trimming along one of its vertical edges, use a pencil with one’s hand inside the entrance hole to mark it. One can also trim the lower edge of the *side stop* if needed. Secure the smaller *side stop* piece.

Nestbox Plan

by Art Gingert

Assembly Sequence

- 1 Attach *back* to *fixed side*, then secure *floor* to *back* & *fixed side*.
- 2 Attach *front* (with inside *perch*) to *fixed side* & *floor*.
- 3 Attach *roof* to *fixed side*, *front* and *back*.
- 4 Cut 45° bevel across *hinged side*, check fit, and secure *side stop* to *back*, *front* and *floor*.
- 5 Finally, attach *hinged side* using hinge nails.

Notes on Design

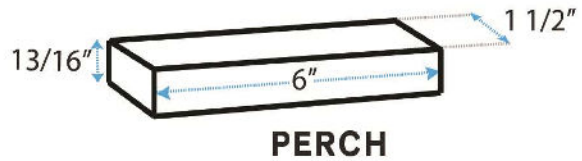
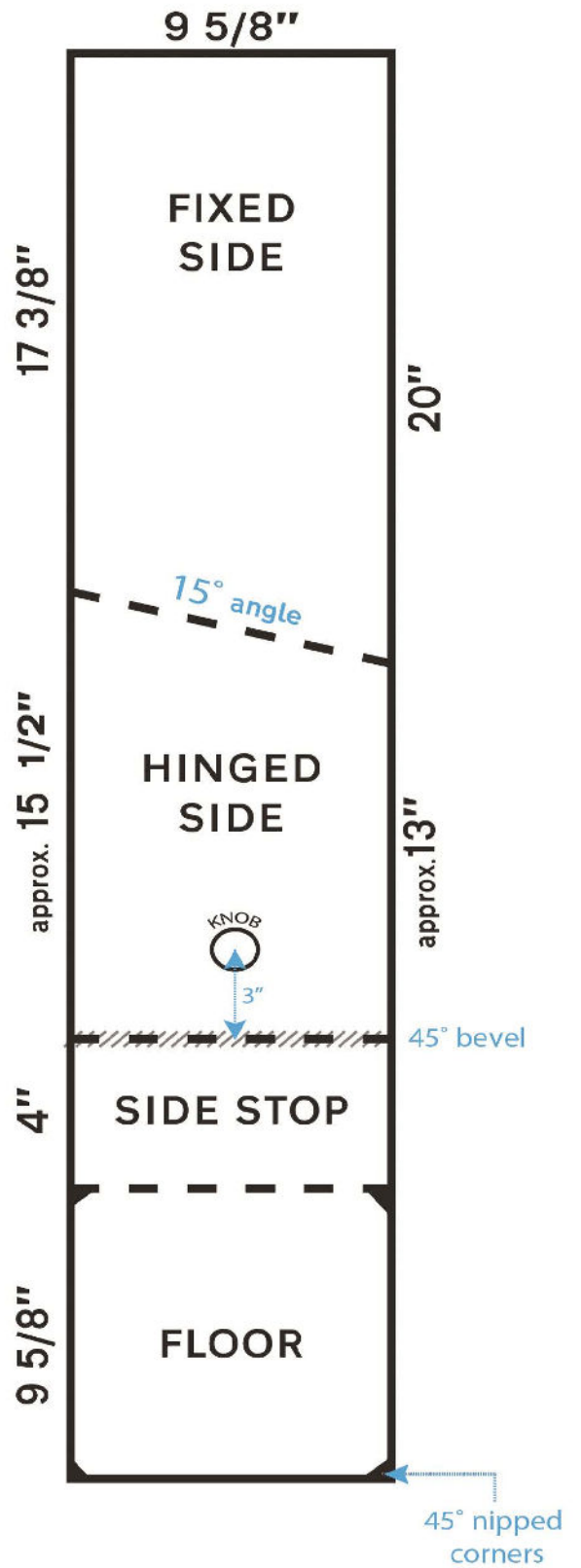
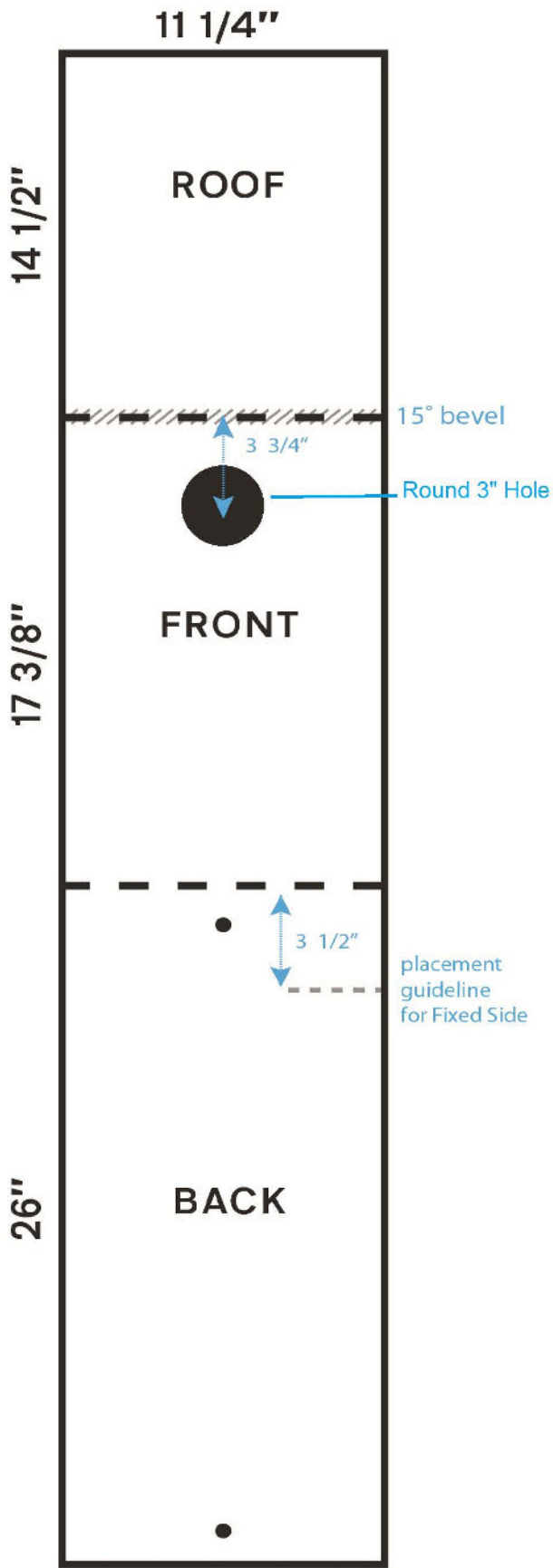
- The side-opening design of the nestbox—with fixed *side stop*—serves a number of practical purposes. The box is much safer to monitor than if it were top-opening; wood shavings, eggs and nestlings are secure; and adult birds and nestlings are easier to capture for banding and research work.
- Door knob can be made out of scrap wood. Door stopping mechanism is a swivel that holds the door shut.
- The floor size for this nestbox design provides almost 93 square inches, which is close to 50% larger than the 8" x 8" floors recommended in the majority of American Kestrel nestbox designs available in the literature or online. Having observed breeding kestrels using wood duck boxes in drained beaver swamps years ago, I realized that more living space was significantly advantageous for broods of five or six nestlings which spend up to a month in the nestboxes.

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Photos by Axel Elfner (top) and Martin Molina (bottom).





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