

Western Kingbird Use of Brightly-Colored Artificial Fibers as Nesting Material

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While conducting field work for the Breeding Bird Atlas of Sacramento County, California, in May 2020, mostly looking for nesting confirmations, we noticed that three of the Western Kingbird (*Tyrannus verticalis*) nests we found had obviously artificial blue fibers woven into them. In total, we identified about 10-12 nests, but we were not making a concerted effort to look for color fibers throughout our search period. These observations raised questions regarding the prevalence of use of artificial fibers in nest construction by Western Kingbirds and whether the species prefers using blue fibers.

Subsequently we received a photograph of a Western Kingbird nest, taken by Jeri Langham in eastern Yolo County on 9 June 2020, that had both blue and white fibers in it (Figure 1). We then queried a few birders in the Sacramento Region for additional records of Western Kingbird nest material observations. Ed Pandolfino reported three records of nests, one from Loomis, Placer County, in 2001 and two in southern Sacramento County in 2019 and 2020, in which kingbirds used colored fibers, all of which were blue.

We then conducted a Google search for images using the subject line “Western Kingbird nest”. We tallied images of 34 nests, all taken in the field and usually containing eggs, nestlings, or a brooding female. These nests were photographed in various locations throughout the range of the species. We did not include in this total some images of nests in museum collections, most of which probably pre-dated the widespread availability of color-dyed fibers. Of these 34 nests, 21 (62%) contained no visible brightly colored fibers. Notably, some of these nests may have contained colored fibers in parts of the nests that were not visible in the images.

Eleven (32%) of the nests located online contained blue fibers (examples of some of these can be seen at web sites listed in Appendix 1). Of these 11 nests, 8 (24%) contained only blue fibers; the other three also contained red and/or green fibers, as well. One nest contained only green fibers, and another contained a strand of yellow/orange string. We ignored what might have been white, buff, or brown fibers, because these resemble natural nest materials (dried grasses, twigs, etc.) in these images. The kingbirds themselves may have difficulty distinguishing white, buff, brown artificial fibers—and perhaps also the green or yellow/orange, found in four nests—from visually similar natural nest materials.

The source of the blue fibers used by kingbirds is difficult to determine, because many of the nests were inaccessible for close examination. Based on the color and size, some of the fibers may be derived from blue woven reinforced polyethylene tarps that are widely sold in the region (see Figure 1). Our collected observations, including nest images on the web, seem to indicate that the source types of artificially colored fibers are varied.

Western Kingbirds are known to incorporate cotton and other soft materials into their nests. The nest description in the Birds of the World account mentions the use of “string” but provides no information on the type, frequency, or color of anthropogenic materials in nest (Gamble and Bergin 2020).

The exact function of the artificial fibers in nests is unclear. They may simply be materials that can be formed into a nest to hold and insulate the eggs. Descriptions of fibers being woven into the nests (Gamble and Bergin 2020) suggests that they may be used to strengthen the nest. The female Western Kingbird makes the nest after the pair has formed (Gamble and Bergin 2020), so using bright colored material is likely not a result of sexual selection for mate attraction.

It is not clear if kingbirds are actively selecting blue fibers or if they are simply picking up a wide variety of fibers, and blue ones happens to be the most readily available artificially colored fibers in their habitat. We found nothing in the literature on colored fiber use or preference by nest-building Western Kingbirds, but an experimental study (Muth et al. 2013) of color material preference by captive Zebra Finches (*Taeniopygia guttata*) found that most pairs preferred blue material. The study offered the finches access to blue, red, and yellow potential nest materials. A similar field trial could be conducted, by placing clusters of artificially colored fiber strands in the environments of nest-building Western Kingbirds to see if they preferentially select certain colors.

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LITERATURE CITED

Gamble, L.R., and T.M. Bergin (2020). Western Kingbird (*Tyrannus verticalis*), version 1.0. *In* Birds of the World (A.F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.weskin.01>

Muth, F., M. Steele, and S.D. Sealy. 2013. Color preferences in nest-building Zebra Finches. *Behavioural Processes* 99:106-111.

Appendix 1. Links to online photos of Western Kingbird nests in which blue fibers were used.

<https://www.flickr.com/photos/hockeylover/35574581375/>,

<https://www.flickr.com/photos/soobie/35621606795/>,

<https://www.flickr.com/photos/100108154@N02/23059562802/>



Figure 1. Western Kingbird (*Tyrannus verticalis*) on nest composed of artificial blue fibers and other fibrous materials, Yolo County, CA, 9 June 2020.

Photo by Jeri Langham