

**ENTANGLEMENT IN PLASTIC MESH KILLS NESTING
SCISSOR-TAILED FLYCATCHERS**

MICHAEL S. HUSAK¹ AND DIANE V. LANDOLL²

¹*Department of Biological Sciences, Cameron University, Lawton, Oklahoma 73505.*

E-mail: michaelh@cameron.edu; ²*Department of Biology, University of Oklahoma,
Norman, Oklahoma 73019. E-mail: dvl04@hotmail.com*

Abstract--In 2010, we documented the death of two nesting Scissor-tailed Flycatchers in Comanche County, Oklahoma, due to entanglement with high density polyethylene plastic mesh used in nest construction. In both cases the mesh was comparable to the netting used to wrap hay bales, landscaping grass bundles, and erosion barriers. Our observations highlight the risk of the increased availability of improperly disposed plastic mesh in the environment to nesting birds.

INTRODUCTION

Scissor-tailed Flycatchers (*Tyrannus forficatus*) construct cup-shaped nests with a coarsely woven outer framework and an interior lining of finer, more compacted materials (Regosin 1998). The species appears opportunistic in their selection of nesting material, as evidenced by the variety of materials listed by previous authors (e.g. Bendire 1895, Bent 1963, Fitch 1950, Russell and Foreman 1979, Regosin 1998). Simmons (1925) and Fitch (1950) found that nests were comprised primarily of plant matter, with only small quantities of both animal and artificial material. However, Bendire (1895) described a nest in Fort Clarke, Texas with an inner lining almost exclusively of cotton twine. After finding a dead Scissor-tailed Flycatcher nestling hanging from a nest entangled in string and carpet fuzz in 1978, Russell and Foreman (1979) analyzed 29 nests to determine the extent to which artificial materials were being used in nests by this species in Brazos County, Texas. They found that 30.1% of nests by weight were comprised of artificial material, which was predominantly string, cigarette filters, and paper. A few "plastic strips" were found in six of the examined nests (Russell and Foreman 1979). Their findings point to an increase in use of artificial materials and the potential risks associated with that use. Because a greater variety of artificial materials have become available in the environment, especially plastics, it stands to reason that use by Scissor-tailed Flycatchers might have increased as well, presenting new problems similar to those described by Russell and Foreman (1979). However, little information on the use and effects of artificial materials by this species has been reported in recent decades.

Here we report two separate observations of Scissor-tailed Flycatcher deaths due to use of plastic baling mesh in nest construction. Observations were made while conducting a study on breeding biology of Scissor-tailed Flycatchers in Comanche County, Oklahoma, during the spring/summer of 2008 – 2012. While we provide no quantitative evaluation of nest construction or composition related to widespread use of such material, description of the events highlights the risks to wildlife of such artificial materials becoming widely available in the environment.

OBSERVATION 1

The first observation involved a female constructing a nest during the 2010 breeding season. On the morning of 1 July 2010, we observed a color-banded female carry natural and synthetic nest material from one vacant lot to another over a busy four-lane street in Lawton, Oklahoma. While traveling back and forth, the female often flew between or just over the wires of a 2-m tall chain-link fence topped with three horizontal strands of barbed wire. We watched the female make several trips to her nest site, then moved on to continue our work. We returned to the area shortly after 1300 hrs where we found the same female hanging from the bottom strand of barbed wire by a 20 cm long section of plastic mesh that was wrapped around a barb and her neck. It appears as though she tried to fly over or between the wires



Figure 1. A female Scissor-tailed Flycatcher found entangled in high density polyethylene mesh on a fence in Lawton, Oklahoma, on 1 July 2010. Photographed by Diane V. Landoll.

and the mesh became entangled in the barbs, pushing her head through the mesh as she was flying and breaking her neck (Figure 1). The mesh consisted of 1.5 cm x 1.5 cm squares and appeared to be made of high density polyethylene (HDPE) plastic (strands approximately 0.5 mm in diameter) that is typical of netting used to wrap hay bales, landscaping grass bundles, and erosion barriers. The vacant lot had been used as a construction staging site during 2009 and early 2010. Thus, while it cannot be confirmed, it is possible that the mesh was residual material from erosion barriers.

OBSERVATION 2

The second observation involved a male that had a nest on the Cameron University campus in Lawton, Oklahoma, about 3 km from the first observation. On 23 June 2010, the male was found hanging by his left leg from plastic mesh that was incorporated into the outer framework of

the nest. His left leg was stripped of skin and most of the muscle above the tarsometatarsus. His flight feathers, which had minimal wear the previous day, were frayed to the shaft, as if from beating them against leaves and branches. It appeared as though his leg was caught in the mesh as he tried to leave the nest after a feeding trip. He could not escape, despite vigorous attempts, and dangled there until he died. The mesh was of the same size and consistency as that described above in the first observation. While there was no obvious source of mesh in the immediate vicinity of the nest, there was a construction site and a barn where bales of hay wrapped in HDPE mesh were occasionally stored within one mile of the nest.

DISCUSSION

While much of the historical literature associated with the lethal effects of various plastics in the environment on birds has focused on marine species (e.g. Rothstein 1973, Pruter 1987, Podolsky 1992), there have been an increasing number of reports of deaths in land birds over the last 20 years (e.g. Loegering 1997, Samano et al. 1998, Slack 1992, Flowers 2012). The use of HDPE mesh/netting for construction, landscaping, and agricultural practices continues to increase due to its benefits in speed of application and preservation of materials, such as hay, wrapped in the mesh (Taylor 1995, Castellano et al. 2008, Shinnery et al. 2009). Unfortunately, these HDPE materials cannot be recycled or burned and are often improperly discarded, resulting in risks to not only wildlife, but also domestic animals (Burton 2012). Flowers (2012) recently reported on the death of a Western Kingbird (*T. verticalis*) in Kansas due to entanglement in HDPE twine, similar to that reported here. While our observations are the first published account of HDPE mesh killing Scissor-tailed Flycatchers, they highlight the need for an active pursuit of minimizing these materials in the environment.

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