SHORT COMMUNICATIONS

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NEST-BOX OCCUPANCY AND REPRODUCTIVE PERFORMANCE OF KESTRELS IN CENTRAL WISCONSIN

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The American Kestrel (*Falco sparverius*, hereafter ''kestrel'') is the most numerous and widespread North American falcon (Smallwood and Bird 2002), but recent data suggests there have been declines in breeding populations in the northeastern United States since the mid-1970s (Bildstein 1996, National Audubon Society 2002). Christmas Bird Counts (CBC) conducted from 1976–2003 in the northeastern United States and Eastern Canada indicated that kestrel numbers decreased by 4.6% per year (Farmer et al. 2005). Breeding Bird Surveys (BBS) conducted in northeastern United States from 1976–2007 showed a significant annual decline of 3.0% in kestrel numbers (Sauer et al. 2008). Declines in occupancy rates of nesting boxes occurred during 2002–05 in New Jersey (Smallwood 2007), with similar results reported from other areas of North America during the 1990s (Smallwood et al. 2009). No recent studies (since 1996) of kestrel occupancy rates and reproductive performance have been published for our area (north-central United States). Although the kestrel has been well studied throughout North America, additional information on its nesting biology from a variety of locations and environments will improve our understanding of these populations. Furthermore, nest-box monitoring programs may help reveal factors that are influencing population trends. Here we describe the reproductive performance of a stable breeding population of kestrels in a large grassland area in Wisconsin.

STUDY AREA

Our study area was originally an expansive wetland made up of tamarack (*Larix laricina*) swamps and open marsh. Early in the 1900s, local farmers ditched and drained the marsh for agricultural use. Most of the fields failed due to poorly drained soils and land was abandoned, reverting to idle grasslands (Westemeier 1971). The Buena Vista Grasslands (BVG) and Leola Grasslands are made up of warm- and cool-season grasses, forbs, and grass prairies. This area is largely open with approximately 8% forested, a mosaic of public and private lands. The Wisconsin Department of Natural Resources (WDNR) currently manages the ca. 4856 ha of the BVG for the Greater Prairie-Chicken (*Tympanuchus cupido*). The WDNR policy employs a 5–7- year rotation of grassland management that includes burning, mowing, grazing, and leaving fields fallow.

The kestrel monitoring program at BVG and Leola Grasslands began in 1967 with only two boxes, built and monitored by Frances Hamerstrom. Additional boxes were added the following year, bringing the total to 50 (Hamerstrom et al. 1973), and were maintained and monitored by Hamerstrom and many interns. The monitoring continued, but with decreasing effectiveness, until 1998. During March of 2000, the WDNR and a local conservation organization placed 50 nest boxes 4–6 m aboveground on abandoned and active utility poles, or on trees. An additional 17 boxes were added in 2002 and were monitored by D. Haessly during the 2002 and 2003 field seasons. We began monitoring and banding in 2004 with the approval of the WDNR.

METHODS

Nest boxes were constructed from 2.5-cm-thick rough-cut pine and followed Jacobs (1981) in design. The number of nest boxes available each year ranged from 58 to 69: 67 boxes were available in 2002 and 2004, 69 in 2003, 68 in 2005, 59 in 2006 and 2007, and 58 in 2008. The entire study area comprised ca. 20 771 ha in southwestern Portage County (44°N, 89°W) and northeastern Adams County, Wisconsin (Fig. 1). To assess nest-box occupancy, we limited our analysis to 40 nest boxes within the Core Area we defined (Fig. 1). These were the only boxes that were

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