

An innovative approach to understanding the Yellow-breasted Chat, a declining neotropical migratory bird

By Mark G. Alessi, Thomas J. Benson, and Michael P. Ward

Introduction

Any birder can tell you that attempting to get good looks of shrubland birds can be a challenge. In many species, males sing from an elevated perch, but male shrubland birds commonly sing from dense shrubs making it difficult with even the more conspicuous of the two sexes. Consequently, one can imagine the difficulty associated with researching shrubland birds. Fortunately, we used new technology to help overcome these hurdles.

Shrubland birds are declining throughout eastern North America (Dettmers 2003). Habitat-related factors are contributing to these declines, including the amount of 'hard' edges or abrupt transitions between shrublands and surrounding forests or agricultural land (Woodward et al. 2001), smaller average patch size (Annand & Thompson 1997, Rodewald & Vitz 2005), and an overall reduction in the amount of available habitat (Burhans and Thompson 1999). Although we often think of shrub habitats as 'edge' habitats, the majority of shrubland birds avoid edges if possible when larger patches are available (Rodewald & Vitz 2005, Schlossberg & King 2008).

A phenomenon we don't fully understand is why nest success varies among species in the same study system. Are shrubland birds that tend to be most vulnerable to nest predation the species with the most concerning population trends? Specifically, we were interested in examining species-level traits that cause the nests of some shrubland species to fail at higher rates than others.

We were also interested in studying Yellow-breasted Chats (*Icteria virens*) in more detail. Most diurnal birds engage in both a dawn and a dusk chorus, but chats also do something that most birds don't—they sing at night. This behavior is most pronounced soon after arrival on the breeding grounds (Canterbury 2007). Another well-studied nocturnal singer is the Common Nightingale (*Luscinia megarhynchos*) (Amrhein et al. 2002, 2004). Roth et al. (2009) translocated female nightingales and found they moved small distances during the day, but moved much farther at night, often visiting the territories of several males. Do female chats also move at night, and if so, why?

We investigated three hypotheses for why chats may move at night:

- Chats may forage at night to reduce the risk of predation while foraging. If this were true, we predicted move-

ments would occur most often or increase in frequency with increased moon illumination that allowed greater visibility for feeding.

- Chats may increase nocturnal activity shortly before leaving the site due to the inability to find a mate or nest failure. If this is the case, we predicted that nocturnal activity would occur in close proximity to a bird's departure.

- Chats may be most active at night when females are receptive to mating and are assessing the quality of competing males or other territories. If this is the driving cause behind nocturnal activity, we predicted that nocturnal movements would be more frequent during the fertile period and less frequent at other times.

Factors contributing to shrubland bird nest survival

We studied shrubland bird nest success at Kennekuk Cove County Park in Vermilion County, Illinois. Kennekuk is an oak-hickory forest with remnant prairie and shrubland patches scattered throughout the park. Typical birds found in these shrublands included Prairie Warblers (*Dendroica discolor*), Yellow-breasted Chats, Field Sparrows (*Spizella pusilla*), Blue-winged Warblers (*Vermivora pinus*), Brown Thrashers (*Toxostoma rufum*), and Northern Cardinals (*Cardinalis cardinalis*).

We located a total of 82 nests of ten species from May through July in 2007 and 2008 by searching areas and flushing birds, or observing parental behavior. We recorded the date of nest discovery, location, the type of vegetation the nest was in, the height of the nest, distance to the nearest edge, and the number of host and cowbird eggs. We returned to nests every two to three days until the young fledged or the nest failed. We used a modeling approach to examine which variables were most important for influencing nest survival (Shaffer 2004) of four species: chats, thrashers, Field Sparrows, and cardinals.

Out of the 82 nests we found, 32% of them fledged at least one young. However, chats were less likely to fledge young (13%) than other bird species (48%). None of the variables we measured adequately explained why chat nests failed, suggesting that chat nests at Kennekuk are failing at random or that a combination of variables are responsible for nest survival. The best predictor of daily nest survival for Field Sparrows, thrashers, and cardinals was the nest