

Habitat Attributes of Painted Bunting Nest Sites in North Texas

Tessa Boucher, Christine Gurley, and James C. Bednarz

Department of Biological Sciences, University of North Texas

Introduction

- Painted Buntings (*Passerina ciris*; Fig. 1) are found in suitable habitat in Texas during their breeding season from May-August¹.
- Bunting populations have declined substantially due to habitat degradation in parts of their range and they are classified as a species of Conservation Concern².
- They use a habitat mix of open prairie with shrubs and small trees³.
- Our objective for this study was to identify habitat attributes selected by Painted Buntings for their nest locations.



Figure 1. Adult male and adult female Painted Buntings captured and banded as part of the study population at LLELA. Photos by Christine Gurley.



Figure 2. Painted Bunting nest containing one egg and 3 hatchlings. Photo by Tate Gregory



Figure 3. Tessa Boucher and Tate Gregory using a profile board to estimate understory cover from 0-2.5 m above ground at a Painted Bunting nest site. Photo by Christine Gurley.



Figure 4. Nest 93 is located in a tall well-established cedar elm (*Ulmus crassifolia*) and Nest 64 is located in a small cedar elm; the nest is 30 cm above the ground. The red arrows indicate location of the nest.



Figure 5. Satellite image of Painted Bunting nest sites for both Barn Owl Ridge Grid (outlined in red) and Bison Grid (outlined in yellow).

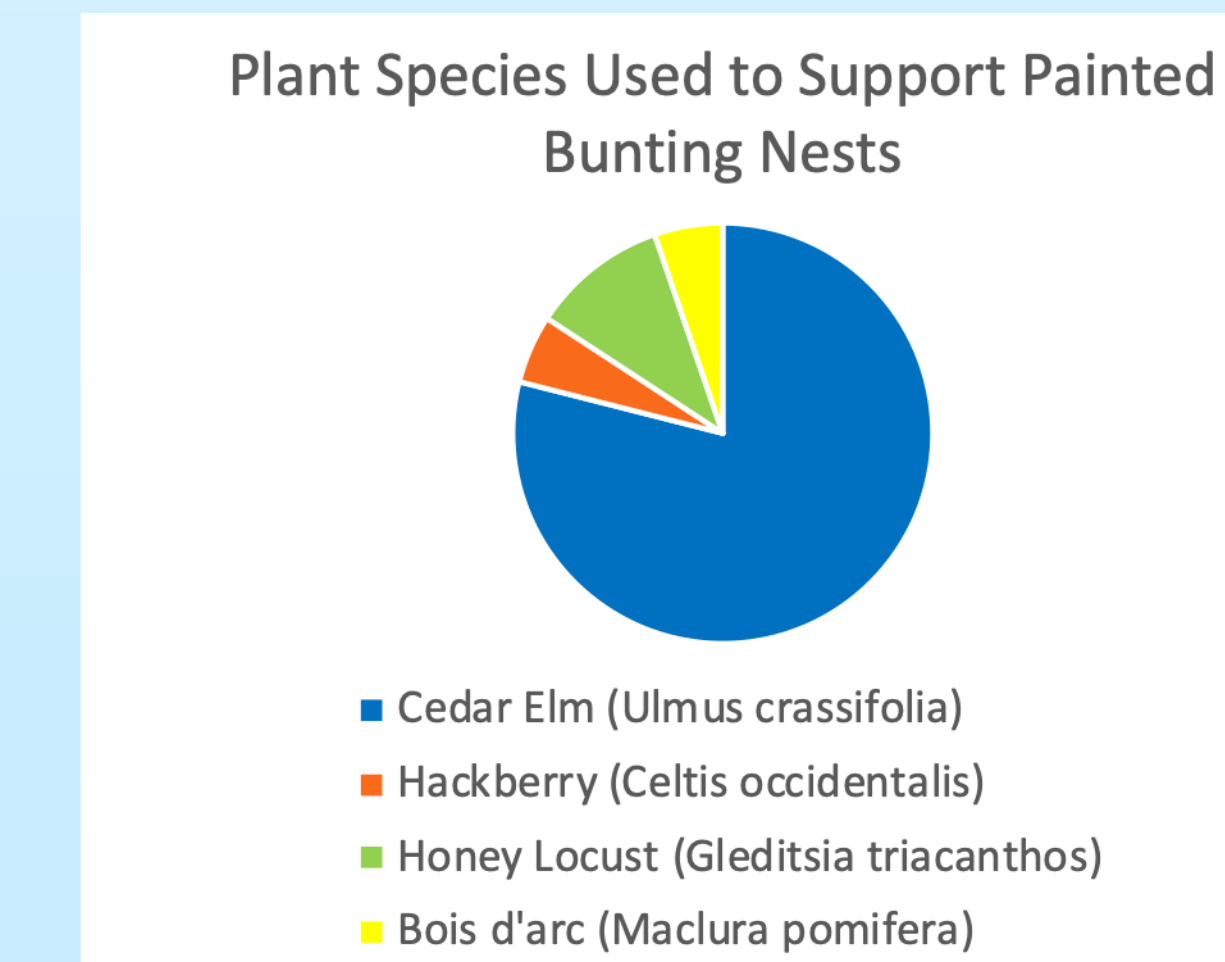


Figure 6. The frequency of plant species selected by Painted Buntings for nest sites at LLELA during the 2019 breeding season.

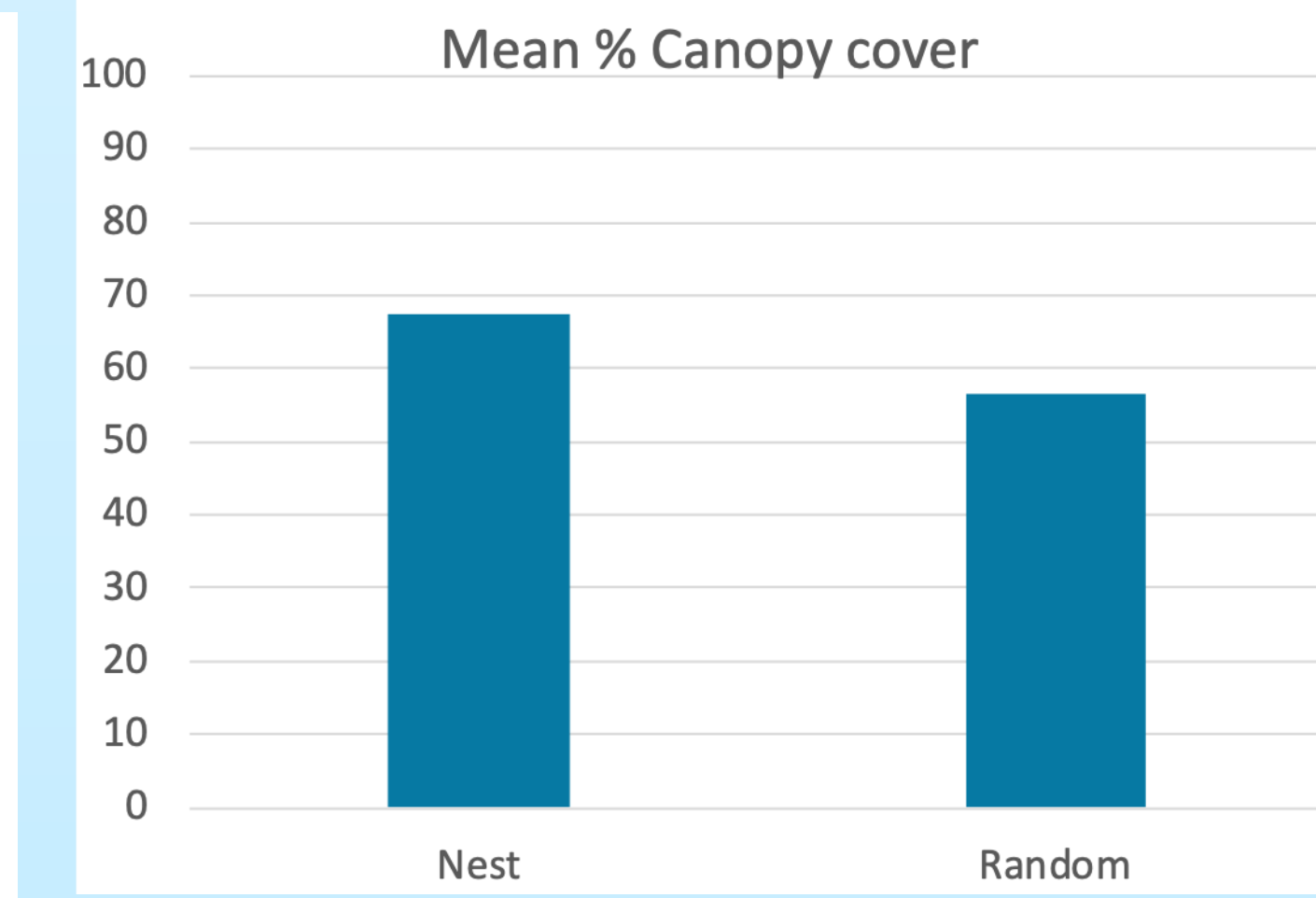


Figure 7. Mean percent canopy cover over Painted Bunting nest sites and randomly-located sites at LLELA.

Research Questions

1. Are Painted Buntings selective in their nest site choice?
2. Is there a difference in the nest-site habitat compared to a paired random site?
3. How can management at LLELA and elsewhere improve nesting habitat for Painted Bunting?

Methods

- The study location was the Lewisville Lake Environmental Learning Area (LLELA), Lewisville, TX.
- We established two study grids that comprised of 38 ha with grid points flagged at 50-m intervals in savanna and woodland edge habitat.
- We searched grids systematically with teams of 3-6 observers by walking linear transects.
- Nest searching was repeated in all sections of the study grids every 1-2 weeks.
- As nests were found, we flagged a nearby shrub or tree and recorded GPS coordinates (Fig. 2).
- Occupied nests were checked every 2-4 days to monitor survival.
- We measured 27 vegetation attributes within a 10-m circular plot centered on each nest and a paired random site within 70 m of the nest after young fledged or the nest failed⁴ (Fig. 3).
- Data were collected and analyzed at 19 nest sites and 19 paired random sites (Figs. 4 & 5).

Results & Discussion

- Painted Buntings selected cedar elm in which to place their nests more often than any other species available in our study area (Fig. 6).
- Bunting nest sites had greater average overhead canopy cover (mean = 67.4%) compared to random sites (56.6%; Fig. 7).
- Nest sites had more vegetation cover above the ground from 1-2.5 m in height (mean = 53.3%) than random locations (42.8%; Fig. 8).
- Based on these results, we suggest that Painted Buntings prefer approximately an intermediate density of overhead canopy cover (~67%) and a relatively high density of understory cover, especially between 1 and 2.5 m above the ground for nesting.
- Management for nesting Painted Buntings should promote the development of a mix of grassland and woodland savanna habitat with abundant open woodland edges (Fig. 5). Management should also encourage the growth of relatively thick understory vegetation above 1 m in height to provide suitable nesting habitat for the Painted Bunting.

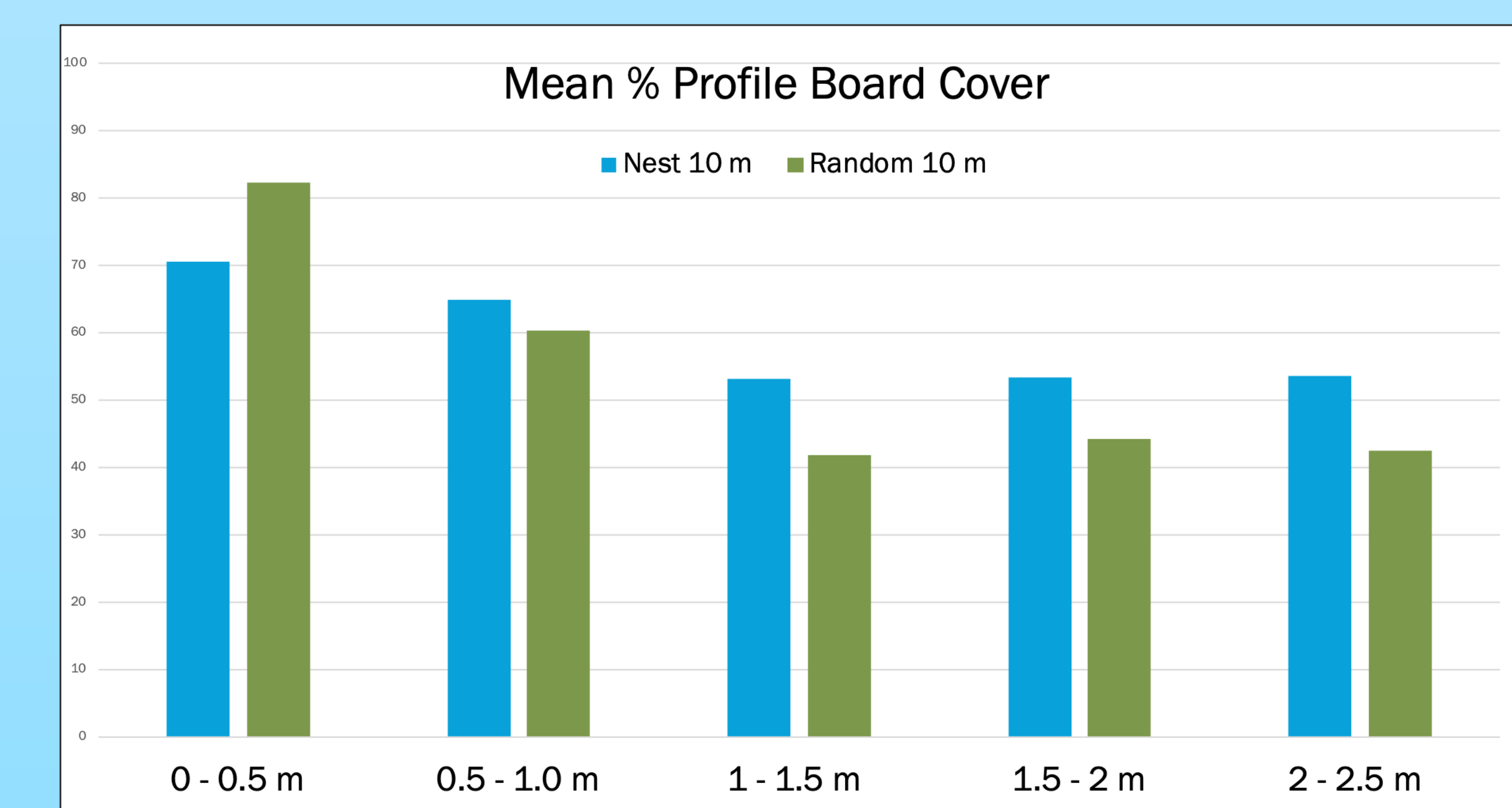


Figure 8. Profile board cover densities at the 1-2.5 m height range were significantly ($P < 0.05$) greater than at random sites. Higher densities of understory vegetation may be an important factor in the selection of Painted Bunting nest sites.

Acknowledgements

Special thanks to Ken Steigman, Richard Freiheit, Tate Gregory, Drew Porter, Kaitlynn Davis, John Boucher, and other nest searching volunteers. Funding was provided by the University of North Texas College of Science, an Arkansas Audubon Society Trust Grant, the Prairie and Timbers Audubon Society, and the Friends of LLELA.

Literature Cited

1. Vasseur & Leberg. 2015. *Eff. Hab. Edg.*, 86: 27-40
2. Meyers, J. M. 2011. *Pop. Den. PABU.* 10: 345-356
3. Kopachena & Crist. 2000. *Mac. Hab. Fet.* 112, 108-114
4. Nudds, T.d. 1977. *Quan. Veg. Stru. Wil. Cov.*, 113-117.