Beat the Heat in Bluebird Boxes

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Bluebirds that nest in Wisconsin are subject to cold temperatures in early spring. Recently, erratic weather patterns have caused heat cycles that reach 100° F and higher. Temperatures of 107° F and higher are considered lethal to eggs or hatchlings (Zeleny 1968). More recently Marking and Koperski (2012) summarized temperature results inside of NABS-style bluebird boxes that were occupied by nesting bluebirds. With ambient temperature of 99° F, the presence of five nine-day nestlings contributed about 6° F to the standard non-vented box.

Ambient temperatures of 100° F or higher would most likely become lethal to 12-day and older nestlings in non-vented boxes. However, vented control boxes were found to be cooler than the ambient temperature of 100° F by an average of nearly 8° F, and cooler than the non-vented control boxes by an average of 4.7° F. Optional venting was promoted as the method of choice to overcome heat mortality in bluebird nestboxes.

Convertible NABS-style boxes were used in the temperature research project to provide options to vent boxes on-site as desired. The Brice Prairie Conservation Association (www.briceprairieconservation.org) has produced only convertible boxes for our members and for sale the last four or five years. Thousands of bluebird boxes exist in Wisconsin that were not constructed convertible so procedures are sought to offer relief from overheating in all types of boxes. Perhaps those boxes could be modified in a simple manner to become convertible?

The convertible NABS-style box is constructed with dimensional cedar lumber that is 7/8-inch thick. The roof is 8-inch stock, the front and back are 6-inch stock, and the side panels are ripped to 5-inch width. Waste from side panels is ideal for making cover strips over permanent vents on existing boxes. Floors are cut to size that results from the dimensional material. The roofs and floors are fastened only to the front and back panels. Side panels are fastened only to the front and back with screws that can be withdrawn to lower them in order to create the 1/2-inch vent as needed. Pilot holes should be drilled to prevent splitting in the conversion process.

Convertible NABS-style box with optional vents

The NABS box plan promoted by NABS founder Lawrence Zeleny required vents under the roof line. We constructed hundreds of boxes with permanent vents, which seemed appropriate for most of the areas where bluebirds nest, but our club members suspected cold mortality of eggs and nestlings some years in early spring in Wisconsin. In addition, we discovered the vents were perhaps making the nestlings more vulnerable to Black Fly attacks. Hence, we decided to cover the vents in spring and remove the covers when heat cycles threatened. The 1/2-inch-thick cover strips were made out of waste from ripping the side panels, fastened originally with small nails, but now screws are preferred for optional venting.

Cedar strips for closing fixed vents

Many boxes were also constructed without vents when cold temperatures were suspected to be lethal to some eggs and nestlings. Those boxes are difficult to disassemble without wrecking the material. We demonstrated a procedure to pry the roof away from the front panel, insert a 1/2-inch block of waste cedar, and place a screw through the roof, through each block, and into the front panel to ensure the vent is stable. This procedure provides venting from both sides and the front, and the procedure can be reversed as desired. This treatment prevents rain from entering and was about as effective for venting heat as the full side vents.

Roof front lifted and blocked for venting

These three options are especially appropriate for a NABS-style box, but the treatments should be applicable to other box plans. We prefer to use screws rather than nails in the original construction and also with alterations to simplify any additional modification or replacements. For instance, the vents could be created by drilling holes to offer air exchange. Then cover strips could be installed for cold cycles in early spring. The important factor for eliminating heat is placement of vents at the highest level because heat rises. Twelve-day and older nestlings are most vulnerable to heat mortality because they contribute heat to the box interior. Proper vents offer a chimney effect where the warm air is exhausted, eliminating the higher temperatures.

References

Zeleny,L. 1968. Bluebird Nesting Box Temperatures. *The Atlantic Naturalist* 214–218.

Marking, L. and C. Koperski. 2012.Cedar Nestboxes Protect Bluebirds During High and Low Temperatures. *Bluebird* 34(2)17–20.