

POSTER PRESENTATION

Title: Interactions between climate and residential development for breeding bird communities in the Southern Blue Ridge Province.

Authors: Heather A. Lumpkin¹, Scott M. Pearson^{2,3}, and Monica G. Turner¹

¹Dept of Zoology, Univ. of Wisconsin-Madison, Madison WI and ²Dept of Natural Sciences, Mars Hill College, Mars Hill NC 28754

³Presenter: spearson@mhc.edu, 828 689-1402

Abstract:

Wildlife populations in Southern Appalachia face landscape-level habitat changes from exurban development and climate change. To what extent will these two forces act independently or synergistically? This study asks how housing density affects the diversity of breeding birds and the risk of nest predation. In 2009 and 2010, we censused breeding bird communities along gradients of elevation and housing density in four North Carolina counties adjacent to the Tennessee state border. Temperature was recorded at each sampling location. Housing density was measured from aerial photography. Occupancy models were developed for selected species to assess the influence of climate, exurban development, and the interaction of these two variables. In addition, nest predation risk was assessed using artificial nests with quail eggs. For avian diversity, the independent effects of temperature or housing density predominated for most species. The synergistic effects of climate and residential development were observed for 10% of species modeled. These species were typically forest-interior Neotropical migrants with centers of distribution located in the northern US. These results suggest that these northern bird species found at high elevations may be more sensitive to habitat losses due to residential development than low-elevation species. For nest predation, predation risk was highly correlated with elevation and nest height and weakly correlated with housing density. Overall, predation risk was higher at low elevations, and this risk increased with residential development. Climatic warming may intensify the effects of residential development in the future especially at high elevations.

Poster: hanging style, 32 in tall x 40 in wide, no electricity