

*The Condor*  
Volume 108, No. 1  
February 2006 C.E.  
Abstracts

**SPECIAL SECTION: HIERARCHICAL MODELS IN AVIAN ECOLOGY**

**SOURCES AND EXPECTATIONS FOR HIERARCHICAL STRUCTURE IN BIRD-HABITAT ASSOCIATIONS**

WILLIAM B. KRISTAN III<sup>1</sup>

*Department of Biological Sciences, California State University, San Marcos, CA 92096*

Manuscript received 28 October 2005; accepted 30 October 2005.

<sup>1</sup>E-mail: [wkristan@csusm.edu](mailto:wkristan@csusm.edu)

*Abstract.* Hierarchical structure in bird-habitat associations can arise from hierarchical structure in environmental variables and from the scale-dependent responses of birds to habitat. Hierarchical structure in environmental variables is expected to result from interactions between variables that differ in grain size (spatial resolution) and frequency, and should occur commonly. Birds cannot accurately sample habitat characteristics at all spatial scales simultaneously, and the habitat chosen for a given purpose may differ depending on whether a bird samples from high above the ground (which is best for sampling coarse-grained variables) or from ground level (which is best for sampling fine-grained variables). Additionally, birds may exhibit an absolute response to a habitat variable, if it is unsuitable beyond some threshold level, or a relative response, if all available habitat is suitable but some is preferred. Models that can represent hierarchical structure in habitat, as well as hierarchical, scale-dependent responses by birds, should provide researchers the best chance of understanding avian habitat associations.

*Key words:* habitat ecology, hierarchical models, scale dependence, spatial ecology.