The Condor
Volume 109, Number 3
August 2007 C.E.
Abstracts

SPECIAL SECTION: CHOICES AND CONSEQUENCES OF AVIAN HABITAT SELECTION

SEASONAL INTERACTIONS, HABITAT QUALITY, AND POPULATION DYNAMICS IN MIGRATORY BIRDS

D. RYAN NORRIS[1,3] AND PETER P. MARRA[2]
[1]*Department of Integrative Biology, University of Guelph, Guelph, Ontario N1G 2W1, Canada*
[2]*Smithsonian Migratory Bird Center, National Zoological Park, 3001 Connecticut Avenue NW, Washington, DC 20008*
Manuscript received 10 June 2006; accepted 28 March 2007.
[3] E-mail: rnorris@uoguelph.ca

Abstract. Historically, studies of habitat selection have focused on quantifying how current patterns of habitat occupancy influence condition and survival within a season. This approach, however, is overly simplistic, especially for migratory birds that spend different periods of the year in geographically distinct places. Habitat occupancy and the resulting condition of individual birds is likely to be affected by events in the previous season, and the consequences of habitat occupancy will influence individuals and populations in subsequent seasons. Thus, for migratory birds, variation in habitat quality (and quantity) needs to be understood in the context of how events interact throughout periods of the annual cycle. Seasonal interactions can occur at the individual level or population level. Individual-level interactions occur when events in one season produce nonlethal, residual effects that carry over to influence individuals the following season. Population-level interactions occur when a change in population size in one season influences per capita rates the following season. We review various methods for estimating seasonal interactions and highlight a variety of examples in the literature. Using a variety of techniques, including intrinsic and extrinsic markers, the vast majority of studies to date have measured seasonal interactions at the individual level. Obtaining estimates of density and changes in per capita rates across multiple seasons to determine population-level interactions has been more challenging. Both types of seasonal interactions can influence population dynamics, but predicting their effects requires detailed knowledge of how populations are geographically connected (i.e., migratory connectivity). We recommend that researchers studying habitat occupancy and habitat selection consider how events in previous seasons influence events within a season.

Key words: *carry-over effects, habitat selection, interseasonal density effects, migration, migratory connectivity, population size.*