

FEATURE ARTICLES

**THE INFLUENCE OF BODY CONDITION ON LOCAL APPARENT SURVIVAL OF
SPRING MIGRANT SANDERLINGS IN COASTAL NORTH CAROLINA**

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Manuscript received 29 October 2002; accepted 24 March 2003.

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Abstract. Many shorebirds are long-distance migrants, and they depend upon widely spaced stopover sites for refueling during their annual migrations. Two competing hypotheses attempt to explain stopover duration: one predicts departure based on time minimization (time-selection hypothesis) and the other predicts departure on the basis of maximum energy gain (energy-selection hypothesis). During spring 1993, we tested these hypotheses during a mark-resight study of migrant Sanderlings (*Calidris alba*) at Portsmouth Island, North Carolina. We individually color-banded 204 Sanderlings and used capture-recapture methods to estimate local apparent survival during 10 five-day intervals from late April to mid-June. We found that survival rates were best modeled as a decreasing quadratic time trend; a linear time trend and period-specific survival rates received little support. We found no evidence that either body mass or a simple body condition index better explained survival rates. Our estimates of the 5-day local survival rates of Sanderlings at Portsmouth Island remained relatively high ($\hat{\sigma}_t > 0.80$) through late May, after which they dropped rapidly as birds left the area. The period-specific conditional resighting probability was 0.39 (SE = 0.03). Our results do not provide strong support for either the time- or energy-selection hypotheses and hint that studies of migratory behavior need to be conducted even more intensively and across much larger regions in order to better understand the underlying factors.

Key words: body condition, *Calidris alba*, North Carolina, Sanderling, shorebird, survival.