

Seasonal interactions and the relevance of understanding migratory connectivity

Peter P. Marra

Smithsonian Migratory Bird Center, National Zoological Park, Washington DC, 20008.
marrap@si.edu.

Migratory birds spend different parts of the annual cycle in geographically disparate places. The conditions and selective pressures at winter locations are likely to affect individual performance during the breeding season, and vice versa. This simple fact has important implications for the ecology, evolution, and conservation of migratory birds. Such inter-seasonal effects are poorly understood within most bird migration systems, in large part because it has been difficult to determine the connections between specific summer and winter populations. Stable isotopes have contributed enormously to our ability to link events in the annual cycle and research in my lab has begun to uncover the ecological and evolutionary significance of these connections. First, because migratory organisms spend different parts of the annual cycle in geographically (and ecologically) separated locations, the dynamics of summer populations are likely to be strongly influenced by events on the wintering grounds and vice versa. Simple mathematical models illustrate the effects of density-dependence on population dynamics. Second, events on the wintering grounds will also likely affect both arrival time and body condition of individual birds on the breeding grounds, and these parameters are likely to have important consequences for breeding behavior and natal dispersal. Understanding migratory connectivity is also critical for the surveillance and tracking of emerging infectious avian diseases and predicting the consequence of climate change on migratory birds. In this talk, I will describe through many of these specific examples how understanding migratory connectivity is essential to our basic understanding of migratory bird biology.