Using capture to determine the effects of El Niño on resident and migrant birds in northeastern Costa Rica. Ralph, C. John, U.S. Forest Service, Arcata, California, Jared D. Wolfe, Louisiana State University, Baton Rouge, Louisiana, and Pablo Elizondo, Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica

Tropical bird demographics may be influenced by the synergistic effects of forest structure and the El Niño Southern Oscillation (ENSO). Here, we used mark-recapture models to examine the influence of ENSO on annual survival and population growth change of White-collared Manakin (Manacus candei) populations residing in young and mature forest near Tortuguero. Our study revealed that in young forests, manakin populations had significantly variable survival and growth: lower in dry El Niño years, and higher in wetter La Niña years. While in mature forests, populations were consistent and unchanging. More specifically, the top model contained an ENSO metric associated with mature forest sites that yielded stable demographic estimates with small overlapping standard errors indicating that, despite being in the top model, ENSO had little effect on manakin demographics in mature forest. Conversely, El Niño events negatively influenced manakin demographics in young forest as indicated by non-overlapping standard errors, high demographic variance and positive correlations between ENSO and young forest survival and growth. We believe mature forests could serve as climatic refugia for this species during dry periods associated with El Niño at our study site. The birds could also have alternate strategies, staying in mature forests where demographic factors are consistent, but somewhat low, or being in a young forest where in some years there is a good chance for higher-than-average survivorship and population growth. Interactions between climate, forest structure and avian demographics, coupled with the increased loss of mature forest necessitate a deeper understanding of community persistence across a heterogeneous landscape.