Analyzing effects of nonbreeders on population dynamics.

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Abstract: Many populations, particularly of birds, have large segments of nonbreeding individuals that fail to obtain breeding opportunities in a given year. These individuals often go undetected in population studies, which tend to be focused on the breeding population only. Here we have used a range of different techniques, including stochastic matrix modeling, elasticity analysis and social network analysis, to quantify the potential role of these nonbreeders in stochastic population dynamics. We have also looked at how population parameter estimates could be influenced by a failure to explicitly include nonbreeders in population models. We have examined systems with different types of nonbreeders (e.g. prebreeders vs. adult nonbreeders). A population of the Green-rumped parrotlet (*Forpus passerinus*) in Venezuela is used as a case study. Data on individually marked parrotlets from this population have been collected for more than 25 years, including large numbers of nonbreeders.