BIRD POPULATIONS

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INTRODUCTION TO THE REPORTS

One of the initial goals of demographic monitoring programs, including the Monitoring Avian Productivity and Survivorship (MAPS) program in North America and the increasing number of Constant Effort Sites (CES) schemes being operated in Europe, is to determine the proximate demographic cause(s) of the population trends documented by these and other population monitoring schemes, such as the North American and British Breeding Bird Surveys. This determination is especially important for migratory species because it can suggest whether management actions should be directed toward increasing a species' reproductive success on its breeding grounds, or toward lowering its mortality rate on its wintering grounds or migration route, or both.

Progress toward achieving this goal has been boosted by MAPS results indicating that spatial variation in BBS trends for Yellow Warbler appeared to derive primarily from spatial variation in survival of both first-year and adult birds (Saracco et al. 2008. J. Wildl. Manage. 72:1665-1673). These results were recently expanded through spatial analyses of MAPS data on 28 species of Nearctic-Neotropical migratory landbirds (Saracco and DeSante. 2008. Unpubl. Report, The Institute for Bird Populations). That report found recruitment to have strong effects on MAPS population trends (lambda) for 25 of the 28 species, while productivity had strong effects on lambda for only 9 species, thereby implicating first-year survival as a driving force for population trends in at least 16 species. Adult survival also had a strong effect on lambda for 10 species. In addition, species for which first-year survival was important in driving population trends tended to have substantially declining populations, while those for which adult survival was important tended to have slightly declining or stable populations, and those for which productivity was important tended to have increasing populations. These results suggest that enhancing survival, especially of first-year birds, will be critical for slowing declines and stabilizing declining populations, while enhancing productivity may be critical for recovering depressed populations whose declines have been arrested.

Discovery of the importance of enhancing survival as a critical first step in efforts to stabilize declining populations presents a whole new array of problems for avian conservation, particularly because survival of migratory birds is likely determined by conditions and events away from the birds' breeding ranges — the locations where most avian monitoring and management effort has thus far been directed. Consequently, there exists a pressing need to understand the weather events and habitat conditions on the wintering grounds that influence annual rates of survival (presumably by directly affecting overwintering survival and indirectly affecting survival during migration through their effects on late-winter body condition). Indeed, evidence is accumulating to indicate that even annual breeding performance may also depend to a large extent upon weather and habitat conditions on the wintering grounds, again through their effects on late-winter body condition. That climate change, through

variations in amount and timing of rainfall, may exert a strong effect on tropical ecosystems, perhaps second only to its effect on polar ecosystems, adds even more urgency to efforts to monitor and understand the effects of weather and habitat on overwintering landbirds.

Monitoring and managing for the effects of weather and habitat on migratory birds on their wintering grounds will be challenging to say the least. Difficult logistics and the general lack of financial resources in the countries that comprise the tropical wintering ranges of many migratory birds are obvious problems, but uncertainty still exists regarding the optimal avian metrics to monitor. The Institute for Bird Populations (IBP) has begun to address these problems on the wintering grounds of Nearctic-Neotropical migratory birds in Middle America, the Caribbean, and northern South America through its Monitoreo de Sobrevivencia Invernal (MoSI – Monitoring Overwintering Survival) program. MoSI operates through partnerships between IBP and avian conservation organizations in the tropics, and consists of a cooperative network of mist-netting stations that aims to monitor monthly overwintering survival rates (site persistence) and body condition of migratory landbirds through the winter and to relate these metrics to local and remote-sensed weather and habitat information.

It is likely that population trends among Palearctic-African migratory bird species, like Nearctic-Neotropical species, may also be driven by processes affecting first-year and adult survival that operate on their wintering ranges (as results from some of the British Trust for Ornithology's monitoring programs have already suggested). If so, partnerships between organizations operating European CES programs and avian conservation organizations in Africa to initiate (or continue) winter monitoring efforts may provide some of the critical information needed to manage and conserve populations of Palearctic-African migratory birds. Finally, it may not be unrealistic to suggest that combined analyses of large-scale breeding and wintering range monitoring programs (such as MAPS and MoSI in the Western hemisphere) could help to further the conservation of migratory birds, or that combined analyses of MAPS and European CES programs could produce generalized results regarding responses of bird populations to climate and weather variables. A willingness to share data and results is perhaps the basic requirement that could make such cooperation possible. It is to this end that *Bird Populations* prints the reports that follow. — David F. DeSante.