

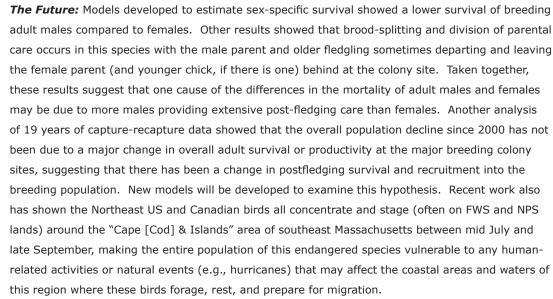
**Patuxent Wildlife Research Center** 

## Modeling Sex-specific Demographic Rates in Metapopulations



- The Challenge: Research that integrates population dynamics and ecological studies is needed to identify the causal factors involved in population declines and viability. For highly mobile organisms such as birds, "between-patch" movements and the use of different geographic sites and habitats at various stages of the annual cycle can make it difficult to measure the effectiveness of "within-patch" site-specific management activities. These local restoration activities must be evaluated within the context of overall population changes on a regional or metapopulation scale. The major objective of this study is to develop new multistate capture-recapture/resighting and ultrastructural models to examine sex-specific regional survival, movement, and recruitment rates. Once developed and tested with data collected from a long-term study of a suitable species, these general types of models can be adapted for widespread use on a variety of other species.
- The Science: The unequal sex-ratio (~60% females) in the breeding population of the study species, the Roseate Tern (Sterna dougallii), has resulted in many birds forming odd mating associations (female-female pairs, trios, multi-female groups) which usually have lower productivity than typical male-female pairs. As a result, the relative lack of males may be a significant factor limiting overall population productivity and recovery. Collaborative studies are underway to determine the cause(s) of the unequal sex-ratio in the breeding population based on differences in the roles of males and females in caring for young chicks and older fledglings during the period after they have left the breeding colony sites but before they begin migration to South American wintering areas. Several partners are involved including federal and state agencies, universities, and non-profit organizations.







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