

BROADENING OUR APPROACHES TO STUDYING DISPERSAL IN RAPTORS.

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ABSTRACT. -- Dispersal is a behavioral process having consequences for individual fitness and population dynamics. Recent advances in technology have spawned new theoretical examinations and empirical studies of the dispersal process in birds, providing opportunities for examining how this information may be applied to studies of the dispersal process in birds of prey. Many raptors are the focus of conservation efforts; thus, reliable data on all aspects of a species' population dynamics including dispersal distances, movement rates and mortality rates of dispersers are required for population viability analyses that are increasingly used to inform management. Here, we address emerging issues and novel approaches used in the study of avian dispersal and provide suggestions to consider when developing and implementing studies of dispersal in birds of prey. Clarifying study objectives is essential in selection of an appropriate methodology and sample sizes needed to obtain accurate estimates of movement distances and rates. Identifying an appropriate study area size will avoid underestimating population connectivity and important population parameters. Since nomadic individuals of some species use temporary settling areas or home ranges before breeding, identifying these areas and the fate of individuals using them indicates the need for conservation efforts focusing on habitats other than just breeding sites. Study designs for investigating raptor dispersal also should explore the importance of environmental and social factors influencing dispersal to improve our understanding of condition-dependent dispersal strategies. Finally, we propose a terminology for use in describing the variety of movements associated with dispersal behavior in birds of prey and suggest this terminology could be used consistently to facilitate comparisons among studies.