
When and why did the diversification of life history traits occur in birds? Is interspecific variation in extra-pair paternity rates associated with variation in breeding density? Is sexual dimorphism a consequence of variation in mating systems? These are some of the questions posed by Bennett and Owens in their new book published in the Oxford Series in Ecology and Evolution. Bennett and Owens revisit many of the central questions that have framed ornithological research in the fields of ecology and evolutionary biology. Lack’s 1968 seminal treatise “Ecological adaptations for breeding in birds” forms the backbone of this book with the authors re-exploring and extending many of Lack’s hypotheses. Each chapter begins with a quote from Lack.

Bennett and Owens take a fresh look at why there is such a great diversity of avian life histories and mating systems. Their re-examination employs modern statistics and the inclusion of phylogenetic analyses. Modern studies that rely on the comparative approach to resolve questions about the origins of life-history traits need to apply phylogenetic analyses so that independent comparisons among taxa can be made. Bennett and Owens rely on the application of Sibley and Alquist’s (1990) molecular phylogeny and use Felsenstein’s (1985) method of independent comparisons.

While many of the authors’ conclusions do not differ greatly from those of Lack and others, there are some surprises that their re-analysis brings to light. The authors acknowledge that they are asking slightly different questions than Lack because they address mechanisms driving diversification of ancient life-history traits among families, whereas Lack focused on reasons for diversification among modern species and populations. These two approaches are not always at odds. For example, Bennett and Owens show that the diversification of life history traits was not driven by increases in body size, which is consistent with Lack. However, in contrast to Lack’s hypothesis, food limitation was not the driving mechanism. They argue that diversification of nest sites was the driving factor.

Throughout the book, Owens and Bennett approach topics by 1) examining the predisposition of certain avian lineages to exhibit a certain life history trait and 2) testing for ecological factors that were involved in facilitating the expression of the trait in question. This approach elucidates many of the underlying factors responsible for the diverse life history and mating systems of birds. For example, the authors show that certain lineages are predisposed to cooperative breeding. Whether or not a species within a predisposed family exhibits cooperative breeding, has to do with ecological variables such as a stable climate that would allow species to hold territories year-round. These factors combined (life-history predisposition and ecological factors), allow the dissection the generally accepted hypothesis that cooperative breeding results when breeding habitats are saturated.

Extra-pair paternity is an issue that Lack was not able to address in his time because modern genetic techniques were not available. Owens and Bennett tackle questions about how rates of extra-pair paternity vary with interspecific variations in breeding synchrony, parental care and life history parameters. They show that extra-pair paternity is an important determinant of patterns of sexual dimorphism. Their conclusions differ from Lack, who concluded that the driving factors determining sexual dimorphism were variations in parental care and social mating systems.

A second issue that was never addressed by Lack is extinction patterns. Owens and Bennett cover patterns of speciation, histori-