
Trading reproduction for survival in the wild? Comparative analyses of raptor populations reveals no evidence for life-history tactics.

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Abstract

The leading ageing theories and related life-histories predict trade-offs between survival and current or future reproduction. Experimental studies have provided some intraspecific evidence and, there is growing evidence from observational studies too. Trade-offs reported include: shorter lifespan of individuals breeding early in life and of those with higher breeding success in young ages; and offspring of young short-lived parents having greater probability of recruitment. However, publication bias might be important here, or importance of life-history tactics might depend on benign/harsh environmental conditions. Furthermore, knowledge and understanding of life-history tactics is also of importance for applied-ecologists, because breeding output is the most commonly used proxy to fitness, and the incidence of trade-offs could bias the results.

In order to assess the presence and impact of life-history tactics in wild populations and their dynamics we analysed 6 long-term (15-34 years) monitoring data of 5 raptor species. We looked for the expression of all the kinds of trade-off previously reported, contrasting harsh vs benign environmental conditions. We found no trade-offs in most data sets, and when detected the, they only affected individuals recruited at early age in environmentally harsh years. Despite that, our analyses were sensitive enough to detect previously reported effects

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in the data such as life-long effects of environmental conditions at recruitment, or learning effects with age. We suggest that, regardless of their evolutionary importance, the ecological effects of intraspecific reproductive and survival trade-offs are of minor importance compared to the effect of environmental and intra-individual variation.

Keywords: survival, breeding, trade offs, life history tactics, fitness, raptors