



# Settlement Phenotypes: Social Selection and Immigration in a Common Kestrel Population

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Dispersal decisions are affected by the internal state of the individual and the external environment. Immigrants entering a new population are phenotypically different from residents due to selection that mitigate costs of dispersal and facilitate settlement. Sexual and status signaling traits may influence individual's ability to settle in a population, either by showing a subordinate phenotype thus reducing aggressive interactions, or by signaling a more competitive phenotype, thus gaining local breeding resources, including mates. By comparing immigrants vs. residents in a common kestrel population across 17 years, we evaluated the influence of dispersal on fitness components (laying date, clutch size and number of fledglings) and investigated if sex, age and phenotypic traits (body size, body condition and plumage coloration) involved in movement and social interactions affected settlement. We found that population characteristics affected sexes and age classes differently, as the admission of females and young males into our population had fewer obstacles than the admission of males. In females, immigrant young were larger, had longer wings and tails, showed better body condition, had less gray tails, started breeding earlier, and laid larger clutches than residents. Adult female immigrants also showed better body condition and less gray tails. In males, immigrants had longer tails and higher number of black spots than residents. Summarizing, immigrants are good-quality individuals and, as deduced from their breeding performance, they benefited by signaling subordination, thus reducing the probability of aggressive encounters and facilitating settlement. Our study highlights the role of phenotypic traits related to signaling to study dispersal.

**Keywords:** dispersal, delayed plumage maturation, melanin traits, status signaling, tail length, ornaments, philopatry, coloration

## INTRODUCTION

Dispersal is a key life-history trait influencing population dynamics and evolutionary processes (Clobert et al., 2012). Two dispersal movements can be distinguished: *natal dispersal*, in which young individuals leave their birth site and select another site to breed for their first time, and *reproductive dispersal*, in which adults change breeding sites between consecutive breeding seasons

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