

GEOGRAPHIC VARIATION OF SELECTION ON FIVE MALE PLUMAGE TRAITS IN THE PIED FLYCATCHER (*FICEDULA HYPOLEUCA*)

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Local environmental and ecological conditions are commonly expected to result in local adaptations, but we have a relatively poor understanding of patterns of selection on phenotype across continent-wide spatial scales. In the pied flycatcher (*Ficedula hypoleuca*), male plumage colouration is highly variable both among and within populations. In addition to variation in melanin-based and structural colouration (UV), males have ornamental patches in forehead, wing and tail that vary greatly in size. For most of these traits, patterns of selection remain unknown throughout the breeding range. We collected standardised data on selection on male plumage colouration from 20 populations across the species' breeding range. We calculated standardised linear breeding date and fecundity selection estimates associated with male colouration traits. The selection estimates were further used to evaluate if there are consistent patterns in the selection on pied flycatcher male plumage colouration among populations. We studied if the selection pressure towards dark colouration and other male plumage traits strengthens with increasing distance to the sympatric area with the closely related collared flycatcher (*F. albicollis*) where selection is known to act towards brown dorsal colouration. In addition, we tested whether environmental factors, in this case the ones associated with latitude and longitude of the sampled populations, affect the selection acting on plumage colouration. We further determined the relationship between the observed phenotypic variation in plumage traits and selection on the traits and tested if selection with respect to two fitness components is reinforcing or divergent. As a result we gain better understanding on spatial variation of selection acting on phenotypic traits and factors that are maintaining the extensive variation in male colouration in the pied flycatcher.

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