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**PROTECTION OF WATERBIRD
HABITATS IN THE UPPER VISTULA
RIVER VALLEY
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Protection of waterbird habitats in the Upper Vistula River Valley
LIFE16NAT/PL/000766

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Genetic markers play a crucial role in avian ecology studies, offering insights into ecological and evolutionary processes. Neutral genetic markers assess genetic variations that do not appear to affect fitness or adaptive traits of an organism, meaning they are not subject to natural selection. They are commonly used to quantify genetic diversity, which is important to assess the health of populations and their resilience to environmental change, and to infer population genetic structure, aiding the understanding of migration patterns, connectivity of populations and barriers to gene flow. These genetic analyses are important for developing effective conservation strategies, particularly for long-distance migrants.

This study aimed to investigate the population genetic structure and diversity of common terns sampled across three European regions – one northern and two southern – using microsatellite markers and a fragment of the mitochondrial DNA control region. High genetic diversity was found in both marker types. Various analyses revealed weak or absent population genetic structure, indicating high gene flow between groups. The low genetic differentiation observed likely arises from differing migration patterns, particularly between the two southern groups. Our findings suggest that geographical distance between breeding colonies has minimal impact on population genetic differentiation. However, the high dispersal indicated in this study may increase the extinction risk for small populations. Therefore, conservation efforts should focus on protecting multiple breeding sites, as well as currently unoccupied but suitable areas, to preserve the genetic diversity and resilience of Common Terns in the future.



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