



# Land cover, prey structure, and secondary seed dispersal by the White Stork: are stork nests traps or a chance for seed dispersal in a disconnected anthropogenic landscape?

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Received: 15 November 2024 / Revised: 13 January 2025 / Accepted: 24 March 2025

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## Abstract

Diplochory is a process which can considerably increase the dispersal distance of a propagule. We studied the process of diplochory mediated by the White Stork (*Ciconia ciconia*) in the highly fragmented and intensively used agricultural landscape of southwestern Poland. The content of 142 regurgitated pellets (invertebrate and vertebrate prey items and seeds) collected from 52 nests was analysed to check if the White Stork nests can be safe germination sites at least for some ecological plant groups dispersed with prey items. Our initial hypotheses were as follows: (i) White Stork nests have the potential to lower the level of isolation of plant populations in intensively used agricultural landscapes by seed deposition and providing an opportunity for germination of seeds in nest material. This is particularly important for plant species whose seeds are devoid of dispersal adaptations, especially for long-distance dispersal; (ii) the seed composition deposited in the nest as the effect of the secondary dispersal process is correlated with the land cover structure and, in consequence, the prey structure; (iii) White Stork nests can play a role of safe germination sites and a micro-habitat (island) for annual, drought-resistant species connected with nutrient-rich habitats (mainly weeds and ruderal species) if they are introduced into the nest, but nests are rather a trap for seeds of biennial and perennial species. We identified the most important factors responsible for the high abundance of beneficiary ecological plant groups among variables from two categories: nestling diet characteristics and land cover types in the closest vicinity of the nest. The low abundance of vertebrates remains in pellets (including mammals) and the high proportion of arable fields in the closest vicinity of the nest appeared to be good predictors of the high abundance of beneficiary plants in pellets.

**Keywords** Nest material · Pellets · Diplochory · Long-distance seed dispersal · Landscape homogenisation

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Communicated by F. Bairlein.

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