Chapter 6

# Movement as an orchestration by the environment: from grouping nomads to solitary residents in one species

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**ABSTRACT** Developmental and behavioural plasticity allow fine-tuning of movements to the environment. They can enhance individual variation in space use, but also underlie space-use patterns at the population level. Consequently, patterns of aggregation and site fidelity, usually considered species-specific, may reflect environmental context more directly than often assumed. We studied space use of red knots (*Calidris canutus*, a migratory shorebird) in two similar intertidal areas but with contrasting resource distributions, the Wadden Sea in The Netherlands and the Banc d'Arguin in Mauritania. Resource patches were much larger in the Wadden Sea, and red knots there showed strong aggregation and weak site fidelity, the opposite of red knots in Banc d'Arguin. We suggest that population space-use patterns reflect individual responses to the resource environment, implying direct consequences of environmental change on population space-use. This calls for studies on the individual development of movement that include the relevant environmental details.