

# Friends because of foes: the interplay between space use and sociality in mediating predation risk

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## Abstract

From the perspective of prey, movement synchrony can represent either a potent anti-predator strategy or a dangerous liability. Prey must balance the costs and benefits of using conspecifics to mediate risk and the emergent patterns of risk-driven sociality depends on the spatial variation and trait composition of the system. Our literature review outlined the prevailing, but not universal, trend of animals using sociality as an antipredator strategy. Empirically, we then used movement synchrony as a measure of social antipredator response of two ungulates to spatial variation in predator and prey habitat domains. We demonstrated that these responses vary based on prey vulnerability and predator hunting modes. Prey favored asynchrony when calves were present and within habitat domains of ambush predators but not pursuit predators. By unifying community ecology concepts such as habitat domains with movement ecology we provided a comprehensive evaluation of factors mediating prey social response to predation risk.

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