How unpredictable is the individual scanning process in socially foraging mammals?

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Résumé en anglais	In group-forming prey species, theory assumes that individuals within groups should scan independently of one another, with vigilance sequences being relatively unpredictable, making interscan durations highly variable. We attempted to detect any divergence from randomness in the scanning process in three mammalian prey species phylogenetically and geographically separated and exposed to different levels of predation: waterbuck, Kobus ellipsiprymnus defassa, under a high observed predation risk, eastern grey kangaroo, Macropus giganteus, still experiencing occasional predation and European roe deer, Capreolus capreolus, under a very low natural predation risk. Our results revealed that the focal interscan duration increased when the duration of the preceding interscan increased, whatever the studied species and the predation risk that its individuals experienced, and decreased with the preceding scan duration in two species under, respectively, occasional and low predation risks. The exponential distribution was the tested model that fitted the observed distributions of interscan durations least well. We discuss what can trigger non-randomness in scanning, through a non-homogenous Poisson process, at both intra-individual and inter-individual levels, particularly with regard to previous studies that have demonstrated synchronisation of vigilance in such mammals. Our results suggest the need to reconsider any assumption of randomness in scanning in the basic model predicting form and frequency of scanning behaviour by prey species.
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