

Does vigilance effort differ between urban and nonurban Little Raven (*Corvus mellori*) populations?

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Received: 23 February 2022

Accepted: 22 April 2022

Vigilance is directed at predators and conspecifics that threaten survival, welfare or resource acquisition. It has commonly been argued that predators of birds may be less abundant in urban than nonurban environments, which should be reflected in a lower vigilance effort by urban prey species. However, the Risk-Disturbance Hypothesis proposes that prey species treat anthropogenic disturbances, which are much more frequent in cities, as analogous to predation risk, which might counteract this trend. This treatment might also be reflected in a greater vigilance effort in areas of the urban environment with higher anthropogenic disturbance levels. The time allocation to vigilance in foraging Little Ravens *Corvus mellori* in south-east Australia was measured to determine whether (a) there was an urban-nonurban difference, and (b) urban individuals were more vigilant in areas with higher ambient pedestrian and vehicular traffic volumes. The mean percentage of a raven's ground-foraging bout allocated to vigilance (36-40%) was similar in urban and nonurban environments. We argue that nonurban ravens' extreme sensitivity to human proximity may dilute the expected influence on their vigilance effort of the much lower frequency of anthropogenic disturbance in rural areas. We also suggest that urban and nonurban relative abundances of Little Ravens' predators need quantification to clarify the role of predator abundance in shaping the similar vigilance effort of ravens in the two environments. Urban ravens' time allocation to vigilance did not vary with pedestrian and vehicular traffic volumes. This finding might reflect a measurement limitation, but alternatively could indicate that many urban individuals are sufficiently habituated to traffic to allow them to inhabit even those areas of cities with very high pedestrian and vehicular traffic volumes.

Keywords: Little Raven; vigilance effort; urban and nonurban environments; Risk-Disturbance Hypothesis; anthropogenic disturbance