

ELECTRONIC SUPPLEMENTARY MATERIAL 2

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Background colour matching reduces predation risk of grasshoppers

For sand grasshoppers (*Sphingonotus azurescens*) occupying the urban area where this study was conducted, that background colour matching plays a role in reducing detection by predators is supported in several ways. First, a virtual predation experiment using humans as predators confirmed that background matching reduced grasshopper detectability and, therefore, predation rate (Baños-Villalba et al. 2018). Second, immature grasshoppers and, to a lesser extent, adults change their colour to better match the background (Peralta-Rincón, et al. 2017). Moreover, individuals experimentally exposed to a greater risk of predation adjusted their colour even better to the experimental background (Edelaar et al. 2017). Third, in the field, adults stop moving and remain motionless when approached by a potential predator, presumably to avoid detection. The distance an adult can be approached before escaping is shorter for individuals that are better matched to their background, suggesting they feel safer (Baños-Villalba et al. 2018). Once an escape flight is performed, those individuals that end up on a mismatching substrate undertake an extra (risky) movement to line up with structural elements that make them more difficult to detect (Baños-Villalba et al. 2018). Fourth, grasshoppers are ventrally flattened and press themselves against the substrate when approached, which reduces shadows and allows them to enhance crypsis. Last, the presence of a disruptive colour pattern across the wings and hind legs also supports that avoiding detection by predators is a key aspect of grasshopper colouration.

References

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