

Do ground-dwelling spiders make good botanists? Perspectives from Te Paki

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Ground-dwelling spider communities in Te Paki Ecological District were sampled at monthly intervals over a year by pitfall trapping in three habitat types: native forest, pine plantation forest, and manuka/kanuka-dominant shrubland. Clusters of eight traps were deployed at three sites in each habitat. As well as spider community, botanical composition was assessed at each sampling site. Some spider species were trapped in just one habitat, whereas others were present, and sometimes common, across all three habitats. Spider α diversity was broadly similar across the three habitats. Species turnover (β diversity) and similarity/complementarity indices generally showed that the greatest differences in spider assemblages lay between native forest and pine forest sites, whereas the most similar were pine forest and shrubland sites. Separate multivariate analyses based on spider and plant community data each identified three clusters of sites. The three clusters in plant space corresponded with the three habitat types. The three clusters in spider space were also largely a reflection of the plant communities, with the exception of Darkies Ridge. Though botanically a shrubland site, the spider community there clustered with the three native forest rather than shrubland sites. In contrast to the other shrubland sites, Darkies Ridge contains a greater coverage of low-growing species, including tangle fern, whose complex structure helps to provide a more heterogeneous environment. This suggests that the nature and diversity of ground-dwelling spider communities is influenced by factors linked to key characteristics of the plant species present, most notably their structural complexity. While these factors are usually reflected in the habitat type, this may not always be the case, which could explain the anomalous spider community at Darkies Ridge. Our results indicate that ground-dwelling spiders are competent botanists, but that structure can trump botany!