

Has the ecological importance of scale insects been neglected as a restoration strategy in New Zealand forest ecosystems?

Annette Evans ^{*1}, Jacqueline Beggs ¹, David Towns ²

¹ University of Auckland

² Department of Conservation

The ecological importance of scale insects as keystone species has been widely documented both in New Zealand and worldwide. Although numerous studies have already examined key interactions within New Zealand honeydew forest ecosystems, large knowledge gaps still remain surrounding the trophic interactions of endemic scale insect *Coelostomidia zealandica* (Coelostomidiidae) with organisms, especially endemic herpetofauna. Anthropogenic changes have caused significant reductions in range and abundance of this endemic scale insect species and its associated fauna. The study site on Korapuki Island, east of Coromandel peninsula is now one of the sole remaining sites in New Zealand where *C. zealandica* and honeydew exploiters, such as insects and herpetofauna, survive in densities that are likely to be representative of pre-human conditions. This system provides an ideal opportunity to evaluate whether the sugar resource is partitioned between invertebrates and vertebrates. We recorded the abundance and diversity of faunal visitors to available sugar resources three times daily along a fixed transect. Large numbers of two species of endemic gecko were recorded nocturnally feeding on honeydew. Reintroduced endemic darkling beetles (*Mimopeus opaculus*) were seen regularly feeding on honeydew, indicating this sugar resource is likely to be important in restoring the native fauna. This research will assist in the development and evaluation of future restoration and management plans for these ecologically important endemic species. Such research will also benefit the global entomological community by filling current global knowledge gaps regarding the strength of trophic interactions; particularly with insects and herpetofauna; thus creating a more holistic view of honeydew ecosystems worldwide.

