

Loranthaceae are parasitic plants in about 76 genera that are predominantly found in subtropical and temperate regions of the Southern Hemisphere as branch parasites. Australia is an area of high diversity with about 11 genera and 65 species, most of which are endemic. Loranthaceae branch parasites are also morphologically diverse having both radial and zygomorphic flowers that are typically bird pollinated and each of the four basic haustorial types. Haustorial types include epicortical roots (ERs) that grow along the host branch surface and at intervals form secondary attachments to their host, clasping unions where parasite tissue enlarges partially encircling the host branch, wood roses where host tissue proliferates forming a placenta where the parasite is attached, and bark strands that spread within the outer tissues of the host branch. We hypothesized that those haustoria where parasitic tissue proliferated, such as ERs and clasping unions, would occupy more mesic environments. To test this hypothesis and investigate other relationships among ecological parameters and haustorial form we used 17,753 sets of occurrence and ecological data from the Atlas of Living Australia (ALA) online repository for 42 species of Loranthaceae. We analyzed haustorial forms through comparative studies of haustoria housed at the UC Herbarium, relevant literature, and collections in public repositories. Biogeographical and environmental data were analyzed using mapping and statistical methods in the R environment. Our preliminary research suggests that bark strands are found in climatic regions across Australia, including deserts, while both epicortical roots (ERs) and clasping unions are mostly restricted to mesic coastlines of eastern Australia (21 of 22 species with ERs occur only along eastern coastlines of Australia or in the Cape York Peninsula). Wood roses are less common in Australia with few data points. Haustoria are sometimes complex, especially clasping unions where bark strands are occasionally also produced. An interesting finding was that *Amyema sanguinea* has a wide distribution in arid as well as mesic climates even though it has ERs. This species has unusually robust ERs that might contribute to its wider ecological niche. Evolution of haustoria in Australia is discussed based on phylogenetic hypotheses of Loranthaceae genera.