

Progress Report

This project aimed to determine if there is regional variation in the understorey of *Eucalyptus salmonophloia* woodlands across the Great Western Woodlands (GWW) and, if so, what environmental factors were influencing it. The project then integrated relevant existing survey data from across the Wheatbelt to assess the variation across the two bioregions in which salmon gum woodlands occur, Avon-Wheatbelt and Coolgardie. This project fills large gaps in the floristic surveys of the GWW, which have previously focused on the banded ironstone and greenstone ranges. One hundred sites were sampled in spring 2011 and 2012, in old growth woodlands or woodlands where the timber cutting and/or grazing history could be estimated. Data was collected on species composition, cover and height, tree dimensions, site-based variables, and soil physical and chemical characteristics. Detailed classification and ordination of the data revealed two main communities; one with an understorey of mainly chenopod species on soils higher in clay found in the drier north and east of the GWW, and the other with non-chenopod species (e.g. *Eremophila* spp., *Acacia* spp., *Scaevola spinescens* and *Alyxia buxifolia*) found on sandier soils in the wetter south and west. Precipitation, monthly precipitation variability and temperature, and to a lesser extent soil phosphorous, pH, silt content, and cover of organic crust influenced the patterns in floristic composition and differentiated between the two main communities. When data from the Wheatbelt was incorporated the two GWW communities remained prominent and were joined by two Wheatbelt communities and one community (with *Melaleuca pauperiflora*) that traversed the two regions. Across this larger area the influence of the annual precipitation gradient and ratio of summer to winter rainfall (less in the east) was strong. Generally regional factors (such as climate) were more influential on the floristic patterns than local (such as soil) factors. This project has contributed to knowledge about these woodlands relevant to their conservation status, delineation of subregional boundaries and land management activities. The salmon gum - chenopod shrublands burn less frequently as they are less flammable and have a more sparse cover than the salmon gum - eremophila woodlands which are experiencing fire more frequently and consequently being reduced in extent. Vouchers for all species collected will be lodged in the Perth Herbarium and the field data will be lodged with TERN-KOS.