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LIPPIA (*PHYLA CANESCENS*) AND ITS RESPONSE TO FIRE

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Lippia is a significant invasive weed in floodplain landscapes in Australia, particularly in the Murray-Darling Basin, with areas of invasion expected to expand under climate change. Current control methods include the use of herbicides, which can be costly and environmentally harmful, particularly in riparian areas. 'Environmentally friendly' control mechanisms are yet to be found, with the potential for biological control still being researched. This research explores the use of fire as a potential control method to help slow the expansion and growth of lippia. Lippia response to fire and the effect of fire in lippia-invaded landscapes has not previously been investigated. Half of the St. Ruth Reserve south of Dalby in Southern Queensland was subject to a control burn in November 2013 by the Western Downs Regional Council in an attempt to reduce lippia abundance in this remnant riparian woodland. This research investigates the response of lippia to the burn. The study will compare the cover abundance of lippia and major functional plant groups between burned and unburned areas; it will also investigate the impact of fire on the density of lippia seed in the soil seedbank by comparing lippia germination rates in soil samples from burned and unburned sites. Additional studies testing lippia seed viability, using tetrazolium staining, will also be conducted after a range of fire mimicking treatments have been applied to seeds from an unburnt area. This research will contribute to evidence-based decision-making for improved management of lippia-invaded remnant ecosystems.

Lucy Galea is currently an Honours student at the University of Southern Queensland after completing her Bachelor of Science majoring in Environment and Sustainability with Distinction in 2014. Her areas of research interest include plant ecology and landscape ecology. She recently completed a summer internship at ANU, where she contributed to research into the ecology of alpine ecosystems.

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ARE IMPACTS OF PLANT INVASION ON NATIVE COMMUNITIES DEPENDENT UPON FUNCTIONAL IDENTITY OF RESIDENT PLANTS OR RESOURCE AVAILABILITY?

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Previous research has clearly shown that impacts of alien plant invasion on native plant communities is often dependent upon the availability of soil resources, yet it remains unknown whether such resource-dependent impacts vary amongst different resident plant functional groups. Using a community-scale mesocosm experiment, we tested whether the interactive effects of invasion by a stoloniferous turf-grass (*Stenotaphrum secundatum*) and nutrient enrichment vary across different plant growth forms in an endangered coastal plant community. Communities contained 18 species (drawn without replacement from a pool of 31 species) with either runner, tufted or woody growth forms. Species were well-established and reproductively mature prior to *S. secundatum* introduction. Species growth (% cover), reproductive output, soil temperature and light availability were monitored for two growing seasons. Invasion and nutrient enrichment had no effect on species richness, community composition, species reproductive output, soil temperature or light penetration. There was no interactive effect of nutrient enrichment and invasion on community productivity (i.e. final biomass), such that invasion caused a reduction in community biomass at both low and high nutrient levels. This was driven by reduced biomass of functionally-similar native runner species, which share similar root morphologies and nutrient-acquisition strategies with *S. secundatum*. Tufted and woody species were unaffected by invasion. Our study indicates that impacts of invasion are dependent upon functional identity of species within recipient communities, not the availability of resources. This shows that management cannot buffer invader effects by manipulating resource availability. Revegetation strategies should target functionally-similar natives for replacement following invader control.

Ben Gooden is a lecturer in plant ecology at the University of Wollongong. Ben is currently researching impacts of invasive plants and recruitment dynamics of coastal plant communities.