Laura Williams

University of New England/Australian Antarctic Division
lwilli63@myune.edu.au

Laura Williams is in the second year of her PhD under the supervision of Dr Paul Krisitansen, Professor Brian Sindel and Dr Susan Wilson from the University of New England and Dr Justine Shaw, Australian Antarctic Division/University of Queensland. Laura's PhD research investigates the ecology and control of the introduced grass, *Poa annua*, on Macquarie Island in the Australian sub-Antarctic. Macquarie Island is one of Australia's two World Heritage sub-Antarctic Islands, conserved for its unique geology and outstanding natural values. Despite the high conservation value of the island, there are three non-native vascular plants, one of which is *P. annua,* the most widespread weed in the sub-Antarctic. *Poa annua* is widespread on Macquarie Island where it colonises disturbed sites and competes with native vegetation. The recent eradication of rabbits on Macquarie Island has resulted in a change to vegetation dynamics and so it is critical to understand the distribution and abundance of *P. annua* in this rapidly changing environment. This project involves studying the longevity, seed bank dynamics and competitive ability of *P. annua* to give us an indication of how this species behaves in the sub-Antarctic environment, as well as mechanisms for its control through *in situ* physical disturbance trials and *ex situ* herbicide selectivity trials and herbicide-soil dynamics experiments. Two field seasons of data collection on Macquarie Island indicate this species is a perennial with a large seed bank and high seed viability although the seed bank is short lived. Physical disturbance promotes the growth of *P. annua* over native species. Initial herbicide trials indicate that three herbicides (glyphosate, trifloxysulphuron and rimsulphuron) selectively control *P. annua* under sub-Antarctic climate conditions. This project will enable us to better understand the ecology and management of *P. annua* in the sub-Antarctic to broaden understanding of invasion biology and assist in the development of non-native plant management protocols in the sub-Antarctic and Antarctic region.

Laura is a member of the Weed Society of NSW. She has presented her preliminary PhD findings at the 17th NSW Biennial Weeds Conference, and the Strategic Science in Antarctica Conference, both in 2013.

Laura will use the CAWS Student Travel Award to attend and present at two consecutive conferences in 2014: **SCAR (Scientific Committee on Antarctic Research) Open Science** in Auckland, New Zealand and the **19th Australasian Weeds Conference** in Hobart. Laura will present the preliminary findings of her PhD work, primarily mechanisms for the control of *P. annua* under sub-Antarctic climate conditions.