

INTERVIEW WITH A RESEARCHER - 2014



RESEARCH FUNDED BY NATURE FOUNDATION SA

RESEARCHER: MR ROBERT CIROCCO, UNIVERSITY OF ADELAIDE PHD STUDENT
RESEARCH PROJECT: "THE EFFECT OF *CASSYTHA PUBESCENS* ON *ULEX EUROPAEUS* ALONG AN ENVIRONMENTAL STRESS GRADIENT IN THE MT. LOFTY RANGES OF SOUTH AUSTRALIA.
SUPERVISOR: A/PROFESSOR JENNIFER WATLING



C. pubescens infection front on *U. europaeus* at Crafers
Photo: Robert Cirocco

What was the aim and purpose of your project?

Parasitic plants feed off other plants via suckers. *Cassytha pubescens* is a parasitic plant that is native to Australia and attaches to the stems of its hosts. The parasitic vine infects both invasive and native hosts, but invasive hosts seem to suffer much more from infection. Thus *C. pubescens* shows potential as a native bio-control agent against major invasive weeds of Australia. But more research is needed so informed decisions can be made about the true potential of this parasite as an effective management tool in helping control these invasive weeds. Here, the main aim was to investigate the effect of *C. pubescens* on the physiology of *Ulex europaeus*, a Weed of National Significance (WoNS) in Australia. This assessment was conducted at three field sites in the Mt Lofty Ranges which varied in both slope and aspect.

Summarise the results of your project.

Although the field sites varied in slope and aspect it appears that infection duration was a more important factor that influenced the effect of the parasite in this host. *C. pubescens* negatively affected the physiology of *U. europaeus* mainly at two of the three field sites where plants had been infected the longest. Infection with *C. pubescens* results in *U. europaeus* becoming water and nitrogen stressed and having lower rates of photosynthesis which would translate to less carbohydrate available for growth. These results revealed that *C. pubescens* can negatively affect the physiology of *U. europaeus* in the field.



C. pubescens photo: Robert Cirocco

The data provides further evidence that *C. pubescens* may be successful in helping control major invasive weeds of Australia such as *U. europaeus* which cost millions of dollars annually to eradicate and reduces our native biodiversity.

What is the most exciting thing about this work?

- Working on a plant that latches on to other plants with suckers and removes water and nutrients so it can grow at the expense of the host.
- Working on plant associations that occur in remnant vegetation.
- My work can help make informed decisions about using a native parasitic plant as a novel bio-control agent against major invasive weeds of Australia.
- Using physiological measurements to help understand how this native parasite affects host plant processes such as photosynthesis.
- Using a combination of glasshouse and field studies to help evaluate the associations between *C. pubescens* and its invasive and native hosts.

“ The most exciting thing about conducting this study was working out in the field (including before dawn) and quantifying the effects of *C. pubescens* on *U. europaeus* in a natural setting”



Vigorous growth of *C. pubescens* on *U. europaeus* in the glasshouse
Photo: Robert Cirocco