

The distribution of western Cape form of bridal creeper (*Asparagus asparagoides*) in South Australia and Victoria

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Summary Two distinct forms of bridal creeper (*Asparagus asparagoides* (L.) Druce) are now known to exist in South Australia and Western Victoria. Both the western Cape form (WC) and the eastern, or common form (BC), of bridal creeper were introduced from South Africa. WC was first recognised in the south-east of South Australia and western Victoria in 2003 and is showing resistance to *Puccinia myrsiphylli* (Thunb.) Wint. (rust fungus), that has been released as a biological control for BC. This paper reports on the known distribution of WC in South Australia and Western Victoria up until February 2006.

INTRODUCTION

Bridal creeper is unusual amongst members of sub-genus *Myrsiphyllum* in being both widespread and variable. At least two forms (eastern and western Cape) have been observed within the species (Obermeyer 1984), with Cooke and Robertson (1990) regarding the western form around Cape Town, South Africa as an ecotype and the taxon most likely occurring in South Australia. Kleinjan and Edwards (1999) reappraised these forms, mainly for southern Africa, and found that there were significant morphological differences. However, they concluded that the predominant Australian form was the one from the eastern Cape. Similarly, Coles *et al.* (2006) found that there were further differences in both gross morphology and phylloclade cuticular patterning between the forms, at least as they occur in Australia.

Rural Solutions South Australia (RSSA) completed a successful GPS mapping exercise to establish the range and density of WC in the south-east of South Australia (SE) and western Victoria (Vic.). Despite being only recognised recently in Australia, the WC taxon is both widespread and shows some apparent differences in habitat preference to the common BC form (Coles and Willing 2006).

MATERIALS AND METHODS

Locations where CSIRO Entomology first identified the WC form in 2004 were revisited from July 2005 to

February 2006. The extent of infestations was mapped along transects at intervals of 100 m to 1000 m using a Trimble GPS with settings: Datum Grid MGA 94, Zone 54, Projection UTM, and Units metric. Infestations were recorded either as a point, line or polygon shape, using a buffer radius of one or more metres. Mapping of the survey points was extended in a 1 km radius from any positive finds on an XY grid pattern, with negative findings also being recorded.

RESULTS

WC was found to be far more widespread than the original six locations described by CSIRO Entomology in July 2005. Three areas with high levels of infestation occur in the SE and Vic. These are around the towns of Millicent, Port MacDonnell and Nelson (Figure 1). In the mapping survey, WC was recorded at 294 separate locations. RSSA recorded 177 WC points, 45 WC lines and 2 WC polygons. Forestry SA collected 70 WC points in Caroline forest. The locations fall in the following South Australian Hundreds: Caroline (at Donovans, Glenelg River and Dry Creek, Wild Dog and Honeysuckle Flats in SA Forest reserves); MacDonnell (near Port MacDonnell, Brown Bay, Mount

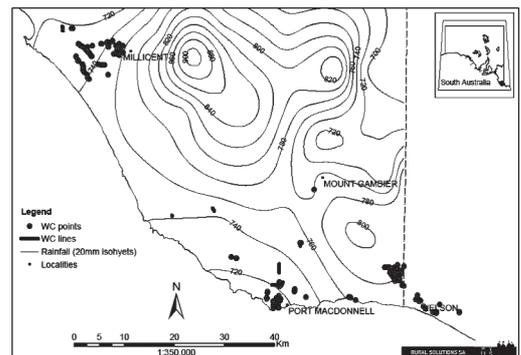


Figure 1. Annual average rainfall and distribution of western Cape form of bridal creeper in the lower south-east of South Australia.

Schank and Allendale East); Kongorong (near Forest reserves 598, 421 and Corattum); Mount Muirhead and Mayurra (near Millicent and in Canunda National Park). In Victoria, near Oxbow Lake, west of Nelson, and south-east of Nelson, at Millhouse Road. A low-density infestation was also recorded 15 km ESE of Nelson in a pine plantation.

DISCUSSION

It is not known whether there are any limiting factors for WC distribution. However, WC in South Africa was found to be restricted to the area where <20% of the annual average rainfall occurs between the summer months of December to February (Kleinjan and Edwards 1999). In these areas, the climate is described as having 'winter-rainfall'. The areas where WC has been located here in Australia, the SE of South Australia and the Western District of Victoria, match the 'winter-rainfall' region, with only 13% of total rainfall occurring from December to February (Australian Government Bureau of Meteorology 2005). WC appears to be confined to within 15 km of the coastal systems in the SE of South Australia and lower western Victoria, and its locations fall in the 650 mm to 800 mm annual average rainfall region.

In contrast, the distribution of BC in South Africa includes both winter and summer rainfall regions (Kleinjan *et al.* 2004). BC is widespread throughout South Australia and Victoria.

WC is demonstrating a resistance to *P. myrsiphylli*, which was released in Australia as a biological control of BC. For example, at Millicent, pustules of *P. myrsiphylli* were recorded on co-habiting phyllocladodes of mature WC and BC forms in September 2005. The percentage of WC phyllocladodes infested was 22% with an area cover of 3.4%, while BC had 96% of phylloclades infested with an area cover of 9.2%. In contrast, however, the seedlings of WC were found to be highly susceptible to rust infection in trials conducted by CSIRO Canberra (L. Morin pers. comm.).

The implication of these field observations of biocontrol agents is that WC might have the ability to re-infest in a suitable environment areas that have

been cleared of BC by the rust fungus or other control measures.

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