

## SOUTH AUSTRALIAN BLUEGUMS THOUSANDS OF YEARS OLD

An unusual group of bluegums on private property in South Australia includes at least one tree that could be thousands of years old.

While this species of bluegum (*Eucalyptus bicostata*) is not endangered, this particular population is genetically and ecologically unique and is the only known population of *E. bicostata* in South Australia.

“This makes it of significant biological interest and high conservation value” says University of Tasmania PhD student Rebecca Jones.

The population at Mt Bryan, near Hallett, has been focus of local attention this week due to its proximity to a proposed windfarm site.

The trees are geographically unique in that they are about 700km from the nearest other native population of this species of bluegum (located at Mt Cole in western Victoria) and is the only population west of the Murray-Darling drainage system.

Ms Jones’ supervisor, Associate Professor René Vaillancourt, has estimated that one tree could be up to 2000 years old, based upon the slow growth rate of the lignotubers which are a feature of this population.

Lignotubers are gnarly looking woody tissues found at the base of many eucalypt species that grow very slowly (approximately 2.5 millimetres per year) and protect the buds that enable the tree to propagate without seed. If the tree is repeatedly damaged or burnt, it will re-sprout from its lignotubers, forming a multi-stemmed stand of clonal trees. So trees that have propagated in this way can be very old.

“This growth form is seen in many of the bluegums at Mt Bryan. There is one tree in particular that consists of stems forming an almost perfect ring shape nearly ten metres in diameter” says Ms Jones.

The likely age and origin of the population was established after researchers from the University of Tasmania, Southern Tree Breeding Association (Mt Gambier) and Flinders University (Adelaide) visited the site in 2000.

All of the stems they sampled from the ring-shaped stand shared exactly the same DNA fingerprint, which shows that they were the result of lignotuber growth from a single tree.

The old age of the trees at Mt Bryan suggest that they are the remnants of a more wide-spread natural distribution of this bluegum species in the past. The population may have been connected to other populations in Victoria by more or less continuous bluegum forest at some time in the past when conditions were much wetter.

Research from Rebecca Jones' PhD has added to what was already known about this population of trees, showing that the Mt Bryan bluegum population is not only probably very old, but also a unique genetic variant.

For three years Ms Jones has been studying the relationships between different populations of the four species of bluegum distributed through New South Wales, Victoria, Tasmania, and the single South Australian population at Mt Bryan. She sampled 25 trees from Mt Bryan for DNA fingerprinting to determine the relationship of the Mt Bryan population to other bluegum populations in the three states to the east.

“My analysis showed that the Mt Bryan population is a unique genetic variant, which is not surprising considering that it is geographically isolated from the other populations, and that it has been separated from them for a very long period of time,” she says.

“My DNA analysis also showed that the population at Mt Bryan has much lower genetic diversity than any of the other 100 populations of bluegum I've sampled across south-east Australia.”

This low diversity is probably the result of inbreeding, which often occurs in small, isolated populations.

Rebecca Jones is available to speak with the media about her research.

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Pictures available upon request.

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