Crown decline in Wandoo

Observations from Wundabiniring Brook 1999-2006

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Introduction

In early 1999 the Science Division of the Department of Conservation and Land Management was alerted by Roger Underwood to foliage death in an extensive area of Wandoo (*Eucalyptus wandoo*) woodland in Talbot forest block visible from the York Road. Causes of initial foliage thinning at Talbot forest block were unclear, though the initial working hypothesis attributed the poor crown condition to below average winter rainfall in the winter of 1997. Subsequent investigations by Hooper and Sivasithamparam (2005) implicate the involvement of fungal pathogens associated with wood boring insect damage. Decline symptoms have been described previously (Wills 2005) and a system for rating symptoms in Wandoo crowns has been developed (WRG 2005). This report updates Wills (2005) with images acquired on 27 May 2006.

Method

A series of Wandoo crowns in open woodland in the north end of Talbot forest block near Wundabiniring Brook (31° 53.103' S, 116° 30.511' E) were photographed on 9 June 1999, then re-photographed on 4 July 2000, 23 May 2001, 9 September 2002, 6 May 2004, 28 April 2005 and 21 May 2006 to facilitate a more rigorous and objective assessment of changes in crown condition. The site was photographed using a digital camera in May 2003 but these images had to be discarded due to unsatisfactory color saturation. Images of the upper and lower extremes of crown condition exemplified by two of these trees, one apparently unaffected by decline (Plate 1) and another showing development of decline and recovery (Plates 2 and 3), are reported here.

Observations

Wandoo crowns at this site continue to carry ample foliage. There is now little sign of flagging (Plate 3). Wandoo at this site is in a recovery phase, indicating that crown decline at this site has probably been a cyclic event. Wandoo at Dryandra observed by Paul Brown to be in decline during the 1980s subsequently recovered, indicating that at least in some cases decline is not a persistent deterioration of tree health.

There has been some disturbance at the monitoring site since late 2005 (Plate 4). Several hectares including trees that have been photographed since 1999 have been shallow ripped, causing some death of Daviesia and native grasses in some areas. Presumably the ripping has been done to improve infiltration of rainwater. Longer-

term effects of this ripping on Wandoo will be monitored, as annual photography of the site will continue.

Conclusions

At this site, crown decline appears to be a cyclic phenomenon, with Wandoo crowns currently in a recovery phase.

References

Wills A. (2005) *Crown decline in Wandoo Observations from Wundabiniring Brook 1999-2005.* Unpublished report. Department of Conservation and Land Management.

Hooper R.J. and Sivasithamparam K. (2005) Characterization of damage and biotic factors associated with the decline of *Eucalyptus wandoo* in southwest Western Australia. *Canadian Journal of Forest Research* 35: 2589-2602.

WRG (2005) *Surveying The Impact of Wandoo Crown Decline. A Guide For Volunteers.* Wandoo Recovery Group and Department of Conservation and Land Management. Perth, Western Australia.

Plate 1 Upper, June 1999; lower, May 2006. An example of a tree showing minimal changes to the canopy since June 1999.

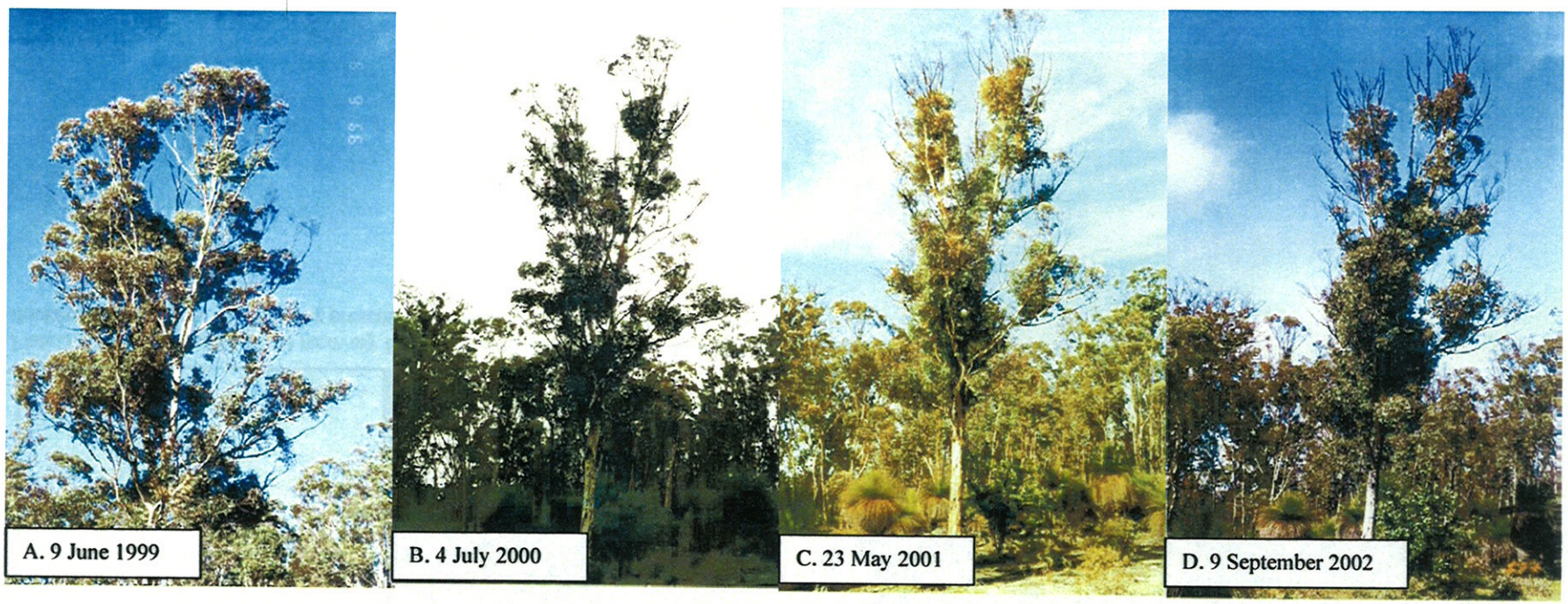

Plate 2 A-D. An example of the onset and progression of crown decline in one tree. A. Some thinning of foliage and initiation of epicormic growth prior to June 1999. B. Heavy thinning of foliage in upper crown and thickening of epicormic growth. C. Continued loss of terminal foliage, thickening of epicormic foliage, and flagging foliage. D. Some flagging, continued thickening of epicormic foliage

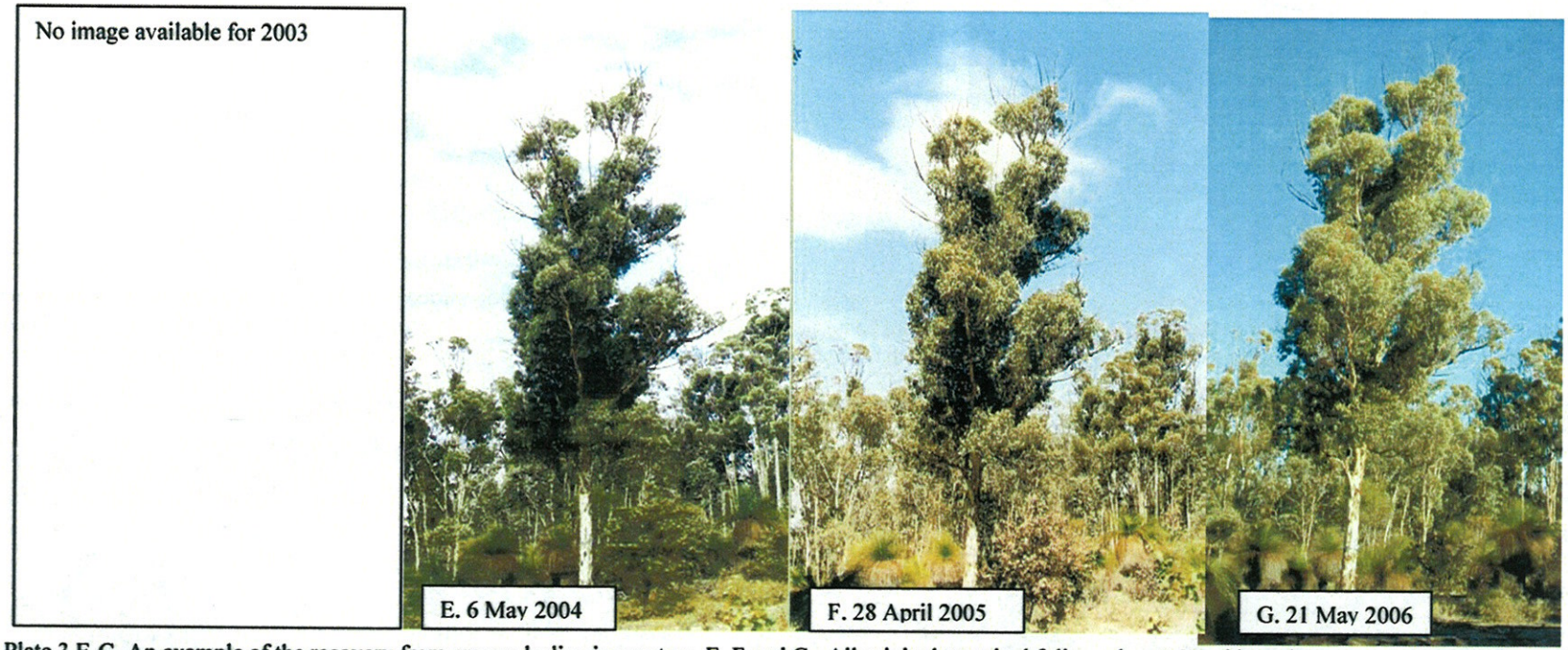

Plate 3 E-G. An example of the recovery from crown decline in one tree. E, F and G. All original terminal foliage absent. Dead branches emergent from canopy. Continued thickening of foliage. No flagging present. Note death of understory shrub in 2005.

Plate 4. Shallow ripping around trees being monitored. Ripping done late summer or autumn 2006.