Decline and recovery of wandoo crowns involving the beetle *Cisseis fascigera* (Buprestidae)

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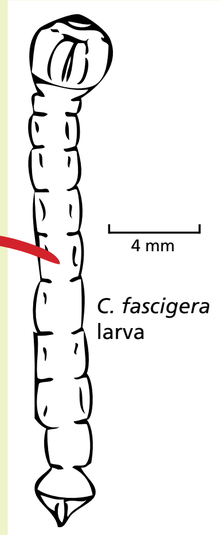
Decline phase →

Recovery phase →



All tree photos and visible symptoms – *Allan Wills, DEC.*

Photos and image of decline agents (lavae, larval tunnel, beetles) – *Ryan Hooper.*

Decline phase

- Clusters of terminal foliage die off (flagging) as twigs and small branches are killed.
- New foliage (epicormic shoots) sprout below the dead branches.
- Decline progresses over several years. Some trees may die.
- Onset and severity of decline varies between individual trees and between locations.

Recovery phase

- Crown density increases as epicormic branches continue to grow and replace lost foliage.
- Flagging within the crown is light or absent.
- Dead branches remain visible for more than 10 years after recovery begins.
- Recovery time depends on the severity and persistence of decline in individual trees.

Agents of decline

- Adult *C. fascigera* beetles lay their eggs on the bark of twigs in summer.
- Eggs hatch and larvae bore a longitudinal tunnel by eating bark and cambium tissue down the twig and branch.
- Feeding by *C. fascigera*, survival of *C. fascigera* and branch water stress interact in a complex way, damaging branch tissue. This results in flagging and branch death, particularly in autumn.
- Larvae pupate in a chamber at the end of the tunnel. The emerging adult beetle bores an exit hole out of the branch.
- Branch death abates as beetle populations diminish. Trees then begin to recover.
- Factors controlling *C. fascigera* populations are largely unknown.

Further reading:

Hooper RJ & Sivasithamparam K. (2005) Characterisation of damage and biotic factors associated with the decline of *Eucalyptus wandoo* in Southwest Western Australia. *Canadian Journal of Forest Research* **35**: 2589-2602.

Hooper, RJ, Wills, A., Shearer, BL, and Sivasithamparam, K. (2010) A redescription and notes on the biology of *Cisseis fascigera* Obenberger (Coleoptera: Buprestidae) on declining *Eucalyptus wandoo* in south-western Australia. *Australian Journal of Entomology* **49**: 234-244.