



TECHNICAL NOTE 2, MAY 2007

Psyllid (*Glycaspis*) Biology

Description

Psyllids are tiny (~5mm) leaf sap sucking invertebrates that construct sugary coated shelters to protect their larvae, called lerps. Lerps were used by Aboriginal people for food and the name is a translation of the Aboriginal word "Larp". Psyllids are phloem feeding insects that are mostly monophagous (feed on a single plant species) but can be oligophagous (feed on a few similar species). These insects are from the Order Hemiptera, meaning half-wing, which are broadly referred to as the "True Bugs". *Glycaspis baileyi* or the Bell bird (miner) psyllid is the main species associated with Bell Miner Associated Dieback (BMAD).



Biology

Glycaspis psyllids live in large populations on Eucalypt tree species and have the capacity to produce several generations in a year. Females lay from 45–700 eggs on the succulent young leaves and shoots and under ideal conditions hatch within 10–20 days as nymphs. These nymphs then locate a position in the foliage to build their shelter. The nymphs insert their stylet into the leaf and start feeding while they build the lerp. The lerp is constructed using honey dew and in some species a waxy substance that is excreted by the psyllid. As nymphs they have five life stages under the lerp and eventually emerge as an adult. The cycle occurs over a 1–2 month period although this will vary with

weather conditions and between sites. The final phase is a winged adult enabling the psyllids to disperse between tree canopies where they lay eggs and start the cycle again.



Distribution

Bell Miner Associated Dieback occurs over a large expanse of the east coast of Australia from Victoria to southern QLD. The distribution rarely occurs west of the Great Diving Range forest types and BMAD does not affect tableland forests. *Glycaspis* psyllids occur within this range due to their association with coastal Eucalypt tree species. While the factors that initiate dieback are undefined at this time, *Glycaspis* psyllids are always present when outbreaks occur. The over abundance of psyllids and lerps in tree canopies, compounded by the exclusion of regulating predators, are key factors in the dieback cycle.

Preferred host trees susceptible to BMAD

North and Central NSW & Southern Qld

#Dunn's white gum	<i>E. dunnii</i>
Sydney Blue gum	<i>E. saligna</i>
Flooded gum	<i>E. grandis</i>
Grey ironbark	<i>E. siderophloia</i>
White Mahogany	<i>E. acmenoides</i>
Grey gum	<i>E. propinqua</i>
Grey gum	<i>E. punctata</i>
Grey Ironbark	<i>E. paniculata</i>



Narrow-leaved Ironbark	<i>E. crebra</i>
Mountain Blue Gum	<i>E. deanei</i>
*Forest red gum	<i>E. tereticornis</i>
*Spotted gum	<i>E. maculata</i>
*Tallowood	<i>E. microcorys</i>
*Bloodwood	<i>E. gumifera</i>
#Wallangarra White Gum	<i>E. scoparia</i>

* BMAD is only rarely expressed in these species
Threatened species

Southern NSW

Monkey gum	<i>E. cypellocarpa</i>
River Peppermint	<i>E. elata</i>
White stringbark	<i>E. globoidea</i>
Woollybutt	<i>E. longifolia</i>
Yellow Stringybark	<i>E. muelleriana</i>
Silvertop ash	<i>E. sieberi</i>

Victoria

Messmate	<i>E. obliqua</i>
Monkey gum	<i>E. cypellocarpa</i>
Narrow-leaved Peppermint	<i>E. radiata</i>

Eucalypt Dieback

Dieback associated with psyllids are the subject of considerable interest in New South Wales, Queensland and Victoria. The life cycle of psyllids and subsequent crown dieback in Eucalypt forests is naturally occurring. The expression of BMAD occurs as a result of a change to the ecosystem, often due to the establishment of a dense understorey and ideal site conditions. These conditions include an open over-storey, presence of Bell miners and psyllids, soil moisture, suitable Eucalypt species and thick understorey eg. *Lantana* or *Cissus*. The BMAD Working Group is currently working towards improving the understanding of the factors driving the BMAD cycle. Adaptive management trials are also being funded in northern NSW to elucidate restoration techniques. These trials are mostly aimed at manipulating understorey habitat and Bell miner life cycles to improve the health of infected trees. The use of fire and herbicide treatments to remove *Lantana* are proving to be a useful technique for reducing both the weed and Bell miners. Monitoring of these sites for improvements in tree health may shed light on the functioning of forest ecosystems and the causative factors of BMAD.



Further Reading

Hollis, D. (2004) Australian Psylloidea: jumping plantlice and lerp insects. Australian Biological Resources Study, Australian Department of the Environment and Heritage

Moore, K.M. (1961) Observations on some Australian forest insects 8. The biology and occurrence of *Glycaspis baileyi* Moore in New South Wales. *Proc. Linnean Society NSW* 86: 185–200

Stone, C. 1996. The role of psyllids (Hemiptera: Psyllidae) and Bell miners (*Manorina melanophrys*) in canopy dieback of Sydney bluegum (*Eucalyptus saligna*). *Australian Journal of Ecology* 21: 450–458.

Wardell-Johnson et al 2006. BMAD Independent Scientific Literature Review. Occasional Paper 2006/116. Dept Environment and Conservation.

Information on Bell Miner Associated Dieback is compiled on our web site found at <http://www.bmad.com.au>.

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