

Mini data sheet on *Chrysophtharta bimaculata*

Added in 2010 - Deleted in 2014

Reasons for deletion:

Chrysophtharta bimaculata has been included in EPPO Alert List for more than 3 years and during this period no particular international action was requested by the EPPO member countries. In 2014, it was therefore considered that sufficient alert has been given and the pest was deleted from the Alert List.

Chrysophtharta bimaculata (Coleoptera: Chrysomelidae) - Tasmanian eucalyptus leaf beetle

Why	The EPPO Panel on Phytosanitary Measures suggested that <i>Chrysophtharta bimaculata</i> could be added to the EPPO Alert List. This insect is a serious defoliator of eucalyptus plantations in Tasmania (Australia). In particular, it was noted that this pest was intercepted 4 times in 2004 by the United Kingdom on tree ferns (<i>Dicksonia antarctica</i>) imported from Australia, these plants are not hosts but could transport the pest (hitchhiking).
Where	EPPO region: Absent. Oceania: Australia (Tasmania, Victoria). <i>C. bimaculata</i> is considered as a major pest in Tasmania but apparently, no economic damage has been reported from Victoria.
On which plants	<i>Eucalyptus</i> spp., mainly <i>E. regnans</i> , <i>E. obliqua</i> , <i>E. delegatensis</i> , <i>E. nitens</i> but the pest has also been recorded on <i>E. dalrympleana</i> and <i>E. globulus</i> .
Damage	<i>C. bimaculata</i> is a defoliator of eucalyptus, both adults and larvae feed on foliage and heavy defoliation results in a characteristic 'broom-topped' appearance of the trees. Although mature eucalyptus can be attacked by <i>C. bimaculata</i> , young trees are particularly vulnerable to defoliation. Damage results in poor tree development, slow growth, and ultimately in a reduction of timber quantity and quality. Repetition of defoliation over several growing seasons can lead to tree dieback and even mortality in severe cases. It has been estimated that insect attacks reduced wood volume of <i>E. regnans</i> by almost 30% after 8 years of repeated defoliation. In Tasmania, it has become necessary to develop integrated pest management programmes against <i>C. bimaculata</i> in eucalyptus plantations. The main strategy is to allow natural enemies to act against the pest and only apply insecticides (e.g. synthetic pyrethroids or <i>Bacillus thuringiensis</i> var. <i>tenebrionis</i>) when necessary. Natural enemies, such as <i>Cleobora mellyi</i> and <i>Harmonia conformis</i> (Coleoptera: Coccinellidae), <i>Chauliognathus lugubris</i> (Coleoptera: Cantharidae), <i>Anagonia rufifacies</i> and <i>Paropsivora</i> sp. (Diptera: Tachinidae) have been reported to limit populations of <i>C. bimaculata</i> in Tasmania. Adults of <i>C. bimaculata</i> are dome-shaped beetles of approximately 9 x 7 mm in size, with two black markings on the pronotum. The body colour is variable from dark red brown when they first emerge to pale green (in summer). <i>C. bimaculata</i> overwinters as diapausing adults in various shelters (e.g. under the bark of dead eucalyptus, bark crevices, clumps of herbaceous plants such as <i>Gahnia grandis</i> (Cyperaceae)). Egg-laying occur in 2 to 3 peaks: usually, one in late spring (end of November/December in Tasmania) and another in late summer (end of January/February). Eggs are laid in batches (rows of approximately 25 eggs) on the upper surface of the leaf. Larvae are dark green to black, and highly gregarious. There are 4 larval instars, the last stage reaching a length of 12-14 mm. Most damage is caused by older larvae (approximately 90% of food intake occurs during the 3 rd and 4 th instars). Approximately 1 month after egg laying, larvae fall to the ground and form pre-pupal cells in leaf litter. Pupation occurs after 5 to 9 days, and adults emerge 12 to 15 days later. Pictures can be viewed on the Internet: http://www.ento.csiro.au/aicn/name_s/b_1026.htm http://eprints.utas.edu.au/224/2/02chapters1to3.pdf (page 8)

Transmission	Adults can fly but no data is available on the insect potential for natural spread. <i>Eucalyptus</i> plant material can disseminate the pest over long distances. The UK interceptions of <i>C. maculata</i> on <i>Dicksonia antartica</i> (non-host plant) imported from Australia show that hitchhiking is indeed a possible pathway.
Pathway	Plants for planting, cut foliage, wood of eucalyptus from Australia. The insect can also be transported as a hitchhiker on other plant species from Australia.
Possible risks	Eucalyptus are grown in the EPPO region for forestry, the paper industry and ornamental purposes (amenity trees and cut foliage). There are large plantations of eucalyptus (in particular <i>E. globulus</i> and <i>E. camaldulensis</i>) in Spain, Portugal and North Africa. <i>C. bimaculata</i> is a serious defoliator of eucalyptus plantations which can impact tree development and wood production. It could probably survive outdoors in parts of the EPPO region where eucalyptus are grown. A UK PRA has shown that <i>C. bimaculata</i> could establish outdoors in areas having a similar climate to Tasmania (e.g. temperate oceanic areas such as North-Western Spain, Western France). Interestingly, another defoliator <i>Chrysophtharta agricola</i> (formerly placed in the genus <i>Paropsis</i>) has recently emerged as a significant pest of eucalyptus in Tasmania and Victoria, coincident with an increase in <i>E. nitens</i> and <i>E. globulus</i> plantations. It seems desirable to avoid the introduction of such defoliators in the EPPO region.
Source(s)	<p>Baker SC, Elek JA, Bashford R, Paterson SC, Madden J, Battaglia M (2003) Inundative release of coccinellid beetles into eucalypt plantations for biological control of chrysomelid leaf beetles. <i>Agricultural and Forest Entomology</i> 5(2), 97-106 (abst.).</p> <p>Bashford R (1999) Predation by ladybird beetles (coccinellids) on immature stages of the <i>Eucalyptus</i> leaf beetle <i>Chrysophtharta bimaculata</i> (Olivier). <i>Tasforests</i>, 77-86.</p> <p>Candy SG (2000) Predictive models for integrated pest management of the leaf beetle <i>Chrysophtharta bimaculata</i> in <i>Eucalyptus nitens</i> plantations in Tasmania. PhD thesis, University of Tasmania, 472 pp. http://eprints.utas.edu.au/224/</p> <p>Clarke AR, Shohet D, Patel VS, Madden JL (1998) Overwintering sites of <i>Chrysophtharta bimaculata</i> (Olivier) (Coleoptera: Chrysomelidae) in commercially managed <i>Eucalyptus obliqua</i> forests. <i>Australian Journal of Entomology</i> 37(2), 149-154 (abst.).</p> <p>Elek JA (1997) Assessing the impact of leaf beetles in eucalypt plantations and exploring options for their management. <i>Tasforests</i> 9, 139-154 (abst.).</p> <p>Elliott HJ, Bashford R, Greener A (1993) Effects of defoliation by the leaf beetle, <i>Chrysophtharta bimaculata</i>, on growth of <i>Eucalyptus regnans</i> plantations in Tasmania. <i>Australian Forestry</i> 56(1), 22-26 (abst.).</p> <p>FERA (2005) Pest Risk Analysis for <i>Chrysophtharta bimaculata</i> (Olivier). http://www.fera.defra.gov.uk/plants/plantHealth/pestsDiseases/documents/Chrysoph.pdf</p> <p>Leon A (1989) The Tasmanian eucalyptus leaf beetle, <i>Chrysophtharta bimaculata</i>: an overview of the problem and current control methods. <i>Tasforests</i>, 33-37</p> <p>Nahrung HF (2004) Biology of <i>Chrysophtharta agricola</i> (Coleoptera, Chrysomelidae), a pest of <i>Eucalyptus</i> plantations in south-eastern Australia. <i>Australian Forestry</i> 67(1), 59-66.</p>