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**CHRYSOCHUS AURATUS (COLEOPTERA: CHRYSOMELIDAE)
ABSOLVED AS PECAN PEST**Charles E. Williams¹

ABSTRACT

Chrysochus auratus, the dogbane beetle, has been erroneously implicated as a pecan defoliator in the early literature. Alternative scenarios suggest other chrysomelid species that may have been responsible for the defoliation.

Despite the importance of the host plant to the ecology and life history of phytophagous insects, knowledge of host plants for many insects remains fragmentary. Compounding this paucity of information are blatantly false host plant records which, despite their erroneous nature, are often perpetuated through citation in published works. During a recent review of the literature concerning the dogbane beetle, *Chrysochus auratus* Fabricius (Coleoptera: Chrysomelidae), I discovered such a reference. *C. auratus* was reported to have caused extensive defoliation of a pecan grove in northern Georgia during the summer of 1904 (Newell and Smith 1905). No information was given describing the behavior of the defoliating insect, condition of the pecan trees, or nature of the plant community in the vicinity of the orchard. Moreover, I could find no follow-up to this unique occurrence in subsequent literature. This report struck me as odd in two ways. First, was it possible that an oligophagous insect such as *C. auratus*, known to feed exclusively upon certain members of the Apocynaceae (dogbanes) and Asclepiadaceae (milkweeds) (Weiss and West 1921), successfully attempted an extreme host plant shift (pecan, *Carya illinoensis*, is in the distantly related Juglandaceae) in such a rapid and devastating manner? Localized feeding specializations are known among insects (Fox and Morrow 1981), but in oligophagous species these usually involve subtle host plant shifts either within or among closely related families (see Hsiao 1978). Second, given the brilliant, metallic-green coloration of *C. auratus*, was a misidentification likely?

This matter could easily be settled by examining specimens of the pecan defoliator. Unfortunately, I found no evidence that Newell and Smith deposited specimens of the insect in a museum (or even if they experienced the defoliation first-hand), thus the true identity of the pecan defoliator may never be known. However, aspects of the life history of *C. auratus* convincingly argue against this species as the perpetrator of the pecan grove defoliation. First, *C. auratus* is a univoltine, non-eruptive species and appears to have a sporadic distribution even when its host plants are numerous (pers. obs.), similar to the distribution of the milkweed leaf beetle, *Labidomera clivicollis* Kirby (Coleoptera: Chrysomelidae), and its host plants (Eickwort 1977). Second, *C. auratus* rarely, if ever, defoliates its host and restricts its feeding primarily to margins of leaves (Weiss and West 1921). Finally, both the low vagility of adults (pers. obs.) and root-feeding habits of *C. auratus* larvae effectively limit the colonizing ability of this species. Therefore, *C.*

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auratus must have been present in the pecan grove or its vicinity for some time prior to, and after, the defoliation. Published evidence for either case is lacking.

How might have this apparently erroneous account arisen? The most plausible explanations are: (1) a transcriptional error by the authors or an assistant; or (2) misidentification of another metallic-green beetle. In the first case, a substitution of *C. auratus* for *Diachus auratus* Fabricius (Coleoptera: Chrysomelidae) may have been made. *D. auratus* feeds primarily upon willow but has been recorded from several other woody plants (Wilcox 1979). It is also metallic-green in color. In the second case, misidentification of the metallic-colored eumolpine, *Metachroma interruptum* Say, a documented pecan-feeder (Wilcox 1979), is a possibility.

Felt (1901) dismissed accounts of *C. auratus* attacking plants other than its usual hosts as erroneous or extreme cases in which the insect attacked a novel host when driven by starvation. While I agree it is unlikely that *C. auratus* will attack plants other than the Apocynaceae and Asclepiadaceae, it is doubtful that even starvation would fuel a host plant shift to as distant a family as the Juglandaceae. Moreover, if a local extinction of its host plant were to occur, it is improbable that *C. auratus* would be present in the numbers necessary to colonize and defoliate a pecan grove.

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