Winter dormancy of the pine sawyer Monochamus galloprovincialis (Col., Cerambycidae) in Portugal

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Abstract:

The pine sawyer Monochamus galloprovincialis is the vector of the introduced pine wood nematode Bursaphelenchus xylophilus in Portugal and has a fixed univoltine life cycle, overwintering as larvae inside the wood. We investigated the possibility of the existence of a phase of winter dormancy affecting the larvae, its induction and termination under controlled conditions and its incidence and termination in the field. In the laboratory, the majority of the newly hatched larvae which were maintained at a constant temperature of 23 degree C and different photoperiods became dormant in <70 days. Part of the population completed dormancy and reassumed development until adult emergence at the constant temperature, without the need for a chilling period. Although no critical photoperiod for dormancy maintenance or termination could be determined, dormancy termination was more frequent for larvae experiencing changes on daylength duration. In the field, dormancy incidence grew progressively from a minimum of 26% in October to a maximum of 100% in April, and dormancy appeared to be completed only during late winter. The results suggest that M. galloprovincialis larvae underwent an obligatory dormancy associated with the last larval instar, which conforms to the general definition of diapause, although presenting some affinities with oligopause. The role of this dormancy on the regulation of the pine sawyer's seasonal development and the number of generations is discussed.