Density of *Megacyllene caryae* (Gahan) (Coleoptera: Cerambycidae) larvae in hickory and notes on gallery mates

While some longhorned beetle species are usually distributed quite sparingly (e.g., *Glycobius speciosus* (Say), Holland 2009), others can reach quite high densities. An understanding of the densities of different species is important in interpreting sampling results for these beetles. If the sampling has a significant impact on the populations of species, this can affect the interpretation of results (Baker and Barmuta 2006).

*Megacyllene caryae* (Gahan) is a longhorned beetle (Coleoptera: Cerambycidae) with larvae that develop within recently cut or killed hickory wood (*Carya* spp.) and occasionally the wood of other trees (Craighead 1950). The beetles have a one year life cycle (Johnson and Lyon 1991). This species is considered a pest because it can severely damage sawed logs cut during the winter (Blatchley 1910). An infestation of larvae in a firewood pile that included much hickory was noticed in the summer of 2007 and this provided an opportunity to study the density of this species. Much of the firewood was hickory that had been cut in late winter (January to March) 2007 from a tree that had recently died.

In January 2008, eight infested pieces of hickory firewood were placed in a home-made rearing chamber constructed from a single-chamber refrigerator. The collecting jar remained empty until early May when it filled completely with adult beetles within a week. The jar was removed and replaced with a larger jar and fresh ethanol. After several months with no further emergence, the logs were removed and measured to calculate their volume based on a cylinder or a quarter-cylinder. All *M. caryae* were examined to confirm their identity and kept in fresh 70% ethanol. Other insects were pinned and identified. All specimens remain in the Landscape Ecology and Biodiversity Laboratory at Purdue University.

Three hundred four *M. caryae* emerged from the eight pieces of wood. The total volume of hickory wood was 0.069 m$^3$ and the average lateral dimension (i.e., radius for quarter-round pieces, diameter for round pieces) was 0.154 m. This volume is approximately equivalent to a log 0.15 m in diameter and 3.9 m long. The wood was extensively riddled with galleries.

In addition to *M. caryae*, two additional Cerambycidae were collected: one *Neolytus a. acuminatus* (Fabricius) and one *Elaphidion mucronatum* (Say). A single Anobiidae (Coleoptera), *Trichodesma gibbosa* (Say), and a single Braconidae wasp (Hymenoptera) *Doryctes* sp., also emerged from the same wood. Upon splitting a piece of hickory wood that had been collected at the same time, but that was not put in the rearing chamber, a Tenebrionidae (Coleoptera), *Neatus tenebrioides* (Beauvois), was discovered just outside a pupal chamber of *M. caryae*. This darkling beetle was found approximately one-third of the way through the fibrous frass plug outside the empty chamber.

The recovery of only a single parasitoid from host plant material from which over three hundred beetles emerged seems quite low. The mortality of a cogener of *M. caryae*, *M. robiniae* (Forster), due to two parasitoids has been studied (references in Solomon 1995, p. 448). These parasitoids caused only one percent loss of the individuals, while two species of woodpeckers, in comparison, ate 30 percent of the individuals. It may be fruitful to determine if low parasitism rate is usual for *Megacyllene*.

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**Literature Cited**

