

**First occurrence of the goldspotted oak borer parasitoid,  
*Calosota elongata* (Hymenoptera: Eupelmidae), in California**

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## Scientific Note

### First occurrence of the goldspotted oak borer parasitoid, *Calosota elongata* (Hymenoptera: Eupelmidae), in California

*Calosota elongata* Gibson (Hymenoptera: Eupelmidae) is a gregarious, ectoparasitic larval parasitoid that was described recently (Gibson 2010) in association with the goldspotted oak borer, *Agrilus coxalis* Waterhouse [now considered to be *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae)] in its native range in southeastern Arizona (Coleman & Seybold 2011). We have discovered this parasitoid outside of its presumptive native range on 1 December 2010 near the Pine Creek Trailhead, Cleveland National Forest in San Diego Co., California, beneath the bark of coast live oak, *Quercus agrifolia* Née (Fagaceae), in association with *A. auroguttatus*. Six pupae of *C. elongata* were collected from an *A. auroguttatus* pupal cell, which had been exposed during destructive sampling of *Q. agrifolia* phloem tissue with a hatchet. The pupae were brought to the laboratory where three specimens matured into adult females. Additional collections of *C. elongata* pupae were made in the same manner and in the same general vicinity on: 1) 19 January 2011—3 pupae (Noble Canyon Trailhead, Cleveland National Forest); and 2) 19 December 2011—6 pupae (Pine Creek Trailhead). No host remains were found during the three aforementioned collections, suggesting that the parasitoids had completely consumed the immature *A. auroguttatus*. Typically, host head capsules are found following these bouts of feeding by gregarious parasitic Hymenoptera (Quicke 1997), however in this instance, the head capsules may have been lost during the destructive sampling of the bark. Subsequent flight trapping in the same general vicinity yielded nine adult female specimens of *C. elongata* that flew between 19 May and 12 October 2011. The wasps were trapped primarily on yellow sticky cards on the north and south sides of two mature *Q. agrifolia*, however, one specimen of *C. elongata* was trapped between 8 September and 12 October 2011 on a purple prism-style trap located at the dripline of the foliage of *Q. agrifolia*. The latter traps have been used routinely to trap *Agrilus* species throughout North America (Francesca et al. 2008). The flight period that we have established from the California specimens contains the emergence period that we noted from some of the type material from Arizona. Bark samples collected on 1–2 May 2009 from Box Canyon (Santa Rita Mountains, Pima Co., Arizona) yielded 12 adults emerging between 6 and 14 July 2009 and 7 adults emerging between 14 July and October 2009 (Coleman & Seybold 2011). Of the 19 specimens from that collection two were males. There were no males among the 12 specimens collected in California, suggesting that this may be a thelytokous population or simply that no males were taken in this small sample from California. We suspect that *C. elongata* was introduced to California with the original population of *A. auroguttatus* because these first California collection records for the wasp are in the area that we consider as the hypothetical point of introduction of the California population of *A. auroguttatus* from Arizona (Coleman et al. 2012a). Also supporting some level of founder effects are preliminary observations of the rate of parasitism, which is higher (15% vs. < 1%) in Arizona than in California (Coleman et al. 2012b).

Record—CALIFORNIA: San Diego Co., Pine Creek Trailhead, Cleveland National Forest, Descanso Ranger District, approx. 1085 m elev., 32.83469° N,

116.54345° W, XII-1-2010, coll. L. J. Haavik, ex: outer bark of coast live oak tree, *Quercus agrifolia*. Collected as pupae in the pupal cells of goldspotted oak borer, *Agrilus auroguttatus*, and reared to adults in laboratory.

Record—CALIFORNIA: San Diego Co., Pine Creek Trailhead, Cleveland National Forest, Descanso Ranger District, 1088 m elev., 32.833031° N, 116.547049° W, V-19- to VI-14-2011, coll. T. W. Coleman, S. J. Seybold, ex: yellow sticky trap placed near coast live oak trees, *Quercus agrifolia*.

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#### LITERATURE CITED

- Coleman, T. W. & S. J. Seybold. 2011. Collection history and comparison of the interactions of the goldspotted oak borer, *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae), with host oaks in southern California and southeastern Arizona. *The Coleopterists Bulletin* 65:93–108.
- Coleman, T. W., A. D. Graves, M. S. Hoddle, Z. Heath, Y. Chen, M. L. Flint & S. J. Seybold. 2012a. Forest stand composition and impacts associated with *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae) and *Agrilus coxalis* Waterhouse in oak woodlands. *Forest Ecology and Management* 276:104–117.
- Coleman, T. W., V. Lopez, R. Stouthamer, P. F. Rugman-Jones, S. J. Seybold, R. Reardon & M. S. Hoddle. 2012b. Can the destruction of California’s oak woodlands be prevented? Potential for biological control of the goldspotted oak borer, *Agrilus auroguttatus*. *BioControl* 57:211–225.
- Francese, J. A., J. B. Oliver, I. Fraser, D. R. Lance, N. Youssef, A. J. Sawyer & V. C. Mastro. 2008. Influence of trap placement and design on capture of emerald ash borer (Coleoptera: Buprestidae). *Journal of Economic Entomology* 101:1831–1837.

- Gibson, G. A. P. 2010. *Calosota* Curtis (Hymenoptera, Chalcidoidea, Eupelmidae) - review of the New World and European fauna including revision of species from the West Indies and Central and North America. *ZooKeys* 55:1–75.
- Quicke, D. L. J. 1997. *Parasitic Wasps*. Chapman & Hall, London, U.K., 470 pp.
- Westcott, R. L. 2005. A new species of *Chrysobothris* Eschscholtz from Oregon and Washington, with notes on other Buprestidae (Coleoptera) occurring in the United States and Canada. *Zootaxa* 1044:1–15.

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