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## RANGE EXPANSION AND ADULT FLIGHT ACTIVITY OF *AGRILUS SUBROBUSTUS* (COLEOPTERA: BUPRESTIDAE) IN TENNESSEE

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Several *Agrilus* species have been introduced to the United States, presumably through transport of infested wood packaging material associated with international trade (Jendek & Grebennikov 2009; Haack 2006). The most problematic exotic *Agrilus* in the U.S. currently is the emerald ash borer (*Agrilus planipennis* Fairmaire), now found in 14 eastern U.S. states as of 2009 (Michigan State University et al. 2010). Lesser known is the arrival of *A. subrobustus* Saunders, which was first reported in the U.S. after collection of 3 specimens on purple sticky traps in northern Georgia (Westcott 2007). This exotic species is listed by United State Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS) as "quarantine significant", meaning it could require mitigative action if it is determined to have a high risk of reproducing and subsequently spreading (Joseph F. Cavey, Branch Chief, USDA-APHIS, personal communication). *Agrilus subrobustus* may be limited in host plant range to its only known plant resource in Asia, the silk tree (*Albizia julibrissin* Durazz) (Jendek & Grebennikov 2009; Westcott 2007). However, as of the publication of this note *A. subrobustus* has yet to be reared from its Asian host in North America. Whether or not *A. subrobustus* is capable of exploiting native plant species as larval hosts remains undetermined. This note reports further northward extension of the known geographical range of *A. subrobustus* in the U.S. and gives the first seasonal adult flight records for trap catches of this beetle in North America.

Mimosa, or silk tree, was introduced to the U.S. in the 18th century by André Michaux as part of a nursery established in Charleston, South Carolina (Cothran 2004). Because Michaux cultivated mimosa from seeds, it is doubtful the plants could have been the original source of *A. subrobustus* in North America. Early establishment of mimosa across eastern North America, originally as a popular ornamental plant, then as a non-native, freely reproducing exotic plant may have enhanced the likelihood of later establishment by *A. subrobustus* in the United States. Though timing of its arrival is not known, it is likely to have arrived from Asian ports in wood packaging material much like Asian emerald ash borer beetle (Haack 2006). Alternatively, it may have arrived in prized ornamental mimosa trees shipped from

Asia, as one hemipteran pest of the silk tree is thought to have done (Wheeler & Hoebeke 2009).

In 2009, four purple panel traps were deployed along the Foothills Parkway in Blount County Tennessee as part of a broader survey of buprestid fauna in the Great Smoky Mountains National Park. Traps were 1.2 m × 0.7 m purple corrugated plastic. Two traps were positioned 10 m apart at ground level in direct sun under a row of mimosa trees, which are plentiful in the surrounding area. The other 2 traps were placed in direct sun along a closed road next to a wooded area and about 30 m away from any mimosa trees. One of the traps was placed at ground level and the other was suspended 7 m above the first. Each trap was checked biweekly from Apr to the end of Aug and terminated 4 weeks after the last specimen was removed.

Identification of *A. subrobustus* adults was confirmed by Richard L. Westcott (Entomologist Emeritus, Oregon Department of Agriculture) and Henry A. Hespenheide (Professor Emeritus, University of California-Los Angeles). Voucher specimens were deposited at the Great Smoky Mountains National Park collection in Gatlinburg, TN, as well as the Otis L. Floyd Nursery Crops Research Station in McMinnville, Tennessee.

*Agrilus subrobustus* flight activity began in late May and continued through early Aug. All adults were caught only on the 2 sticky traps placed directly below mimosa trees, while traps 30 m away from mimosa trees did not catch any *A. subrobustus* adults. Though only 9 adults were collected, peak activity occurred in early to mid-Jun (Fig. 1). These Tennessee records of *A. subrobustus* are approximately 240 km northeast of the first site of discovery in Georgia in 2006. This indicates that *A. subrobustus* has become established in at least 2 U.S. states. An effort was made to scout for signs of *A. subrobustus* infestation consistent with buprestid larval feeding (i.e., compact frass, winding galleries, D-shaped exit holes) on trunks and stems below 2 m on 6 trees surrounding the traps, but none were found. Exit holes 1.2 mm in diameter, the size of a typical adult *A. subrobustus* head, also were not observed. Safety concerns prevented inspection above 2 m. It is likely that adults of *A. subrobustus* emerged from upper branches on the trees examined, which ranged in height from 4-8 m and

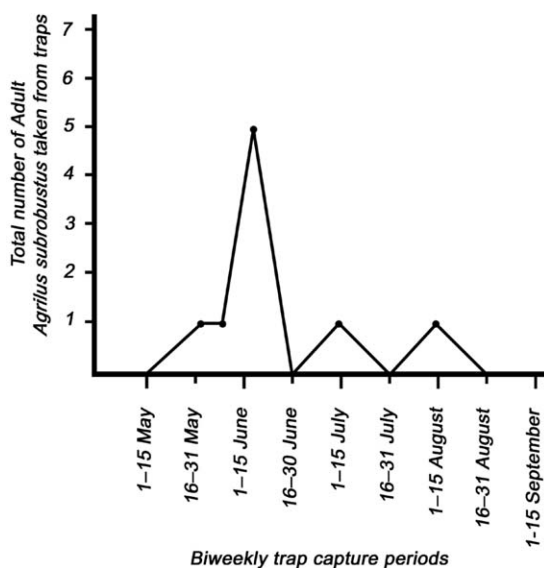


Fig. 1. Adult flight of *Agrilus subrobustus* collected on purple sticky traps along the Foothills Parkway in Blount County, Tennessee in 2009.

had diameter breast heights of 12–25 cm, or from trees other than those examined. Mimosa is a plant host to other wood boring insects in this area, as several unidentified weevil larvae (Coleoptera: Curculionidae) were removed from a branch about 7.6 cm in diameter and tunneling of a small (<3mm) unidentified beetle was also observed in mid-summer. Further survey work is needed to elucidate the geographic range and assess natural enemies associated with introduced *A. subrobustus*, which may be capable of surviving in eastern states from Florida to Massachusetts where mimosa grows (Elias 1980; Isely 1998). Since very little is known about the life history of *A. subrobustus* in Asia, its establishment in the U.S. provides an opportunity to more fully understand its biology. It will also be important to determine if it has the ability to negatively impact native legumes.

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#### SUMMARY

*Agrilus subrobustus* was taken on purple sticky traps in Blount Co., Tennessee, in 2009 extending the southeastern range of this exotic buprestid beetle from northern Georgia where it was first discovered. Based on season-long trap catch data, preliminary adult flight activity from May to Aug is presented.

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