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The exotic *Agrilus cyanescens* (Ratzeburg) (Coleoptera: Buprestidae) is discovered in Oregon

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Abstract. In two separate occurrences, graduates of the Oregon Forest Pest Detector program discovered the exotic *Agrilus cyanescens* (Ratzeburg) (Coleoptera: Buprestidae) in Portland, Oregon, damaging a backyard shrub, *Lonicera involucrata* (Rich.) Banks ex Spreng. (Caprifoliaceae). Although first detected in the USA 99 years ago, the known occurrence nearest to Oregon is in Utah.

Key words. State record, host plants, Utah.

Introduction

Invasive forest insects and disease are a leading cause of tree mortality and decline of forest health across the USA (Ciesla 2011). For some invasive pests, such as the exotic gypsy moth, *Lymantria dispar* (L.) (Erebidae), pheromone lures are a powerful tool for positive detections at low population densities (Elkinton and Liebhold 1990). For other forest pests, trapping is ineffective for early detection. Instead, early detection is reliant upon people who observe and report signs and symptoms of exotic forest pests.

The Oregon Forest Pest Detector (OFPD) program was initiated in 2015 using funding awarded by the USDA (Farm Bill and Landscape Scale Restoration Program). The goal of the OFPD is to train a pool of natural resource professionals who work in urban and natural forests (e.g. arborists, foresters, park workers) how to recognize characteristics of damage by the emerald ash borer (EAB), *Agrilus planipennis* Fairmaire (Buprestidae), and the Asian longhorn beetle (ALB), *Anoplophora glabripennis* (Motschulsky) (Cerambycidae). The Pacific Northwest does not have any known populations of those insects but has several susceptible endemic host tree species. The program is coupled with an online reporting tool, the Oregon Invasive Species Online Hotline, that is accessible via mobile devices. The program has trained over 500 students at 30 workshops held across the state. More than 25 reports have been filed by OFPD graduates thus far, though most reporting noxious weeds. This note reports the first **state record** for a terrestrial insect made by a graduate of the program. The first reporter, Lise Gervais, is employed by a private tree care company and is a volunteer in restoration projects of local natural areas. The second, Bethany Lund, is employed by a local soil and water conservation district.

Materials and Methods

During May 2019, Lise noted damage and adult emergence holes on a twinberry shrub, *Lonicera involucrata* (Richardson) Banks ex Spreng. (Caprifoliaceae) (Fig. 1–2) and found beetles that she correctly recognized as being an exotic species of *Agrilus*. A sample of infested stems was sent to us, from which beetles emerged. We confirmed the species to be *Agrilus cyanescens* (Ratzeburg) (Fig. 3–4). Adults of that species are variable in color, ranging from blue to green (E. Jendek, in litt.). Although the Portland specimens appeared green when collected and placed in ethanol, the color of the mounted specimens is a dark bluish green. More beetles were collected later at the site. Nine voucher specimens are deposited in the following collections: Oregon State Collection of Arthropods (Oregon State University), Oregon State Department of Agriculture, and Oregon State Department of Forestry; and they are labeled as follows (number of specimens in parentheses): OREGON, Multnomah Co., Portland, 45.508444°, –122.621990°, 13.v.2019/Emerged from *Lonicera involucrata*, Lise Gervais (2). Same except 18.v.2019/Host plant *Lonicera involucrata*, Lise Gervais (3); same except 19.v.2019/Mudge & Westcott colls. (4). In August 2019, Bethany noted similar damage as described above on a twinberry shrub in a Portland neighborhood 3.4 miles NbW of the first report. Samples of infested stem were sent to us, and upon dissection a dead adult male was discovered and confirmed as *A. cyanescens*. The location of the second discovery is 45.556214°, –122.637119°.

Discussion

Although *L. involucrata* is a **new larval host record** for the beetle in North America, it was reported by Drees (1999) in the Old World (Germany), where the plant is not native. Aukema et al. (2010) implied that the introduced *Lonicera periclymenum* L. is a larval host in North America, though did not provide substantive information. The plant is a known larval host in its native Eurasia (Jendek and Poláková 2014).

Currently, all larval host associations in North America are honeysuckles, *Lonicera* spp., though adults have been reported from the genus *Symphoricarpos* (Caprifoliaceae) (Westcott 1991; Nelson et al. 1996). Jendek and Poláková (2014) considered species of *Rhamnus* (Rhamnaceae) and *Rosa* (Rosaceae) as larval hosts in Europe, though Jendek and Grebennikov (2009) had considered the latter to be a dubious record. Eduard Jendek (in litt.) says it pertains to *Agrilus cuprescens* (Ménétries), the error being caused by mistyping in a database.

Agrilus cyanescens, widespread in and native to Eurasia, was first reported in North America by Frost (1922; as *Agrilus coeruleus* Rossi [sic]) based on two specimens that he examined that were collected in 1920 from Sturgeon Bay, Wisconsin, where they were reported as abundant flying around wild raspberry bushes, and one from Sherborn, Massachusetts collected in 1921. Knull (1944) stated that the species was well established at Columbus, Ohio, taken on ornamental *Lonicera* sp. “in which the insect breeds.” The aforementioned abundance around raspberry bushes is odd and better fits with another exotic, the common widespread and abundant *A. cuprescens*, which was introduced to North America at least by the early 1900s (Westcott et al. 2015). Wellso and Manley (1976) listed *A. cyanescens* (as *A. coeruleus*, a *lapsus calami* for *A. caeruleus*), giving the host as *Lonicera tartarica* [sic] (*L. tatarica* L.). Nelson et al. (1981) recorded collection of several adults on *Lonicera* sp. and one from *Viburnum* sp. (Adoxaceae). The latter was long placed in the Caprifoliaceae. Westcott (1991) reported adults taken on *Symphoricarpos orbiculatus* Moench in Missouri, which likely represents a larval host because it is in Caprifoliaceae. Nelson et al. (1996) recorded an adult collected on *Symphoricarpos* sp. in Colorado. The only larval host given in the North American catalog (Nelson et al. 2008) is *Lonicera* sp. Maier (2012) discussed the occurrence of *A. cyanescens* in Connecticut at some length, reporting it reared from *Lonicera* sp.

As an example of what appears to be a relatively recent introduction, *A. cyanescens* was first reported from Utah based on a specimen collected in Salt Lake City during 1978 (Westcott 1991). There is a specimen in the Monte L. Bean Museum, Brigham Young University, from American Fork that was collected in 1991 (Shawn Clark, in litt.), another was photographed in Cottonwood Heights during 2013 (bugguide.net/node/view/776833 [accessed 23-V-2019]). These localities appear to be no more than 20 miles apart, all being in the general area of Salt Lake City. Kristopher Watson (in litt.), an entomologist with the Utah Department of Agriculture and Food, said that neither he nor colleagues that he contacted

had any knowledge of this insect in the state. Based on the foregoing information it seems the beetle is uncommon in Utah, though certainly it has established.

We have assumed that in North America *A. cyanescens*, although widespread and common, has not proved to be a pest of significant concern, especially from a general economic point of view—compare it to *A. planipennis*! Aukema et al. (2010) made the same comparison and considered that the former species “...to date has caused virtually no noticeable impact.” Maier (2012) echoed that sentiment. We have not found any information to the contrary. Of course, that does not negate the damage it can do to an ornamental planting such as the one discovered in Portland (Fig. 1). However, we suggest such damage can be mitigated by removing and destroying any damaged plant material observed.

This is the first instance where a previously undetected exotic insect species was reported on the citizen reporting tool, Oregon Invasive Species Online Hotline. The fact that two of the 500 graduates of the Oregon Forest Pest Detector program were able to observe and report this occurrence is proof of concept that newly arriving invasive pests can be detected early through interagency cooperation using a combination of targeted outreach and education with a user-friendly mobile reporting platform.

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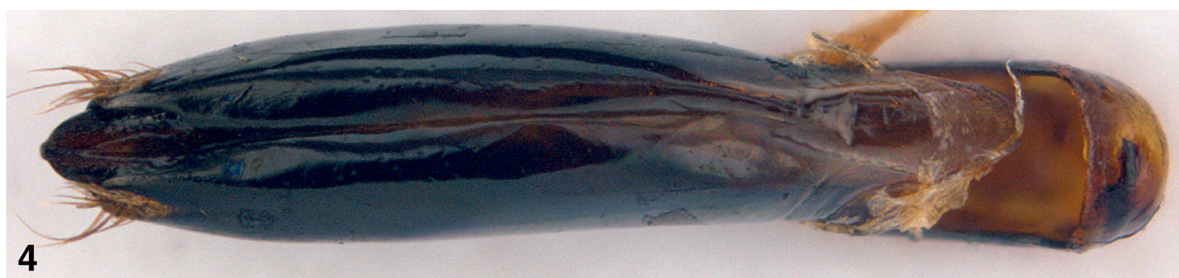
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Figures 1–2. *Agrilus cyanescens* host plant. 1) *Lonicera involucreta*, the larval host plant where *Agrilus cyanescens* was found in Portland, Oregon. Alan Mudge. 2) Adult *Agrilus cyanescens* exit holes in branch of host plant.



Figures 3–4. Adult *Agrilus cyanescens*. 3) Habitus of *Agrilus cyanescens* specimen from Massachusetts. Photo by Tom Murray. 4) Aedeagus of *Agrilus cyanescens*, dorsal view. Photo by Eduard Jendek.

