



# Total Records of Velvet Longhorn Beetle *Trichoferus campestris* Faldermann (Coleoptera, Cerambycidae) from Utah

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## Introduction

The velvet longhorn beetle (*Trichoferus campestris* Faldermann) is a potential threat to Utah's urban, orchard, and riparian wood land areas. Field sampling and actions taken in association with the detection efforts by the Utah Department of Agriculture and Food (UDAF) are necessary to maintain productive commercial tree fruit production, and healthy urban forests. Expanded detection trapping along natural waterways and orchards indicate that the velvet longhorn beetle (VLB) distribution, first discovered in South Salt Lake City in July 2010, is widespread in Salt Lake and Utah counties. The insect was first detected in North America in the province of Quebec, Canada in 2002 and 2006 (Grebennikov et al. 2010). The VLB has been found in Ohio (2009), Rhode Island (2006), New Jersey (2007, 2013), Illinois (2009) (Blackwood 2010), Colorado (2013), and New York (2014). It spreads into new areas through infested wood packing material that accompanies a wide variety of imported commodities such as: building supplies, machinery, tools, glass, tiles, etc. (Cavey 1998). Published reports from the European Plant Protection Organization, CABI and Global Pest Disease Database have been summarized in the USDA-APHIS-National Identification Services Plant Pest Risk Assessment (1998). The conclusion of this literature review is that VLB is polyphagous and prefers to attack apple (*Malus*), and mulberry (*Morus*) in its native range. In Utah, VLB larva, pupae, and adult life stages have been recovered though destructive sampling from peach and cherry (*Prunus*). See Table 2 for a complete list of hosts.

## Description

The adult is 11–20 mm long, with an elongated body and parallel-sided elytra (figure 2). The elytra, legs and other parts of the body vary in color from dark brown to brownish-orange, with the legs and antennae – usually being lighter –(figure 2). It is easily recognized by the irregularly distributed hairs on the elytra, which form spots (Kostin 1973). Mature larvae are 22 mm long, yellow-white in color, and have a brown head (Figure 1).



Figure 1: Larva Life Stage (Clint Burfitt, UDAF)



Figure 2: Adult Life Stage (Caressa Pratt, UDAF)



Figure 3: Emergence holes (Clint Burfitt, UDAF)

## Biology and Behavior

In Utah, the known distribution runs from central Salt Lake County to central Utah County. It occurs in high densities near hygienic cull piles found in commercial fruit production areas and near riparian habitat associated with golf courses. The adult form is nocturnal and emerges for flight in mid-spring (April–May) (Spears 2014). It is attracted to Lindgren funnel traps baited with ethanol lure (table 3). Living hosts are fruit trees (table 3). Live beetles were recovered from sleeve cages placed on cherry and peach trees (figure 4). See Table 1 for a complete list of hosts.

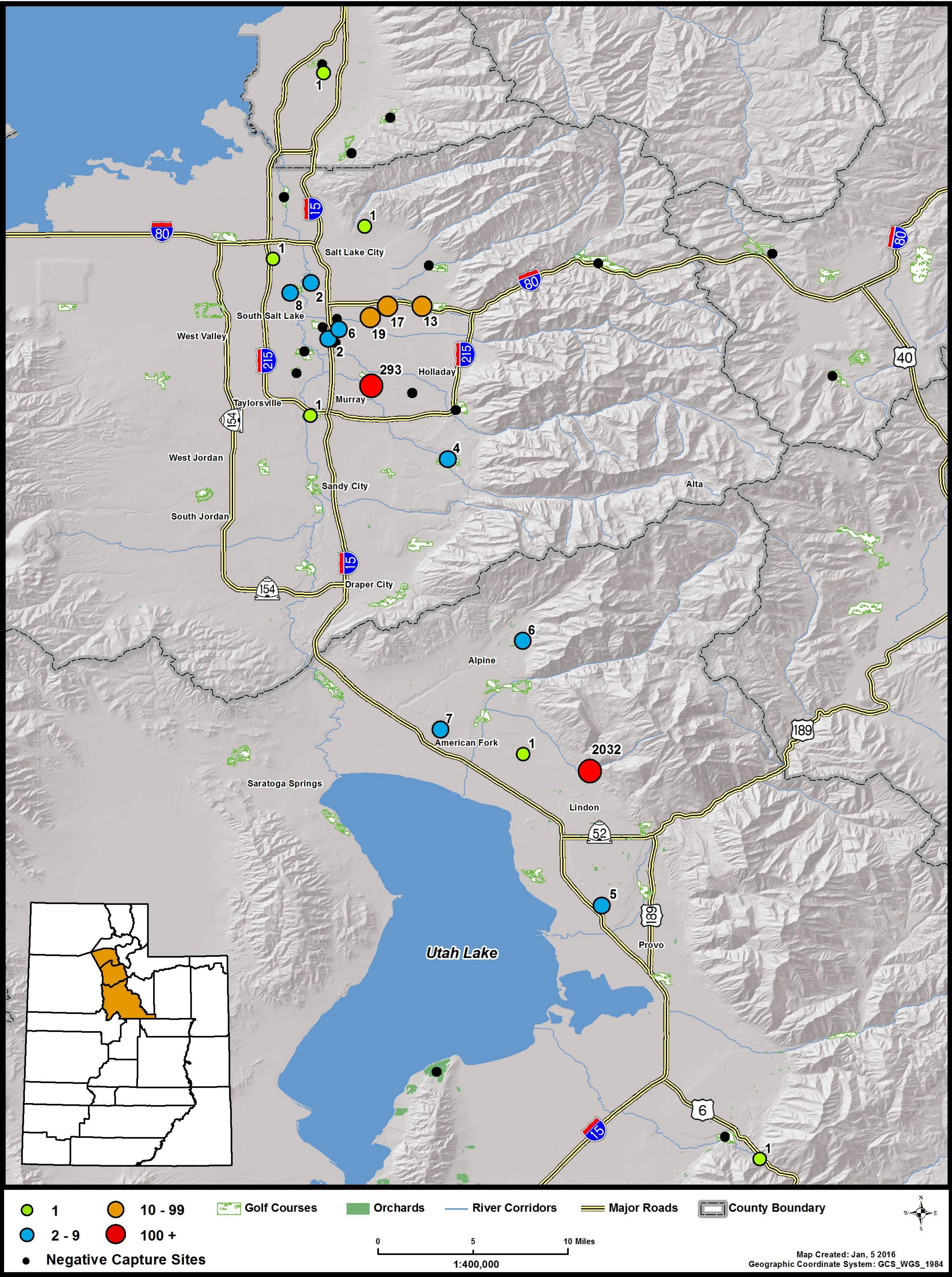
It is unknown whether the insect prefers healthy or stressed trees; however, it seems to favor hosts that are medium to large in size. Larvae develop under the bark and then in the wood. The insect is a pest of construction materials often infesting the timber, lumber, and dry wood (Kostin 1973). Infested trees display thinning crown, frass deposits at the base of the tree, epicormic shoots, and exit holes on the trunk and main branches (figure 3). VLB infestation may have an impact on fruit yield, wood marketability, and tree longevity (Spears 2014).

Betula spp. (Birch)
Broussonetia spp. (Paper mulberry)
Gleditsia spp. (Honeylocust)
Malus spp. (Apple/Crabapple) [preferred host]
Morus spp. (Mulberry) [preferred host]
Picea spp. (Spruce)
Pinus spp. (Pine)
Salix spp. (Willow)
Sorbus spp. (Mountain-ash, rowan)
Prunus spp. (cherry, peach)

Table 2: Living Hosts

Year	2010	2011	2012	2013	2014	2015
Total Beetles	4	0	11	142	408	1,863
Total Lindgren Funnel Traps	42	75	105	108	149	160

Table 1: Number of adult beetles collected and number of lindgren funnel traps placed by year



Trap Type	2010	2012	2013	2014	2015
Lindgren Funnel	4	11	142	286	83
Cross Vane Panel				107	
Sleeve Collection				8	24
Light Trap				3	2
Visual Survey				1	0
Rearing Cage				1	
Japanese Beetle Trap	0	0	0	1	3
Gypsy Moth Delta Trap	0	0	0	1	0
Live Captures					9
Lindgren Funnel (color)*					201
Cross Vane Panel (lure)*					1306
Cross Vane Panel (height)*					235

Table 3: Number of adult beetles by collection method per year. Shaded boxes indicate that the trapping method was not used that particular year. Asterisks denote experimental traps that were part of the Cephis trapping method study. Note that 2011 is excluded from the table because no beetles were caught that year.

## Surveillance and Monitoring Activities

UDAF continues to gather information on the distribution of *T. campestris* in Utah. To date 2,427 adult specimens of this exotic wood borer have been collected from 15 sites, in three Utah counties. A new county record was set in Davis County for 2015. The sites where this beetle have been detected are orchards, riparian areas (golf courses), and industrial sites. Ongoing research and development must continue in effort to understand the biology of the insect and risk that the pest imposes socially, environmentally and economically. Currently, Otis laboratory is in the process of trying to establish a colony for further research. The exotic wood borer survey was completed as a cooperative project by UDAF with funding from USDA APHIS PPQ.

Additionally, Otis laboratory has partnered with UDAF to develop a trapping method for *T. campestris*. Experimental trapping methods were implemented at 2 sites (table 3). Funnel traps of varying colors and lure types were placed at a site in Utah County. Cross vane panel traps were placed in a site in Salt Lake County. at varying distances from the ground. The results of this study are not yet available.



Figure 4: Sleeve trap made out of mesh wrapped around the branch of vulnerable fruit trees (Kris Watson, UDAF)

## Outreach

UDAF conducts outreach focused on exotic wood borers and their potential impact to Utah's urban, orchard, and riparian wood land areas. Information specific to the recent monitoring programs to detect early introductions of *T. campestris* has been presented to the following groups: Utah Fruit Growers Association, Golf Course Superintendents Association (Salt Lake County), Utah Nursery and Landscape Association, Utah Horticultural Association, Utah Fruit Growers Association, and municipal urban foresters.

Citations:

Grebennikov, V.V., Gill, B.D. & Vigneault, R. (2010). *Trichoferus campestris* (Faldermann) (Coleoptera: Cerambycidae), An Asian wood-boring beetle recorded in North America. The Coleopterists Bulletin, 64 (1),13-20.

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Cavey, J. F. (1998). Solid wood packing material from China, initial pest risk assessment on certain wood boring beetles known to be associated with cargo shipments: Asian Longhorned Beetle (*Anoplophora glabripennis*), Ceresium, Monochamus and Hesperophanes. USDA PPQ, 22pp.

Blackwood, J.S. (2010). Survey activities conducted in response to detections of Chinese longhorned beetle, *Hesperophanes* (*Trichoferus*) *campestris*, in Schiller Park, Illinois in 2009. Internal report submitted September 16, 2010.

Spears, L.R., Ramirez, R.A. (2014). Invasive Insect Field Guide for Utah 2014. Utah State University Extension Publication.

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