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New host and distribution records plus additional notes for North American species of *Chrysobothris* Eschscholtz (Coleoptera: Buprestidae), with designation of a lectotype for *Chrysobothris vulcanica* LeConte, 1861

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Abstract. New distribution and host records plus additional notes are provided for North American species in the genus *Chrysobothris* Eschscholtz (Coleoptera: Buprestidae). Forty-one species are treated. The occurrence of *Chrysobothris bicolor* Horn in the USA is refuted. *Chrysobothris breviloboides* Barr is **newly synonymized** with *Chrysobothris breviloba* Fall. The southernmost record for *Chrysobothris piuta* Wickham, from Baja California, Mexico, is established. A specimen of the Argentinian *Chrysobothris rugosa* Gory and Laporte labeled from Florida is reported. A lectotype for *Chrysobothris vulcanica* LeConte is **newly designated**.

Key words. Adult, larva, jewel beetles, exotic, synonymy.

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Introduction

According to Nelson et al. (2008) there were 141 species of *Chrysobothris* Eschscholtz in North America north of Mexico. Since that time, I am aware of only one addition, that being *Chrysobothris cerceripraeda* Westcott and Thomas (Westcott and Thomas 2015). Forty-one species are treated in this paper, all records for the USA except one for Mexico. One, the exotic *Chrysobothris rugosa* Laporte and Gory, is included based on a single specimen labeled from Florida; however, its occurrence there needs to be confirmed. Excluding the latter and two other species that I have determined do not occur in the USA, the fauna now stands at 140 species. New state records are established for 20 species, and one species is reported from Mexico for the first time. New larval hosts are reported for 13 species, and new adult hosts are given for eight species. Due to its confusing history considerable discussion is devoted to *Chrysobothris vulcanica*, for which a lectotype is designated. *Chrysobothris breviloboides* Barr is placed as a synonym of *Chrysobothris breviloba* Fall.

Materials and Methods

The species records in this work are based on specimens in my collection and numerous others that, over many years, have been sent to me for identification. Although states are spelled out for the label data provided herein, usually they are abbreviated on the actual specimen labels. I have changed some other label data for clarity and/or uniformity.

New state or country records for any of the species treated are provided in **bold** CAPS, and with the states arranged in alphabetical order if more than one is included. Plant taxa representing new larval or adult host records are given in **bold** font and for larvae include “**new larval host(s)**” in parentheses. The term “adult host” as used herein simply means collected on a plant. Certainly in some cases the plant may also be a larval host. Authors and plant families are provided only the first time a species or genus is mentioned. They are not on the specimen labels, which otherwise are not always given verbatim, such as dates of collection, e.g. 25-XI-1939. Plant taxa are according to WFO (2022). Collector names are not always provided.

The following USA collection abbreviations used herein, most of which are from Evenhuis (2022), may refer to more than one preceding record:

BYUC	Monte L. Bean Life Science Museum, Brigham Young University, Provo, Utah.
CAS	California Academy of Sciences, San Francisco.
CIDA	Museum of Natural History, College of Idaho, Caldwell.
CSCA	California State Collection of Arthropods, Sacramento.
CSUC	Colorado State University, Fort Collins.
ENMU	Natural History Museum, Eastern New Mexico University, Portales.
FMNH	Field Museum of Natural History, Chicago, Illinois.
INHS	Illinois Natural History Survey, Champaign.
MCZC	Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.
MRLC	Mike R. Lahti, Hemet, California.
NSCH	Nathan Schiff, USDA, Forest Service, Stoneville, Mississippi.
NVDA	Nevada State Department of Agriculture, Reno.
OSAC	Oregon State Arthropod Collection, Oregon State University, Corvallis.
POKC	Paul O. Kaufman, Morrissetown, Arizona.
RLWE	Richard L. Westcott, Salem, Oregon.
TCMC	Ted C. MacRae, Wildwood, Missouri.
UAIC	University of Arizona Insect Collection, Tucson.
UCDC	Bohart Museum of Entomology, University of California, Davis.
UCRC	University of California, Riverside.
UGCA	University of Georgia Collection of Arthropods, Athens.
UNSM	University of Nebraska State Museum, Lincoln.
WFBM	W. F. Barr Entomological Museum, University of Idaho, Moscow.

Results

Chrysobothris analis LeConte, 1860

Nelson et al. (2008) listed 22 species in 10 families as larval hosts for this species. A specimen reared from an ornamental species of *Juniperus* L. (Cupressaceae) (**new larval host**), emerged V-1992, Texas, Bexar Co., MacArthur Park, D. W. Sundberg, RLWE. Also, two adults were taken on cypress [another conifer of an unknown genus, undoubtedly an ornamental], Texas, Bexar Co., San Antonio, Witte Museum, 3-VI-1992, D. W. Sundberg, RLWE. The records from conifers are of special interest because all other of the numerous host records known for *C. analis* are hardwoods. Additional specimens were reared from *Dodonaea viscosa* (L.) Jacq. (Sapindaceae) (**new larval host**), emerged 2-V to 4-VI, 1979, Arizona, Pima Co., Organ Pipe Cactus Nat. Mon., Jim Cope (CSCA, RLWE). These had been misidentified as *Chrysobothris bicolor* Horn.

Chrysobothris axillaris Horn, 1886

NEVADA, Lincoln Co., Beaver Dam State Park, Waterfall Trail, 4980', ~37.4967°, -114.0547°, beating *Quercus gambelii* Nutt. (Fagaceae), 25-VI-2014, R. L. Westcott, RLWE.

Chrysobothris azurea LeConte, 1857

Although the distribution map in Paiero et al. (2012) for this widespread species shows it to occur in **KENTUCKY**, neither Bellamy (2008) or Nelson et al. (2008) listed it from that state, and no other record has been encountered. A voucher is Madison Co., Berrea College Forest, Cowbell Creek area, 37.54563°, -84.22774°, 10-17-VI-2013, CSUC. **NEBRASKA**, So. Sioux City, 22-VII-1912, L. T. Williams, UNSM. This species is widespread in the USA except the Pacific and most southwestern states, and it occurs across Canada. **WISCONSIN**, Columbia Co., Mud L. St. Wildlife Area, SE Sec. 14, T11N, R10E, 23-VI-1992, P. J. Johnson, RLWE.

***Chrysobothris beyeri* Schaeffer, 1904**

CALIFORNIA, Riverside Co., Hwy. 74, milepost 88, Seven Level Hill, 670 m, 27-V-2003, R. L. Westcott; San Diego Co., Cuyamaca Mts, ca. 4.5 mi SbW, Julian, 33.0150°, -116.6166°, 1268 m, 19-VI-2019, on cut *Baccharis pilularis* DC. (Asteraceae), oak-pine woodland with adjacent chamise chaparral burned in Cedar Fire in 2003, Robyn Waayers, UCRC. An image of the latter specimen can be seen at BugGuide.net (Waayers 2019).

***Chrysobothris bicolor* Horn, 1894**

Various authors have reported this species to occur in the USA, California–Texas. I have examined numerous specimens from that range which were determined as this species, notably from California (Nelson et al. 1981), and determined them to represent *C. analis* (q.v.) instead. Therefore, *C. bicolor* should be considered endemic to Baja California Sur, Mexico.

***Chrysobothris breviloba* Fall, 1910**

Chrysobothris breviloba Fall 1910: 51; Fisher 1942: 182 (revision); Nelson et al. 2008: 120 (cat.).

Chrysobothris breviloboides Barr 1969: 126; Nelson et al. 2008: 120 (catalog). **New synonymy.**

This well-known and widespread species has been recorded from British Columbia and Alberta east to South Dakota, and south to Arizona and Texas. Older records in the literature from the Pacific Coast states and British Columbia are based on misidentifications. I examined a series of eight such specimens determined as *C. breviloba* and five species were included, none of which were that species! *Chrysobothris breviloboides* has been known only from south central Idaho (Craters of the Moon National Monument). Eleven paratypes of the latter were compared with 42 specimens collected from southern Cassia Co., Idaho (only one) through central Utah—from Box Elder Co. south to Wayne Co. Also compared with the foregoing were 72 specimens of *C. breviloba* collected in Colorado, Nevada, New Mexico, and Texas. The apex of the female last abdominal sternite varies from moderately wide and triangular (rare) through narrowly to widely U-shaped, to having barely a V-shaped notch, to no discernable emargination. See Westcott (1983) for an example of extreme variability of this character in *Chrysobothris bispinosa* Schaeffer. Almost all specimens from the latter four states have the notch narrowly to scarcely defined, but there are notable exceptions. Almost all Utah specimens, and all Idaho specimens, have the notch larger. In males from Colorado, Nevada, New Mexico, and Texas, the very tip of the median lobe of the aedeagus is narrowly truncate to subtruncate. Those from Idaho and Utah have the apex narrowly rounded, but a few exhibit a slight transitional condition. I found the anterior tibial dilation of males to be identical on all specimens examined. Other characters mentioned by Barr (1969), such as overall dorsal coloration and color of the face in males, are variable. Further study might provide evidence for subspeciation; however, in my opinion, it appears to be a clinal relationship. For these reasons I am treating all the populations as one species that ranges widely in the Mountain States.

***Chrysobothris californica* LeConte, 1860**

Based on Barr (1971), Fisher (1942), and all except one specimen in my collection, this species ranges in length from 13.7–17.0 mm. The exception measures 8.87 mm; and on that factor alone, one cannot arrive at *C. californica* in Fisher's (1942) key. Another complicating divergence for this specimen is that the prosternum bears a slightly developed median lobe, whereas the lobe is reported to be lacking in this species. Thus, in keys the specimen runs to *Chrysobothris blanchardi* Horn (a synonym of *Chrysobothris rotundicollis* Gory and Laporte), which clearly it is not. Fortunately it is a male, and the foretibial dilation and, especially, the aedeagus match well for *C. californica*. Historically, that species has been confused with *Chrysobothris vulcanica* LeConte (q.v.).

***Chrysobothris carmelita* Fall, 1907**

NEVADA, Clark Co., Blue Diamond, 36.0432°, -115.39633°, Lindgren trap BB43 w/ EtOH + α -pinene, 19-VII-2006, NVDA.

***Chrysobothris convexa* Fall, 1907**

ARIZONA, Cochise Co., San Simone Road, 3 mi N Portal, 4550', 31°57', 109°8-9', 27-V-1981, *Artemisia* L. (Asteraceae), H. A. Hespenheide, UCDC. The specimen is a small female measuring only 8.1 mm long. I (Westcott 1990) examined 18 specimens of this rarely collected species and found their length to range from 9.6–13.3 mm.

***Chrysobothris crandalli* Knull, 1943**

On *Psorothamnus spinosus* (A. Gray) Barneby (Fabaceae), Nevada, Clark Co., 5 mi SW Laughlin, T33S, R66E, S19, 14-VI-1989, NVDA.

***Chrysobothris distincta* Gory, 1841**

Obenberger (1940) stated this species to occur in California, but provided no detail. Knull (1949) accepted this species as part of our fauna based on specimens in his collection (now FMNH) and INHS, from the Andrew Bolter collection, labeled simply “Cal.” I have not examined them. Nelson et al. (2008) listed the state questionably. Other than that anomalous data, the species is known only in Mexico, from where I (Westcott 2008) provided several new state records including the northernmost, which is in Nayarit, a site I then estimated to be at 21°55', –104°30'. However, after further investigation, I feel that must be incorrect, and closer coordinates are 21°57', –104°32'. Wherever it was collected, the locality is about 970 miles from the California border. Given this information, in my opinion *C. distincta* should not be accepted as part of our fauna.

***Chrysobothris ephedrae vogti* Knull, 1964**

I examined a specimen of this taxon from NEW MEXICO, De Baca Co., Hwy 294, 9.5 mi S Taiban, 34.303300°, –104.006453°, 4360', 26-V-2015, ENMU. This is approximately 350 mi NW of the nearest locality known to me, in Kimble Co., Texas (Quinn 2011), and 640 mi NNW of the type locality at Sullivan City, Texas. It is closer to the type locality of the nominate subspecies, which is 210 mi to the SE (Las Cruces, New Mexico). Apparently each subspecies has been collected from only a few sites.

***Chrysobothris eriogoni* Westcott, 2005**

Nelson et al. (2008) erroneously listed *Eriogonum compositum* Douglas ex Benth. (Polygonaceae) as a larval host. The only confirmed larval host is *Eriogonum elatum* Douglas ex Benth., and reference to the former species was considered to be based on mislabeling (Westcott 2005). Instead, it may reflect collection of adults on *E. compositum* or, much less likely, due to misidentification of the plant; the two species may occur together. Each harbors larvae of a different yet closely related species of *Chrysobothris* (Westcott 2005).

***Chrysobothris exesa* LeConte, 1858**

NEVADA, Clark Co., Las Vegas, 12-VIII-1988, European pine shoot moth trap, M. J. Vorchick, NVDA. Recorded hosts for this species do not include conifers.

***Chrysobothris idahoensis* Barr, 1969**

CALIFORNIA, Shasta Co., 10 mi W Bartle, 23-VI-1968, on and emgd. ex *Eriogonum* sp., 8–20-VII-1968. Siskiyou Co., Mt. Shasta, ski lift area, 5-VIII-1963, CAS; NE,SE Sec.31, T41N, R3W, Mt. Shasta, Bunny Flat, 7050', 1-VIII-1982, on host plant, *Eriogonum marifolium* A.Gray (new larval hosts), and Mt. Shasta, Panther Meadow, 7700', 28-VII-1986, all R. L. Westcott, RLWE, OSAC, WFBM. This species belongs to what I might term the “aeneola group,” an extremely confused assemblage of species, most or likely all of which utilize species of *Eriogonum* as adult and larval hosts.

***Chrysobothris lateralis* Waterhouse, 1887**

NEVADA, Clark Co., Aravada Ranch, 7.3 km E Whitney Pocket on AZ Road, 36°31'35", –114°02'60", 1317 m, malaise in narrow rocky gully, 6-V–8-VI-2018, M. E. Irwin & G. R. Ballmer, UAIC. Reared from *Acacia constricta*

Benth. (Fabaceae), Arizona, Yavapai Co., Wickenburg, 20385 W Coyote Gulch, 2370' 12S 332501/3763832 UTM, emerged V-23–VI-12-2015, P. Kaufman, POKC (**new larval host**).

***Chrysobothris lilaceous* Chamberlin, 1925**

There has been little doubt that, based on collection of adults, this species utilizes junipers as larval hosts (Nelson et al. 2008). However, apparently no rearing records have been published. I have seen two specimens as follows: California, Santa Clara Co., Mt. Hamilton, V-1967, reared from *Juniperus californica* Carrière, WFBM; Oregon, Klamath Co., 4 mi N Klamath Falls, em. 26-VI-1971, reared from burnt *Juniperus occidentalis* Hooker, Westcott & Penrose, RLWE (**new larval hosts**). NEVADA, Washoe Co., Reno, *Juniperus*, [no date] 1988, NVDA.

***Chrysobothris mali* Horn, 1886**

The common name Pacific flatheaded borer for this often-destructive species is a misnomer, as it is common and widely distributed west of the Rocky Mountains, with isolated records to the east. Burke and Boving (1929) listed 70 host plants belonging to 40 genera and 21 families. They did not clearly distinguish larval hosts from adult hosts, though in my opinion most are the former. All hosts listed by Nelson et al. (2008) are listed as larval hosts. Here are two more: Reared from *Cercocarpus ledifolius* Nutt. (Rosaceae), Idaho, Idaho Co., John Day Cr., Salmon Riv. Cyn., June 1962 and Owyhee Co., Juniper Mt., 17-V-1965, W. F. Barr, WFBM; *Ribes erythrocarpum* Coville (Grossulariaceae), Oregon, Klamath Co., Crater Lake Nat. Park, 27-VII-68, F. M. & V. S. Beer, OSAC, WFBM (**new larval hosts**). This species is highly variable, exhibiting a variety of phenotypes and sizes (“6.5 to 11 mm,” [Fisher, 1942]). Some might be considered as separate species were it not for the consistent form of the male genitalia. The variability should not come as a surprise considering the tremendous variety of hosts for this species

***Chrysobothris monticola* Fall, 1910**

This is yet another widespread species in the Western States. NEVADA, Washoe Co., Reno, 39.524682°, -119.805183°, summer 2008, reared from *Picea abies* (L.) H.Karst (Pinaceae), J. B. Knight (**new larval host**); Reno, 28-VII-1973, R. C. Bechtel; Thomas Creek Canyon [Carson Range, SW of Reno], 9-VII-1980, J. B. Knight, all NVDA. All other host records for this species are from pines.

***Chrysobothris nelsoni* Westcott and Alten, 2006**

A single larva of what undoubtedly is this species was collected as follows: ARIZONA, Coconino Co., 3 mi NE Pine Tree Pockets Ranch, 6315', 36.8736°, -111.9303°, 26-IX-2016, in crown dead *Eriogonum alatum* Torr., R. L. Westcott, WFBM. That plant is the only known host for *C. nelsoni*, and the locality is only 30–45 miles from sites of similar habitat in Utah noted in the original description (Westcott and Alten 2006).

***Chrysobothris nixa* Horn, 1886**

Nelson et al. (2008) stated that adults of this species are found on *Thuja plicata* Donn ex D. Don (Cupressaceae), but did not list it as a larval host. However, Everson (1978) recorded it from Vancouver Island, British Columbia, “...in a gallery in *Thuja plicata*...” I reared a specimen from that host: Oregon, Marion Co., 2 mi ENE Hubbard, emerged 15-V-1972, OSAC. Also, Oregon, Linn Co., Cascade Range, NW Sec. 15, T12S, R6E, 3600', 17-VIII-1983, adult collected on downed *Cupressus nootkatensis* D. Don (Cupressaceae) (labeled as *Chamaecyparis*) in 3-mo.-old burn, R. L. Westcott, both OSAC; also reared from the exotic ornamental *Cupressus sempervirens* L. in Nevada, Clark Co., Las Vegas, 1986, J. B. Knight & S. A. Wayland, NVDA (**new larval host**). Obviously, this beetle does not occur naturally in the desert. It seems reasonable to assume that *C. nixa* can utilize most any cupressaceous plant that grows within, or sometimes beyond, its normal range. It can be a pest of a variety of such ornamental trees and shrubs. This species has been recorded from California and Nevada north to British Columbia, Montana and Wyoming. Now we can add IDAHO, Ada Co., Boise, 3000' 12-IX-2014, Japanese beetle pheromone trap, urban habitat, CIDA.

***Chrysobothris octocola* LeConte, 1858**

Emgd. *Psorothamnus spinosus*, California, Riverside Co., Box Canyon, wood caged 15-V-2018, adult found dead 4-XI-2019, M. R. Lahti, MRLC (new larval host).

***Chrysobothris parapiuta* Knull, 1938**

Two specimens em. between 26-V-2-VI-2018, ex. wood *Cercocarpus montanus* Raf. gathered 3-III-2018, Arizona, Yavapai Co., Cottonwood Canyon, 12S 337827/3785942 UTM, 4456', P. Kaufman, POKC (new larval host).

***Chrysobothris peninsularis peninsularis* Schaeffer, 1904**

NEW MEXICO, Hidalgo Co., Granite Gap, ~20 mi N Rodeo, 27-V-2022, on *Prosopis glandulosa* Torr. (Fabaceae), J. W. DuBois, JWDC; on *Prunus fasciculata* (Torr. A. Gray) (Rosaceae), Nevada, Lincoln Co., Garden Wash, 1-VI-1983, R. C. Bechtel & J. B. Knight, NVDA.

***Chrysobothris piuta* Wickham, 1903**

One specimen, IDAHO, Cassia Co., Malta, 6-VI-1969, W. F. Barr, WFBM. MEXICO, BAJA CALIFORNIA, Sierra Juárez, Laguna Hanson, 1600–1650 m, 26-V-89, beaten from *Cercocarpus betuloides* Nutt., R. L. Westcott, RLWE. The latter is the southernmost known occurrence for this beetle. I (Westcott 1990) recorded the northernmost record, from Madison Co., Montana, also based on a single specimen. That record has been disputed by M. A. Ivie (personal communication), in my opinion for no good reason. He questions its occurrence so far north, and said that the specimen had been lost, thus its occurrence in Montana must be confirmed. However, according to Alexey Tishechkin (personal communication) the specimen is in CSCA and matches perfectly with others of this species in the collection. Previously, the northern record was Reno, Nevada (Fisher 1942). The Idaho record bridges the gap and is about 200 miles southwest of the Montana site. The only recorded larval host for *C. piuta* is *C. montanus* (MacRae and Nelson 2003). That plant is known in Montana only from small areas in the SE; however, *C. ledifolius* is common and widespread in the SW (Montana Field Guide 2022). Adults have been collected on the latter plant and those in several other genera of Rosaceae. The beetle is known also from Arizona, California, and Utah.

***Chrysobothris purpureovittata purpureovittata* Horn, 1886**

Westcott and Nelson (2000) provided the first records of this subspecies from New Mexico and Mexico (Chihuahua and Nuevo León); however, strangely, Nelson et al. (2008) did not include any of those localities; and the world catalog (Bellamy 2008) omits Chihuahua. This species was collected on *Condalia* sp. (Rhamnaceae) in Texas, McMullen Co., Choke Canyon State Park, 18-IV-1988, OSAC; on *Quercus virginiana* Mill., San Patricio Co., Welder Wildlife Refuge, 7 mi N Sinton, 18/19-IV-1989, UCDC; sweeping *Quercus havardii* Rydb., Ward Co., Monahans St. Park, 6 mi NE Monahans, 3000', 22-VI-1982, RLWE.

***Chrysobothris pusilla* Gory and Laporte, 1837**

NEBRASKA, Thomas [Co.], Halsey: Nebraska Nat. Forest Firetower, 14T 388868 4638047 UTM, 2912', 6-V-2015, dead on steps, P. Kaufman #11848, POKC. Its nearest occurrence to that locality is in Minnesota. Of interest is that, in 1903, 70,000 "wildlings" of jack pine, a host for *C. pusilla*, from that state were planted in the area, and they were successfully established (USDA, Forest Service 2022).

***Chrysobothris quadriimpressa* Gory and Laporte, 1837**

COLORADO, Jefferson Co., Wheatridge, 6-IX-2009, ex *Juglans nigra*; Larimer Co., Ft. Collins, Wedbee Street, ex black walnut, 13-VI-2013; Otero Co., Rocky Ford, 400 S 10th St., 1-VII-2012, and Rocky Ford, 25-IX-2013, Lindgren Funnel, all CSUC. KANSAS, Riley Co., Manhattan, University Park, 16-V-2012, CSUC. Ex [on] *Betula* sp., Pennsylvania, Lebanon Co., 40.544590°, -76.535910°, 22-V-2007, PADA. NEVADA, Clark Co., Aravada Ranch, 7.3 mi E Whitney Pocket on AZ Road, malaise in narrow rocky gully, 26-VI-19-VII-2018, 1317 m, 36°31'35", 114°02'60", Ballmer & Irwin, UAIC. According to the collector, Sven-Erik Spichiger (personal communication), the Kansas beetles were collected on slash in a recent timber sale. Most adult and larval host records have been in

the genus *Quercus*, though larval host records have been reported for several other totally unrelated plant genera (MacRae and Basham 2013; Wellso and Manley 2007). The latter commented: “This common oak inhabiting species probably occurs in all states east of the Continental Divide.” In my opinion, too it probably occurs in most states west of the Continental Divide, although in some places, such as the Pacific Northwest, likely it was introduced.

***Chrysobothris rossi* Van Dyke, 1942**

Emgd. *Psorothamnus spinosus*, California, Riverside Co., Box Canyon, wood caged 15-V-2018, found dead 4-XI-2019, M. R. Lahti, MRLC.

***Chrysobothris rotundicollis* Gory and Laporte, 1837**

Nelson and Westcott (1976) wrote of this species (as *C. blanchardi*): “... seems to be found primarily in the north-eastern states ... has not been recorded from the Rocky Mountains, but undoubtedly it occurs there.” Indeed it does; and based on its currently known distribution (MacRae and Nelson 2003; Nelson et al. 2008) and recent results from trapping for woodboring insects in the Rocky Mountain region, notably from Colorado, it is widespread in that region. The following data confirm its occurrence in two additional Rocky Mountain states: **COLORADO**, Boulder Co., 39°58.797', -105°30.881', ±1.25 air mi N Nederland, 2554 m, Lindgren funnel trap w/ UHR and α-pinene, 28-VII-2011, RLWE, and vic. Lyons, 1795 m, 40.20099°, -105.28322°, 3-VIII-2012, T. Rowley, funnel trap w/ α-pinene & EtOH, ODAC; Larimer Co., Carter Lake Res., 1778 m, 40°21.03', -105°13.457', funnel trap w/ EtOH, 19-VI-2012, ODAC; 40.683267° -105.397967°, Hwy 14 W of Ft. Collins, 1855 m, 3-IX-2011, Funnel trap w/ α-pinene; 40.553°, -105.194°, 2112 m, vic. (W) Ft. Collins, 4-IX-2011, Funnel trap w/ α-pinene; Carter Lake Res., 8.5 mi (air) SW Loveland, 1780 m, 40.3505166°, -105.224283°, funnel trap w/ α-pinene, 4-IX-2011, TCMC, WFBM. **IDAHO**, Kootenai Co., Hauser Lake, Burlington No. R.R., summer 2009, Lindgren funnel trap; and Athol, funnel trap, 10-VIII-2010, WFBM; also Bonner Co., 48.000°N, -116.733°W, Elev. 735 m, 3-VI to 2-IX-2008, variably baited Lindgren funnel traps, NSCH, RLWE, UGCA, WFBM. This species occurs across southern Canada from British Columbia to New Brunswick, and in the USA from Washington and Arizona to Maine and Florida. Nelson et al. (2008) listed the legume *Ebenopsis ebano* Barneby & J.W. Grimes (Fabaceae) as a larval host for this species, but that is an error, and instead refers to *C. rossi* Van Dyke (MacRae and Nelson 2003), the species immediately preceding *C. rotundicollis* in the catalog (Nelson et al. 2008), which species is known to breed only in dead wood of gymnosperms of the family Pinaceae.

***Chrysobothris rugosa* Gory and Laporte, 1837**

I have examined one specimen of this Argentinian species that was labeled as collected in Florida, Orange Co., Orlando, 7-VI-1973, BYUC. It seems likely that the specimen is mislabeled. It remains to be seen if this species has established in the USA, and until such time as that happens it should not or only questionably be further listed.

***Chrysobothris semisculpta* LeConte, 1860**

Reared from *Thuja occidentalis* L. (Cupressaceae) ('Pyramidalis'), Nevada, Washoe Co., Reno, 21-IV-1986, R. C. Bechtel & J. B. Knight, NVDA (**new larval host**).

***Chrysobothris serripes* Schaeffer, 1905**

One specimen taken on branch of *Quercus emoryi* Torr., Arizona, Yavapai Co., Yarnell, 17374 W Foothill Drive, 12S 337830 3787520 UTM, 4863', 12-VI-2018, P. Kaufman, POKC. The only other host known is another species of oak (Nelson et al. 2008). No larval host has been recorded; however, since related species in the group to which *C. serripes* belongs are only known to breed in oaks, surely this one does too.

***Chrysobothris smaragdula* Fall, 1907**

A male and a female reared from the ornamental *Schinus terebinthifolia* Raddi (Anacardiaceae), Arizona, Yavapai [Co.], Wickenburg, 37650 Camino Blanco, 12S 335427 3764248 UTM, 2330', 4-VI-2-VII-2016, P. Kaufman #13062, POKC (**new larval host**). The use of this exotic host indicates to me a wide host range for this rarely collected beetle, for which no other larval host has been reported.

***Chrysobothris subcylindrica* Ménétries, 1859**

Specimens were collected on *Gutierrezia californica* (DC) Torr. & A. Gray (Asteraceae), California, San Benito Co., NE Sec. 35, T15S, R11E, 19-V-1978, R. D. Haines, RLWE. That plant undoubtedly serves as a larval host considering that *G. sarothrae* (Pursh) Britton & Rusby has been so recorded from Oregon (Barr and Westcott 1976).

***Chrysobothris trinervia* (Kirby, 1837)**

NEBRASKA, Dawes Co., Pine Ridge, July; Sioux Co. (no other data), UNSM.

***Chrysobothris viridiceps* Melsheimer, 1845**

COLORADO, Douglas Co., 22-VII- 2008, Franktown Firewood, Lindgren Funnel [with] Ips Lure, Colorado Dept. Ag, CSUC.

***Chrysobothris vulcanica* LeConte, 1861**

LeConte's (1861) description of this species was brief and in Latin. He gave the length to be 0.6–0.63 inches, thus it is clear that more than one specimen was before him. He gave the locality as “East of Fort Colville.” Subsequent workers seem to have overlooked that LeConte (1861) provided a range of measurements in his description of *C. vulcanica*. Horn (1886) simply “united” this species with *C. californica*. Fall (1910) discussed the seven specimens placed under *C. californica* in the LeConte Collection (MCZC), stating that the fourth specimen is the type of *C. vulcanica* and that the fifth specimen was probably that species. He stated both to be from Oregon, not providing a specific locality. However, he did not overturn Horn's (1886) synonymy. Fisher (1942) redescribed the species from “...the female type, No. 2699...”, the aforementioned fourth specimen which Fall (1910) said was the only one that could be considered as this species. He stated that the fifth specimen “seems to be *canadensis*.” (*Chrysobothris canadensis* Chamberlin is a synonym of *C. vulcanica* [Barr 1971]). Quoting LeConte (1861), Fisher (1942) gave the type locality of *C. vulcanica* as “East of Fort Colville,” but added “Oreg., type simply labeled with a dark-blue disk.” That type (MCZbase 2022a) curatorially had been labeled as a holotype, then was changed to a syntype. I identified the fifth specimen mentioned by Fall (1910), which also bears a blue disk, to represent *C. vulcanica*, thus it became a syntype (No. 727538) (MCZbase 2022b). Small colored disks were used by LeConte to indicate the provenance of his specimens. The dark blue disks on *C. vulcanica* (they have faded with time) indicate Oregon or Washington (Bosquet 2012). Thus, the type locality for *C. vulcanica*, Fort Coville, a historical site, is not in Oregon; rather, it is located near Coville in far northeastern Washington.

Given the considerably convoluted history of *C. vulcanica* and my clarification that LeConte described it from more than one specimen, in my opinion the designation of a lectotype is necessary. For that I choose the aforementioned specimen (MCZ No. 2699) that was used by Fisher (1942) for his redescription and bears LeConte's handwritten species label.

Chrysobothris vulcanica is reliably recorded from British Columbia and Alberta south to Oregon and Wyoming. It was listed from California (no definite locality; Bowditch Collection) under its synonym *C. canadensis* by Fisher (1942) based on specimen No.731879 in MCZC (MCZbase 2022c). I have examined that excellent image of the specimen, including the aedeagus, and clearly it is *C. vulcanica*. In my opinion, the specimen was mislabeled, as I know of no other specimen of *C. vulcanica* from California, and its nearest localities to that state that I am aware of are in the Blue/Wallowa Mountain region of northeastern Oregon. I examined a specimen determined as this species by J. N. Knull, from Crystal Lake, Los Angeles Co., California (UCDC), which proved to be *C. californica*. These species have been highly confused in collections and in the literature, but they are clearly distinct. Under *C. vulcanica*, Nelson et al. (2008) listed “adults on *Pseudotsuga menziesii* (Mirb.) Franco (Pinaceae),” but provided no indication that it is a larval host, which was made clear by me (Westcott 1990).

***Chrysobothris wickhami* Fisher, 1942**

Cut from *Prosopis pubescens* Benth., California, Imperial Co., Hwy. 98, 16 mi E Calexico, 29-V-1983, F. M. Beer, WFBM (new larval host). Nelson (1960) reported adults collected on the same plant and *P. glandulosa*.

***Chrysobothris wintu* Wellso and Manley, 2007**

This species was recorded from Washington based on a single female in WFBM from Anatone, in the far southeastern corner of the state (Wellso and Manley 2007). I have examined this specimen, which bears a label “flying to *Pinus contorta*.” *Chrysobothris wintu* is unknown from anywhere near Anatone, otherwise being recorded in the Pacific Northwest only from western Oregon, and it utilizes hardwoods, almost exclusively oaks. *Pinus contorta* Douglas ex Loudon does not occur at Anatone, and oak is not native to southeastern Washington., thus I believe that the locality may be in error or based on mislabeling. Confirming records for Washington are Klickitat Co., Rock Creek, 14.1 mi E Goldendale, 45.842°, -120.532°, 1068', 8-VII to 13-IX-2011, Lindgren trap w/ *Sirex* lure; and Courtney Road at SR 14, 2.9 mi ESE Bingen, 45.6999°, -121.40854°, 290', 6-29-VII-2008, Lindgren trap w/*Sirex* lure, WSDA. Oregon white oak, *Quercus garryana* Douglas ex Hook. grows at both those locations, which are in southwest Washington.

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