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New anthophilous host associations for adult *Acmaeodera* Eschscholtz, 1829 (Coleoptera: Buprestidae) species from the western United States and Texas

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New anthophilous host associations for adult *Acmaeodera* Eschscholtz, 1829 (Coleoptera: Buprestidae) species from the western United States and Texas

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Deceased 13 April 2017

Abstract. New anthophilous host associations are presented for adults of 42 species and two subspecies in the buprestid genus *Acmaeodera* Eschscholtz, 1829 (Coleoptera: Buprestidae), mostly from Arizona and Nevada. *Acmaeodera reflexa* Barr is reported for the first time from Arizona.

Key Words. Jewel beetles, flower visitors, new records, cantharophily.

Introduction

Anthophilous species of Coleoptera seek out flowers primarily for three correlated reasons that reflect a process of convergent evolution (Faegri and Van der Pijl 1979; Bernhardt 2000, and references therein):

(1) The majority forage for floral rewards (pollen, nectar and/or other exudates). Most cantharophilous flowers or inflorescences (“beetle flowers”) are large, conspicuous, and brightly colored. In many other species, scent production is often emphasized over pigmentation. Many such flowers emit a floral scent of organic compounds greater than those of phalaenophilous (moth-pollinated) flowers, which are among the most strongly scented (Lewis et al. 2003).

(2) Beetles typically use the flower as an aggregation site for reproductive activities and concurrent and post-copulatory feeding. In some rare instances, through phytophagy, beetles obtain compounds from the flower that are used as a component of a pheromonal effluvium produced during reproductive behavior to attract potential mates (Sharma and Kumar 2012).

(3) In some flowers, the morphology of the floral chamber creates a refuge for beetles by producing a microhabitat preferable to ambient external environments. Thus, the behavior of some beetles to remain on one flower for long periods before moving to another suggests a possible role in geitonogamy (self-pollination) (Hawkeswood 1983).

Long ago Lovell (1915) wrote: “The Buprestidae, which superficially resemble the Elateridae, are most abundant in the tropics and are of little significance in pollination either in Europe or North America.” He included only one species, from North America, *Acmaeodera tubulus* (F., 1801). However, his coverage was based on specimens collected in Maine and Massachusetts, an area which is hardly noted for its diversity of the family, and especially not for the flower-visitors. Also, at the time little was known about the extent of anthophily in this family in the USA, even though a fair number of species had been described, including in the genus *Acmaeodera* Eschscholtz, 1829. It is interesting to note that Nelson et al. (2008) listed 145 species in that genus, and at least 104 of them exhibit anthophily. Of the remaining 642 species of Buprestidae but a small fraction, ± 50 species, are known to be anthophilous. Nevertheless, we do not consider the Buprestidae to be insignificant pollinators in the USA.

Some of the anthophilous host associations for species of the buprestid genus *Acmaeodera* presented herein may have been recorded in earlier literature as, for the most part, we followed Nelson et al. (2008), even though that work has been found to contain errors of omission as well as commission. In some instances, we have cited earlier references, but we have not made a concerted effort to correct the oversights in Nelson et al. (2008). Many of the presumed new records included in our paper are based upon adult specimens collected by the second author from various flowers in Arizona, California and

New Mexico. Adults of anthophilous species of *Acmaeodera* usually are not host specific and will utilize a variety of available floral resources, though they may be restricted to a single plant family (Westcott et al. 1979).

Materials and Methods

The following data are provided with the states arranged in alphabetical order and in CAPS. Under each state the plant taxa representing new adult host records are given in **bold** font. Some label data abbreviations are as follows: FR = Forest Service Road; m = meters elevation; St. Rte. = State Route. The following collection abbreviations are used:

ASUHC – Hasbrouck Insect Collection, Arizona State University, Tempe, AZ, USA.
 BPC – Ben Pfeiffer, New Braunfels, TX, USA.
 BYUC – Monte L. Bean Life Science Museum, Brigham Young University, Provo, UT, USA.
 CLBC – Charles L. Bellamy, Sacramento, CA, USA.
 CSUC – Colorado State University, Fort Collins, CO, USA.
 DALC – Delbert A. La Rue, Entomology Research Museum, University of California, Riverside, CA, USA.
 MLRC – M. L. Raschko, Wilsonville, OR, USA.
 NVDA – Nevada State Department of Agriculture, Reno, NV, USA.
 ODAC – Oregon Department of Agriculture, Salem, OR, USA.
 OSAC – Oregon State University, Corvallis, OR, USA.
 POKC – Paul O. Kaufman, Morristown, AZ, USA.
 RACC – Richard A. Cunningham, Chino, CA, USA
 RLWE – Richard L. Westcott, Salem, OR, USA.
 TCMC – Ted C. MacRae, Chesterfield, MO, USA.
 UCDC – R. M. Bohart Museum of Entomology, University of California, Davis, CA, USA.
 UDAF – Utah Department of Agriculture and Food, Salt Lake City, UT, USA.
 WFBM – W. F. Barr Entomological Collection, University of Idaho, Moscow, ID, USA.

Collection abbreviations may apply to more than one record preceding them. Most of the specimens from the second author's collection (DALC) now are housed in RACC. Plant names and authorship are based on The Plant List (www.theplantlist.org; last accessed 20 February 2017) or PLANTS Database (plants.usda.gov; last accessed 19 February 2017). It should be noted that those sources are not always in accord, not even for family names. Since the following specimen records all refer to flower visitation (anthophily), after the first record, the word "flower" usually is not employed in association with a host, even though it may occur on the specimen labels. Plant families are provided only the first time a genus is listed, and plant and beetle species authors are provided only the first time they are mentioned.

Results

Acmaeodera acuta LeConte, 1860. NEVADA, Clark Co., Glendale, 18-V-83, ***Baileya multiradiata*** Harv. & A. Gray ex Torr. (Asteraceae); Cedar Basin, 4-VI-82, ***Eriodictyon angustifolium*** Nutt. (Hydrophyllaceae); Lincoln Co., 9 mi NNW Elgin, 14-VI-88, ***Opuntia*** sp. (Cactaceae), NVDA.

Acmaeodera alpina Barr, 1972. UTAH, Carbon Co., Pole Can., off Whitmore Can., N of Sunnyside, 2190 m, 39.588°, -110.362°, 23-V-2012, ***Phlox longifolia*** Nutt. (Polemoniaceae), RLWE; Grand Co., N end La Sal Mts., 38.6121°, -109.1884°, 2390 m, 20-VII-2011, ***Heterotheca villosa*** (Pursh) Shinnars (Asteraceae), BYUC, RLWE, UDAF.

Acmaeodera amabilis Horn, 1878. Adults of this late summer montane species have been recorded from many flowers (Chamberlin 1926; Westcott et al. 1979; MacRae 2006) to which may be added ARIZONA,

Cochise Co., Dragoon Mts., lower Cochise Stronghold FR 84, 1450–1650 m, 24–30-VIII-2015, *Hymenothrix wislizeni* A. Gray (Asteraceae), DALC.

Acmaeodera amplicollis LeConte, 1866. Collected in ARIZONA, Cochise Co., on *Allionia incarnata* L. (Nyctaginaceae), 1 mi E Portal, 23-VIII-65, ASUHC; *Hymenothrix wislizeni*, Dragoon Mts., lower Cochise Stronghold FR 84, 1450–1650 m, 24–30.VIII.2015; *Solidago* sp. (Asteraceae), N. Cochise Stronghold Rd., .09 rd. mi W Jct. US Rte. 191S, 1280 m, 27–30-IX-2006, DALC; *Thelesperma megapotamicum* (Spreng.) Kuntze (Asteraceae), Huachuca Mts., Ash Canyon, 5100', 17–18-VIII-79, OSAC.

Acmaeodera angelica Fall, 1899. Adults of this species are typically associated with chaparral floral communities. CALIFORNIA, Riverside Co., San Jacinto Mts., St. Rte. 74 at Pacific Crest Scenic Trail access, 1495 m, blue-flowered *Lupinus* sp. (Fabaceae), 15–21-VI-2003, DALC; NEVADA, Clark Co., Virgin Mts., 4500', 13-VII-77, *Eriodictyon angustifolium*, NVDA.

Acmaeodera atactospilota Westcott, 1971. Adults have been collected on a wide variety of plants. (Nelson et al. 2008). CALIFORNIA, Riverside Co., San Jacinto Mts., St. Rte. 74 at Pacific Crest Scenic Trail access, 1495 m, 15–21-VI-2003, blue-flowered *Lupinus* sp., DALC; NEVADA, Clark Co., Blue Diamond, 2-V-62 and St. Thomas Gap, T17S R71E S31, 15-V-83, *Encelia virginensis* A. Nelson (Asteraceae), NVDA.

Acmaeodera bishopiana Fall, 1907. Nelson et al. (2008) listed larval hosts for this species, but did not provide any specific adult flower visitation records, merely stating them to be “on various flowers.” Barr (1971) listed *Tetradymia glabrata* Torr. & A.Gray (Asteraceae), plus several other adult hosts identified only to genus; Westcott et al. (1979) reported it on *Encelia actonii* Elmer. From NEVADA, we add *Heliomeris multiflora* var. *nevadensis* (A. Nelson) W. F. Yates (Asteraceae), Lincoln Co., Coyote Summit, 5590', 11-VI-84; *Oenothera deltoides piperi* (Munz) W. M. Klein (Onagraceae), Churchill Co., Sand Mountain, 25 mi SE Fallon, 23-V-78; and *Psoralea polydenius* (S.Watson) Rydb. (Fabaceae), Washoe Co., Nixon, 21-VI-60, all NVDA; and from OREGON, *Sphaeralcea grossulariifolia* (Hook. & Arn.) Rydb. (Malvaceae), Harney Co., SE Sec. 29, T39S, R35E, Little Cottonwood Creek, 6-VI-78, ODAC, OSAC, RLWE.

Acmaeodera bowditchi Fall, 1901. Taken in NEVADA on flowers of *Argemone munita* Durand & Hilg. (Papaveraceae), Lincoln Co., Beaver Dam State Park, 12-VI-89; *Eriodictyon angustifolium*, Clark Co., Virgin Mts., 6500', 5-VI-81; and *Oenothera elata* Kunth, Lincoln Co., Beaver Dam State Park, 20-VII-77, NVDA; and in TEXAS, Jeff Davis Co., 11.3 mi W Ft. Davis, Hwy 166 picnic area, 20-VI-2003, on *Engelmannia peristenia* (Raf.) Goodman & C. A. Lawson (Asteraceae), *Ratibida columnifera* (Nutt.) Wootton & Standl. (Asteraceae), *Thelesperma megapotamicum*, and *Xanthisma spinulosum* (Pursh) D. R. Morgan & R. L. Hartm. (Asteraceae), TCMC.

Acmaeodera carlota Fall, 1932. Many adults were collected on light blue flowers of *Phacelia* sp. (Hydrophyllaceae), similar to or the same as *P. ambigua* M.E. Jones, in a chaparral scrub area at ARIZONA, Gila Co., Milepost 227, Hwy. 88 northwest of Globe, 3800', 33°32'16"N, 110°55'20"W, 30-IV-2001, CLBC, OSAC, RLWE, TCMC, UCDC, WFBM.

Acmaeodera cazieri Knull, 1960. On flowers ornamental *Calylophus* sp. (Onagraceae), ARIZONA, Huachuca Mts., Ash Canyon Road, 5100', 22-VI–17-VII-2006, OSAC.

Acmaeodera chiricahuae Barr, 1972. Adults of this species, which is restricted to the Chiricahua Mountains and nearby areas in southeastern Cochise Co., ARIZONA, have been recorded on a variety of flowers (Barr 1972) to which may be added: *Gutierrezia sarothrae* (Pursh) Britt. & Rusby (Asteraceae), Chiricahua Mts., FR 42, E slope, mile marker #7 to FR 42D, NW of Portal, 1845–2190 m, 11-X-2015, DALC; *Helianthus annuus* L. (Asteraceae), Hwy 186, 0.7 mi N Hwy 181, 12S 647335 3543388 (UTM), 4927 ft. 22-X-2016, POKC.

Acmaeodera condita Barr, 1972. On *Opuntia* sp., NEVADA, Clark Co., Cold Creek, Willow Creek Campground [N end Spring Mts.], 11-VI-93, and Lincoln Co., 9 mi NNW Elgin, 14-VI-88, NVDA.

Acmaeodera connexa LeConte, 1859. Adults of this species, the larvae of which feed in oaks, have been recorded from a variety of flowers. However, Nelson et al. (2008) overlooked the following: *Epilobium* sp. (Onagraceae) and *Monolopia major* DC. (Asteraceae) (Beer 1940); and *Eriophyllum lanatum* (Pursh) Forbes (Asteraceae) (Beer 1944). New records are *Chrysopsis* sp. (Asteraceae), CALIFORNIA, San Bernardino Co., San Bernardino Mts., Monument Park, 13-VI-2008, CSUC; *Balsamorhiza sagittata* (Pursh) Nutt. (Asteraceae), OREGON, Wasco Co., Mill Crk., 10 mi SW The Dalles, 22-23-V-71, ODAC, OSAC, RLWE; and *Achillea millefolium* L. (Asteraceae), WASHINGTON, Klickitat Co., Satus Pass, near ski area, 30-VII-69, RLWE, all in Asteraceae.

Acmaeodera decipiens LeConte, 1866. Nelson et al. (2008) included at least some larval and adult hosts recorded in the literature for all North American species of *Acmaeodera* except for this one, simply stating “adults on various flowers”. Westcott et al. (1979) listed 12 flower records, all but one in Asteraceae. To those we add the following from ARIZONA, Cochise Co., Chiricahua Mts.: *Erigeron speciosus* (Lindl.) DC (Asteraceae), lower Pinery Cyn., FR 42, 1650–2200 m, 6-13-IX-2015; *Gutierrezia sarothrae* and *Cirsium* sp. (Asteraceae), lower Pinery Cyn., FR 42, E slope, mile marker #7 to FR 42D, NW of Portal, 1845–2190 m, 11-X-2015, DALC; *Heterotheca subaxillaris* (Lam.) Britt. & Rusby, Onion Saddle, 7600', 29-VIII-66, ASUHC. Also on *Oenothera elata*, ARIZONA, Graham Co., Pinaleño Mts, St. Rte. 366-Swift Trail Parkway, 13 rd. mi SW Jct. US Rte. 191N, 2185 m, 26-IX-2015, DALC.

Acmaeodera diffusa Barr, 1969. NEVADA: *Cirsium neomexicanum* A. Gray, Nye Co., Sawmill Canyon, 7600', 22-VII-64; *Cirsium nidulum* (M. E. Jones) Petr., Clark Co., Virgin Mts., 7700', 13-VII-77, and at 4500' *Eriodictyon angustifolium*; *Oenothera elata*, Lincoln Co., Beaver Dam State Park, 20-VII-77, and *Penstemon* sp. (Plantaginaceae), 18-VI-86; *Rosa* sp. (Rosaceae), Lander Co., Kingston Canyon, 7400', 1-VII-77, all NVDA.

Acmaeodera discalis Cazier, 1940. *Aster* sp. (Asteraceae), ARIZONA, Gila Co., Sierra Ancha, Workman Creek, 19-VIII-91, RLWE. Apparently the only other adult host recorded is “on lavender composites” (Nelson 1980). That fits some species of *Aster*.

Acmaeodera disjuncta Fall, 1899. Adults of this common species have been recorded on a variety of flowers (Westcott et al. 1979) to which we add from ARIZONA, Cochise Co., Dragoon Mts.: *Heterotheca subaxillaris*, Texas Cyn. at Dragoon Rd., ±0.15 rd. mi S of I-10, 1720 m, 4-IX-2015; *Hymenothrix wislizeni*, lower Cochise Stronghold FR 84, 1450–1650 m, 24-30-VIII-2015, DALC.

Acmaeodera dolorosa dolorosa Fall, 1899. *Penstemon* sp., CALIFORNIA, Riverside Co., San Jacinto Mts., Keen Camp, 10-VI-39, NVDA.

Acmaeodera fenyesei Fall, 1899. CALIFORNIA: *Eriodictyon* sp., Solano Co., Stebbins Preserve, 25-V-2003, RLWE; *Penstemon* sp., Riverside Co., San Jacinto Mts., Keen Camp, 10-VI-39, NVDA.

Acmaeodera flavomarginata (Gray, 1832). It seems strange that only one adult flower visitation record for this species has been reported for the USA, that being the ubiquitous *Helianthus annuus* (MacRae 2006). Three other records, also from TEXAS are: *Gymnosperma glutinosum* (Spreng.) Less. (Asteraceae), Bee Co., 7 mi w Beeville, 23-X-78; *Verbesina encelioides* (Cav.) Benth. & Hook. f. ex A. Gray (Asteraceae), Hidalgo Co., 1 mi SE Sullivan City, 9-X-75, OSAC, RLWE; and *Verbesina virginica* L., Comal Co., New Braunfels, 29°42'11.8", -98°09'04.2", 16-X-2015, BPC.

Acmaeodera flavopicta Waterhouse, 1889. ARIZONA, Cochise Co. 2 mi E Portal, 20-VIII-65, *Verbesina encelioides*, ASUHC.

Acmaeodera gibbula LeConte, 1858. ARIZONA: on snakeweed, *Gutierrezia sarothrae*, Yavapai Co., Wickenburg Mts., 3445', Monte Cristo Mine, 34.065°, -112.584°, 23-X-2014, WFBM. Cochise Co., *Hymenothrix wislizeni*, Dragoon Mts., Cochise Stronghold, FR 84, 1450–1650 m, 24–30-VIII-2015; and *Solidago* sp., N Cochise Stronghold Rd., .09 mi W US 191, 1280 m, 27–30-IX-2006. DALC.

Acmaeodera immaculata Horn, 1878. NEVADA: *Baileya* sp., Lincoln Co., Tule Desert, T9S, R69E, S9, 16-VI-83; *Cylindropuntia acanthocarpa* (Engelm. & J. M. Bigelow) F. M. Knuth (Cactaceae), Clark Co., 6 mi NE Gold Butte, 3-VI-81; *Sphaeralcea ambigua* A. Gray, Lyon Co., Weeks, 6-VII-77 and Mineral Co., 3 mi NW Schurz, 15-VI-84, NVDA. NEW MEXICO, *Fallugia paradoxa* (D. Don) Endl. ex Torr. (Rosaceae) and *Helianthus canus* Wooton & Standl., Eddy Co., Hwy. 285, 18 mi S Artesia, 11-VI-83, WFBM.

Acmaeodera knowltoni Barr, 1969. IDAHO, *Rosa woodsii* Lindl. (*R. fendleri* on label) (Rosaceae), Franklin Co., Cub River Canyon, 29-VI-73, OSAC, RLWE. NEVADA, Lincoln Co.: Bunker Pass, 6100', 12-VI-85, *Eriodictyon* sp.; Highland Peak Rd., 8500', 11-VI-87, *Peraphyllum ramosissimum* Nutt. ex Torr. & Gray (Rosaceae), NVDA. UTAH: *Calochortus nuttallii* Torr. (Liliaceae), Beaver Co., Wah Wah Mts., 2230 m, 38.3448°, -113.5625°, 24-VI-2014, RLWE; *Lotus* sp. (Fabaceae) and *Vicia americana* Muhl. ex Willd. (Fabaceae), Washington Co., 37.4304°, -113.1839°, canyon below Timber Top Mt., 5800', 16-V-2002, OSAC, RLWE.

Acmaeodera latiflava latiflava Fall, 1907. Adults of this species have been recorded from a large variety of flowers (Westcott et al. 1979; Westcott 1990). We add *Encelia actonii*, CALIFORNIA, Riverside Co., Santa Rosa Mts., DALC.; and in NEVADA, on *Baileya pleniradiata* Harv. & A. Gray, Clark Co., St. Thomas Gap, T17S, R71E, S31, 11-V-84; and *Encelia virginensis*, Clark Co., Virgin Mts., 3000', 4-V-82, NVDA.

Acmaeodera latiflava lineipicta Fall, 1931. Numerous adults were taken on flowers of *Baileya* sp. in a chaparral scrub area in ARIZONA, Gila Co., Milepost 227, Hwy. 88 northwest of Globe, 3800', 33°32'16"N, 110°55'20"W, 30-IV-2001, CLBC, RLWE.

Acmaeodera ligulata Cazier, 1940. On light blue flowers of *Phacelia* sp., ARIZONA, Gila Co., Milepost 227, Hwy. 88 northwest of Globe, 3800', 33°32'16"N, 110°55'20"W, 30-IV-2001, CLBC, OSAC, RLWE.

Acmaeodera lupinae Nelson, 1996. When Nelson (1996) described this species, he listed *Tetranneuris torreyana* (Nutt.) Greene (Asteraceae) and *Sphaeralcea* sp. as adult hosts. However, they are missing in Nelson et al. (2008).

Acmaeodera miliaris Horn, 1878. TEXAS, Jeff Davis Co., 11.3 mi W Ft. Davis, Hwy 166 picnic area, 20-VI-2003, *Thelesperma megapotamicum*; Val Verde Co., 11.6 mi W Comstock, Hwy 90 at Pecos River, 26-VI-2003, *Thelesperma simplicifolium* (A. Gray) A. Gray and *Wedelia hispida* Kunth (Asteraceae), TCMC.

Acmaeodera mixta Horn, 1860. TEXAS: *Gaillardia pulchella* Foug., Val Verde Co. (Asteraceae), Pfeiffer River Ranch, 45 (air) km NNW Del Rio, 29.7816°N, 100.9932°W, 29-V-2016; and *Ratibida columnifera*, same location, 21–22-V-2016, BPC.

Acmaeodera neglecta Fall, 1899. *Ratibida columnifera*, TEXAS, Pecos Co., 29 mi S Ft. Stockton, 24-V-80, RLWE. Nelson et al. (2008) listed this beetle as taken on flowers in 26 plant genera in a variety of families but did not provide any species names therein. Adults of this buprestid obviously have a catholic taste.

Acmaeodera panamintensis Westcott, 1971. *Eriodictyon* sp., NEVADA, Clark Co., Lovell Canyon, T21S, R57E, S3, 22-VI-89, NVDA.

Acmaeodera plagiaticauda Horn, 1878. This species is typically not considered anthophilous as adults are mostly collected on or flying about the foliage of *Arctostaphylos* spp. (Ericaceae) (Beer 1940; Nelson 1959; Westcott et al. 1979; Westcott and Nelson 2000). The few recorded anthophilous associations include “petal of garden rose” and “yellow composite” (Westcott and Nelson 2000). CALIFORNIA, Riverside Co., San Jacinto Mts., St. Rte. 74 at Pacific Crest Scenic Trail access, 1495 m, 15–21-VI-2003 (4), on flowers of *Adenostoma fasciculatum* Hook. & Arn. (Rosaceae), DALC.

Acmaeodera pletura Barr, 1972. *Eriodictyon angustifolium*, NEVADA, Clark Co., Cedar Basin, 4200', 4-VI-81, NVDA; *Penstemon palmeri* A. Gray, UTAH, Washington Co., N entrance Snow Canyon State Park, 16-V-2002, RLWE.

Acmaeodera prorsa Fall, 1899. Although commonly collected, this chaparral-inhabiting species has been recorded from flowers of only five plant species (Westcott et al. 1979; MacRae 2006). CALIFORNIA, San Bernardino Co., San Bernardino Mts., Seven Oaks Rd., 2.6 rd. mi NW of Glass Rd., 1450 m, 29-VI-2003, on flowers of *Salvia apiana* Jeps. (Lamiaceae), DALC.

Acmaeodera purshiae Fisher, 1926. One specimen, OREGON, Wasco Co., Butler Can., on Hwy. 197 S of Tygh Ridge Summit, 45°17'51", -121°10'12", 6-VI-2017, on flowers *Achillea millefolium* L., MLRC. This is the first record of this species' occurrence on a flower. Usually it is taken flying about or is beaten from its only known larval host, *Purshia tridentata* (Pursh) DC (Rosaceae).

Acmaeodera quadrivittatoides Nelson and Westcott, 1995. Adults were collected on flowers of the following plants: ARIZONA, Pima Co. E side Rincon Mts., Miller Creek trail, 32.161°, -110.500°, ±1360 m, 25-VIII-2011, *Portulaca suffrutescens* Engelm. (Portulacaceae), WFBM; Cochise Co., Whetstone Mts., lower French Joe Canyon, ±4950', 22-VII-2015, *Jatropha macrorhiza* Benth. (Euphorbiaceae), RLWE. NEVADA, Clark Co.: Virgin Mts., Nickel Creek, 3800', 13-VII-77, *Echinocactus polycephalus* Engelm. & J. M. Bigelow (Cactaceae); 2 mi NE Gold Butte, 14-VII-77, *Ferocactus cylindraceus* (Engelm.) Orcutt (Cactaceae); Cedar Basin, 4100', 3-VI-81, *Cylindropuntia acanthocarpa*, NVDA. NEW MEXICO, Hidalgo Co., Peloncillo Mts., St. Rte. 80 at Granite Gap, ±18 rd. mi N Rodeo, 1330 m, 17.VII.2010, *Allionia incarnata*, DALC. TEXAS, Brewster Co., Big Bend National Park, 9.7 mi E Panther Jct, 23-VI-2003, *Bahia absinthifolia* Benth. (Asteraceae); same data, *Xanthisma spinulosum* var. *chihuahuanum* (B. L. Turner & R. L. Hartm.) D. R. Morgan & R. L. Hartm.; lower Pine Canyon, W of Glenn Springs Rd, 23-VI-2003, *Lantana achyranthifolia* Desf. (Verbenaceae); lower Pine Canyon, wash below Nugent Mt., 23-VI-2003, *Hibiscus coulteri* Harv. ex A. Gray (Malvaceae), *Ruellia parryi* A. Gray (Acanthaceae), and *Thelesperma megapotamicum*, TCMC; and Val Verde Co., Pfeiffer River Ranch, 45 (air) km NNW Del Rio, 29.7816°N, 100.9932°W, V-2016, *Thelesperma simplicifolium*, BPC. Added to the 33 plants listed in Nelson et al. (2008), this brings to 44 the number of flower visitation records for this beetle. Thus, one receives the impression that if a plant growing where *A. quadrivittatoides* occurs produces flowers, this little beetle visits them!

Acmaeodera reflexa Barr, 1992. One specimen, ARIZONA, Cochise Co., Chiricahua Mts., lower Pinery Cyn., FR 42, 2190 m, 31°55'30", -109°15'17", 6–13-IX-2015, on white flower *Erigeron* sp., RLWE (NEW STATE RECORD). This species has been known only from the type locality in the nearby Animas Mountains of New Mexico and in Chihuahua, Mexico, with no host records provided.

Acmaeodera rubronotata Laporte and Gory, 1835. Adults of this common species have been recorded on a variety of flowers (Westcott et al. 1979; MacRae 2006) to which may be added the following from ARIZONA, Cochise Co.: Huachuca Mts., Ash Can., 5100', 17–18-VIII-79, on *Thelesperma megapotamicum*, OSAC, RLWE; Chiricahua Mts., FR 42, E slope, mile marker #7 to FR 42D, NW of Portal, 1845–2190 m, 11–24.X.2015 (23), on flowers of *Gutierrezia sarothrae* and *Sphaeralcea laxa* Wootton & Standl. (Malvaceae); and Dragoon Mts., Cochise Stronghold FR 84, 1450–1650 m, 24–30-VIII-2015, on *Hymenothrix wislizeni*, all DALC. Also NEVADA, Lincoln Co., Gleason Canyon, 6800', 25-IX-68, *Ericameria nauseosa* Pall. (Asteraceae), NVDA.

Acmaeodera scalaris Mannerheim, 1837. Adults feed on a wide variety of flowers, though relatively few have been recorded in the literature (Westcott et al. 1979), to which may be added: *Gymnosperma glutinosum*, TEXAS, Bee Co., 7 mi W Beeville, 23-X-78, OSAC, RLWE; *Helianthus annuus* and *Hymenothrix wislizeni*, ARIZONA, Cochise Co., Dragoon Mts., lower Cochise Stronghold FR 84, 1450–1650 m, 24-VIII-2015 (4), DALC.

Acmaeodera solitaria Kerremans, 1897. ARIZONA, Cochise Co., Huachuca Mts., Ash Can., 5100', 17–18-VIII-79, on *Thelesperma megapotamicum*, OSAC, RLWE; Dragoon Mts., lower Cochise Stronghold FR 84, 1450–1650 m, 24–30-VIII-2015, on *Kallstromia grandiflora* A. Gray (Zygophyllaceae); and N. Cochise Stronghold Rd., .09 rd. mi W Jct. US Rte. 191S, 1280 m, 27–30-IX-2006, on *Hymenothrix wislizeni* and *Solidago* sp., DALC. Also in Pima Co., E side Rincon Mts., Miller Creek trail, 32.161°, -110.500°, ±1360 m, 25-VIII-2011, on *Portulaca suffrutescens*, RLWE, WFBM.

Acmaeodera tuta Horn, 1878. NEVADA, on flowers of *Baileya multiradiata*, Clark Co., Glendale, 18-V-83; *Encelia virginensis*, St. Thomas Gap, 15-V-83; and *Helianthus deserticola* Heiser, Churchill Co., Sand Mt., 25 mi SE Fallon, 23-V-79, NVDA.

Acmaeodera variegata LeConte, 1852. On flowers of *Fallugia paradoxa*, NEW MEXICO, Socorro Co., Magdalena Mts. above Water Canyon, 2745 m, 10-VII-84, RLWE.

Acmaeodera yuccavora Knull, 1962. Collected on flowers of *Portulaca suffrutescens*, ARIZONA, Pima Co., E side Rincon Mts., Miller Creek trail, 32.161°, -110.500°, ±1360 m, 25-VIII-2011, RLWE.

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