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A new species of *Buprestis* (s. str.) Linnaeus, 1758 (Coleoptera: Buprestidae) from the southwestern United States

Richard L. Westcott
IPPM Program, Entomology Museum
Oregon Department of Agriculture
635 Capitol Street NE
Salem, OR 97301-2532

Clint Burfitt
USDA, APHIS, PPQ
6800 NE 59th Place
Portland, OR 97218s

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A new species of *Buprestis* (s. str.) Linnaeus, 1758 (Coleoptera: Buprestidae) from the southwestern United States

Richard L. Westcott
IPPM Program, Entomology Museum
Oregon Department of Agriculture
635 Capitol Street NE
Salem, OR 97301-2532
rwestcott@oda.state.or.us

Clint Burfitt
USDA, APHIS, PPQ
6800 NE 59th Place
Portland, OR 97218
clinton.e.burfitt@usda.gov

Abstract. A **new species** of *Buprestis* L., 1758, *B. pinyoni* Westcott and Burfitt (Coleoptera: Buprestidae), is described from Arizona, New Mexico, and Utah. It is compared to other species in the subgenus *Buprestis*.

Key words. Taxonomy, Buprestini, jewel beetles, pinyon pine.

Introduction

Trapping programs conducted by the Utah Department of Agriculture and Food to detect exotic woodborers, such as the destructive emerald ash borer, *Agrilus planipennis* Fairmaire, 1888 (Coleoptera: Buprestidae), resulted in the discovery of a single specimen of a new species in the genus *Buprestis* Linnaeus, 1758, from southwestern Utah. Subsequently, more specimens were located in material borrowed from museum collections, and these led to more focused placement of traps in hope of capturing additional specimens. Overall, 18 additional specimens became available for study, all but one being female. Most were from traps, and most were imperfect, some grossly so. Only three specimens had been collected alive in Nature.

Materials and Methods

Traps employed in this study included Lindgren funnels with various baits (see paratype data) and purple panel traps. Field collecting by beating suspected hosts, pinyon pines, was limited and unsuccessful in finding the target species. Plant names are taken from USDA, NRCS (2020).

Collection, institution, and affiliation abbreviations used herein are mostly from Evenhuis (2020) and are as follows:

BYUC Monte L. Bean Life Science Museum, Brigham Young University, Provo, UT
EMUS Utah State University, Logan, UT
ODA Oregon Department of Agriculture, Salem, OR
RLWE Richard L. Westcott Collection, Salem, OR
UAIC University of Arizona, Tucson, AZ
UDAF Utah Department of Agriculture and Food, Salt Lake City, UT
USNM National Museum of Natural History, Washington, DC
WFBM W. F. Barr Entomological Collection, Moscow, ID

Results

***Buprestis* (*Buprestis*) *pinyoni* Westcott and Burfitt, new species**
(Fig. 1–3)

Description. Holotype male: 15.2 mm long, 6.3 mm wide, widest across basal ¼ of elytra; dorsally convex, more so basally on elytra; shining black above, black with light copper and purple reflections below; integument with dark yellow markings as follows: head almost entirely except for vertex, short triangular lateral/sublateral areas each side of prothorax, small lateral spot on each side ventrite 4, a larger lateral marking each side of ventrite 5. Setae white.

Head finely, moderately densely punctured and with short subrecumbent setae, front flattened. **Pronotum** distinctly narrower than elytra, widest basally, rather abruptly narrowing at about basal ¼, then converging to apex; lateral margins sharp and distinct on basal half, not evident anteriorly; anterior margin broadly shallowly arcuate medially; hind margin shallowly bisinuate; front angles subquadrate, hind angles quadrate; surface coarsely punctured, moderately densely so on disc, reticulately so on sides, punctures with a minute white seta. **Elytra** widest behind humeral region to past middle, then gradually converging to subtruncate apex that bears a tiny sutural tooth on each side; slightly swollen back of base. Each elytron with surface uneven, a large quadrate shallowly depressed area at about middle, formed by transverse raised ridges; striae finely impressed, more prominent on basal half, minutely and indistinctly punctured; intervals mostly well-defined, distinctly yet about equally elevated, with some portions flattened, punctures fine and irregularly scattered. **Prosternum** with anterior portion at middle finely sparsely punctate, the setae indistinct, becoming moderately coarsely reticulate-punctate at sides and with distinct setae, process with scattered indistinct punctures, the setae minute.

Foretibia armed with a prominent retrorse sagittate tooth. **Venter** with sparsely to densely placed fine to medium size punctures, the distinct recumbent setae much shorter and sparse on middle, quite long elsewhere; first ventrite broadly, shallowly, longitudinally sulcate at middle, last ventrite with apical margin broadly subtruncate (vaguely emarginate), not retracted at sides.

Material examined. Holotype male (USNM) labeled "UTAH, Iron Co., Cedar City, 5880′, W Cross Hollow Rd., 0.5 mi W Hwy. 15, near Wal-Mart and Home Depot/12-unit Lindgren funnel trap baited with UHR ethanol and a-pinene, 6/VI-8/VII-2006, UT Dept. Agric., Clint Burfitt/HOLOTYPE *Buprestis pinyoni* Westcott & Burfitt" [red card]. **Paratypes** as follows: 1 male, **UTAH**, **Grand Co**., Negro Bill Cyn mouth, Colo. Riv, 21-VIII-1984, Nelson Bauman/*Buprestis maculativentris* Say?, det. R. L. Westcott [label upside down]. Sixteen females as follows: **ARIZONA**, **Mohave Co**., N slope Hualapai Mts., 35.158553°, −113.893372°, Dw Ranch Road, 4784′, 10-VI-2006, M. L. Raschko, 1. **UTAH**, **Garfield Co**., Mt. Ellen, N Wash [±38.02, −110.53?], 8-VII-1978, Tim Vogt/ *Buprestis* nr. *subornata* LeC., det. W. F. Barr, 1; **Grand Co**., Hideout Rd., 6000′, 38.70436, −109.15946, purple sticky panel trap, 16-VII-2013, C. E. Burfitt, 2; same except Lindgren funnel trap w/ EtOH & a-pinene, 1; 16-VIII-2012, Hideout Rd., Elevation 6440′, 38.69261°, −109.170148333°, Purple sticky panel trap, Coll. J. A. Wilkins, C. E. Burfitt, 1; same except -109.17014, 16-VII-2013, C. E. Burfitt, 1; 16-VIII-2012, Hideout Rd., Elevation 6,000′, 38.704366667°/-159468333°, Purple sticky panel trap, Coll. J. A. Wilkins, C. E. Burfitt, 1; 1833 m, 38.704614°, -109.160086°, purple sticky panel trap, no bait, 22-IX-2010, 3; Upper Onion Creek, NE of Moab, ±7000-8000'/Pinyon juniper habitat, on sticky purple panel trap, 2-IX-2007, Clint Burfitt, 1; **Iron Co**., Parowan Canyon, 1945 m, 37.81870°, −112.81052°, funnel trap w/ a-pinene, 9-IX-2012, 1; **Kane Co**., Coral Pink Sand Dunes [≈37.035, −112.725°, »5900′], 5 (handwritten) 28, 29-XIII [sic]-1993, 1. **Sanpete Co**., Antelope Valley, 39.23655°N, 111.75351°W, elev. 5790 ft., 10–23-VIII-2006, Malaise trap, juniper 3, R. L. Johnson, 1.

Paratypes deposited in BYUC, EMUS, RLWE, UDAF, WFBM. The holotype was collected at about 37.658°, −113.092°, in an area that is now much more developed and probably will continue to be. Two habitus images are provided: Fig. 1; and Fig. 2, the image taken after an attempt was made to further extract the aedeagus. The specimen was left in the relaxer too long, thus causing distortion. It may have been slightly teneral. Nevertheless, it was chosen as holotype because it is a male and the only other male we have is highly damaged, including the aedeagus (Fig. 3), the nature of which sex we consider extremely important in identifying this and other species in the group (see discussion to follow).

Figures 1–3. *Buprestis* (s. str.) *pinyoni* male holotype. **1)** After being relaxed. **2)** Prior to being relaxed. **3)** Aedeagus, dorsal view.

The following specimen in UAIC is not included as a paratype because of its slight bronzy-black color and disparate locality. Nevertheless, it appears conspecific with *B. pinyoni*. More specimens from the area, particular male, are needed for confirmation. **NEW MEXICO**, Glenwood, [Catron Co., 33.3167°, −108.8831°, 4745′], 14-VII-'44, on pinyon/F. H. Parker/9370, F. H. Parker Collection/*Buprestis maculativentris* Say, det. Knull '49 [folded]/*BUPRESTIS PINYONI* Westcott & Burfitt, det. R. L. Westcott.

Variation. In length, the two males each measure 15.2 mm; the 16 females range from 14.3–18.5 mm, averaging 17.0 mm. A few specimens exhibit dorsally a vague metallic reflection that is similar to that found on some specimens of *Buprestis maculativentris* Say, 1894. Like most species in their group, integumental markings are highly variable. In *B. pinyoni* they range from dark yellow to orange, the pronotal spot rarely may be absent, and the ventral abdominal markings range to being present on all ventrites. No significant difference was found to distinguish females except they lack a protibial tooth and, much less useful, the apical margin of the last ventrite is subtruncate to very shallowly broadly rounded and may be slightly retracted at the sides.

Habitat. With one exception, all of the beetles were taken in pinyon-juniper woodland where no other conifer was observed, thus we surmised that pinyon must be its host. The exception is the badly damaged specimen labeled from the mouth of Negro Bill Canyon, which was renamed Grandstaff Canyon in 2017 (Burr 2017). Likely it floated down the creek, as there are no junipers or pinyons nearby. However, no species of New World *Buprestis* is known to develop in juniper, although the unrelated *B. aurulenta* Lin-naeus, 1767 is recorded from a plant in the same family, *Thuja plicata* Donn ex D. Don (Cupressaceae). All but one of our species of *Buprestis* in the nominate subgenus are known to develop only in Pinaceae, mostly *Pinus* spp. (Nelson et al. 2008). According to a distribution map in Cole et al. (2008), the only species of pinyon that occurs at the collecting sites is *Pinus edulis* Engelm.

On 16 June 2018, at the site where the paratype specimen from Arizona was collected, a partial individual of *B. pinyoni*, missing the head, prothorax and abdominal venter, was dug from an old dead *P. edulis* stump measuring about 12" in diameter that was "totally dry, pretty well eaten up" and contained pieces of others that had died in their pupal cells. Other trees and shrubs at this site include *Canotia holocantha* Torr. (Rhamnaceae), *Ceanothus greggii* A. Gray (Rosaceae), *Chilopsis linearus* (Cav.) Sweet ssp. *arcuata* (Fosberg) Henrickson (Bignoniaceae), *Forestiera pubescens* Nutt. (Oleaceae), *Juniperus* sp. (Cupressaceae), *Quercus turbinella* Greene (Fagaceae), and *Rhus trilobata* Nutt. (Anacardiaceae) (Paul Kaufman, Morristown, AZ (*in litt.*); partial beetle specimen, which we examined, is in his collection).

Comparison and discussion. Twenty-six species of the genus *Buprestis*, placed into five subgenera, were known to occur in the USA (Nelson et al. 2008); *B. pinyoni* makes the 27th. The most recent revision of our fauna was by Helfer (1941), who recognized 22 species. All but one, including the many synonyms, were described prior to 1941, the exception being *Buprestis parmaculativentris* Knull, 1958. Based on the aedeagus, *B. pinyoni* appears most closely related to that species; however, it is less robust, distinctly black (rarely with an indistinct metallic reflection), the elytral punctation finer and slightly sparser; and the intervals are wider and better defined apically. In contrast, *B. parmaculativentris* usually exhibits a distinct, albeit weak, metallic reflection dorsally, usually greenish or bluish and more noticeable on the pronotum; and the elytral depressions, if present, are vague. Based on elytral structure, uneven and with depressed areas, *B. pinyoni* more closely resembles *B. maculativentris*, to which both it and *B. parmaculativentris* will key in Helfer (1941). However, *B. maculativentris* almost always exhibits distinct, variably colored, metallic reflection, and it is a distinctly more elongate species, much more closely resembling *B. lyrata* Casey, 1909 in that regard. The species appear to have disparate distribution patterns, with *B. maculativentris* recorded from much of Canada south to Colorado, across most of the northern USA. Nelson et al. (2008) listed it from several western states, but in our opinion those records need to be confirmed, as they may refer to *B. lyrata* or *Buprestis subornata* (LeConte, 1860) (see Nicolay and Weiss 1918, and Helfer 1941), although *B. maculativentris* may occur in eastern parts of the Rocky Mountain States. *Buprestis parmaculativentris* is known only from the Chisos Mountains, Texas, where it has been collected only on pinyon.

Care should be taken not to confuse *B. pinyoni* with the uncommon black form of *B. subornata*, though usually they bear slight metallic reflection. In the latter species, aside from overall shape—usually more cuneate—it appears the best distinguishing character, besides the aedeagus, is that the elytral intervals

are usually more confusedly punctate and usually distinctly, finely rugulose, especially laterally; and the alternate intervals are distinctly more highly elevated. The aedeagus of *B. subornata* is unique, the parameres being abruptly expanded at the apex. It is worth mentioning a junior synonym of that species, *Buprestis histrio* Casey, 1909, known by only a single specimen described from Stockton, Utah, and well within the range and habitat type of *B. pinyoni*, is shaped and colored much like the latter. However, the elytral sculpturing and, notably, the two pronouncedly raised discal elytral costae distinguish it as *B. subornata*, even though it appears more slender than usual for that species. We trapped a single, typically-shaped, specimen of *B. subornata*, colored black with faint metallic reflections, from 38.69261°, −109.170148333°, 150′ from where *B. pinyoni* was trapped.

Etymology. The species epithet, a noun in the genitive case, is based on the only known larval host being a pinyon pine, and as far as we know all but one of the adult specimens available for study being found in localities where those are the only pines that occur.

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