Zootaxa 1879: 52–56 (2008)
www.mapress.com/zootaxa/

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

New *Agrilus* Curtis species from mistletoe in México (Coleoptera: Buprestidae)

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Abstract

Agrilus andersoni Hespenheide, new species, from the genus *Phoradendron* and *A. howdenorum* Hespenheide, new species, collected on "mistletoe," are described, illustrated, and compared to the related *A. turnbowi* Nelson from Texas which is also known to use the genus *Phoradendron* as a larval host.

key words: *Agrilus*, Buprestidae, México, mistletoe, new species, *Phoradendron*, Viscaceae

Introduction

The plant genus *Phoradendron* includes a moderately large number of species of mistletoes in the family Viscaceae (or Santalaceae, s. lat.). Anderson (1994) has reviewed the weevil genera that use species of *Phoradendron* as hosts, including three genera in the Conoderinae (as Zygopinae) and *Cionomimus* (Burke 1982) and *Smicraulax* (Burke & Hafernik 1971) in the Anthonomini. Mistletoes are infrequent hosts of *Agrilus* Curtis, 1825. Nelson (1990) described *Agrilus turnbowi* from specimens reared from *Phoradendron* in Texas. The genus *Agrilus* is by far the largest genus in the Buprestidae in México with literally hundreds of undescribed species (Hespenheide 1989, 1996). Describing small numbers of species of *Agrilus* is certainly not preferable to larger studies, but the known and interesting biology of this distinct species group warrants their publication.

The following collection codens are used throughout the text (Evenhuis 2007): BMNH: The Natural History Museum, London, England; CHAH, Henry A. Hespenheide, University of California, Los Angeles, CA, U.S.A.; CLBC, C.L. Bellamy, Sacramento, CA, U.S.A.; CMNC, Canadian Museum of Nature, Ottawa, Canada; MNHN, Museum of Natural History, Paris, France; NMPC, National Museum, Prague Czech Republic; RLWE, R.L. Westcott, Salem, OR, U.S.A.; USNM: National Museum of Natural History, Smithsonian Institution, Washington, DC, U.S.A.

Agrilus andersoni Hespenheide, new species

(Figs. 1–3)

Description. Holotype male: Moderately robust, flattened above, more convex below in cross section, 5.8 mm long, 1.6 mm wide; purplish-red on most of front, pronotum, half the length of the elytra beyond anterior 1/3, meso- and metasternum, and abdomen beneath, elytra and abdomen with coppery reflections, front metallic olive-green between eyes and on anterior faces of anterior femora, otherwise dark purple, including prehumeral carinae and basal depression of pronotum and apical 1/6 of elytra; setae pale, recumbent and inconspicuous on pronotum and beneath, denser and semi-erect on prosternal process, golden and denser on

 Accepted by C. Bellamy: 6 Aug. 2008; published: 17 Sept. 2008

front between the eyes, for half the length of the elytra beyond anterior 1/3, on dorsal portions and in vaguely triangular spots on lateral portions of ventrites 1–4 (Fig. 2); golden setae on elytra not uniform but with irregular transverse break in middle and linear bare spots anterior and posterior to break (Fig. 1).

Head with front convex, but narrowly, deeply depressed along midline above middle, surface punctate and shagreened; epistoma between antennal insertions 1/3 width of distance between inner margins of eyes, slightly emarginate below, eyes oval, slightly emarginate on upper inner margins; antennae distinctly serrate from antennomere 4, antennomeres 4–11 triangular.

Pronotum subequal to elytra at posterior margin, with sides shallowly expanded outward then gently rounded to apex; marginal carina slightly undulate, submarginal carina nearly straight, separated for entire length and converging slightly toward base when viewed from side; from above anterior margin produced as angulately-rounded lobe; basal margin angulately emarginate at middle of each elytron, slightly emarginate before scutellum; disk very irregular, with strong basal depression and weaker anterior depression along midline and strong oblique depressions interior to and in front of prehumeral carinae to lateral margins; prehumeral carinae not conspicuous, 1/3 length of pronotum, arising interior to posterior angles and parallel to lateral margin; surface coarsely, irregularly rugose, rugae especially distorted at midline. Scutellum pentagonal with transverse ridge.

Elytra subequal in width at humeri and beyond middle with lateral margins shallowly emarginate between, apices broadly, separately rounded, distinctly toothed; disk relatively flat, humeri narrow and prominent, each elytron with strong oval depression at base and distinct costa along suture, wider and deeper in setal spots, then narrower and stronger to apex; surface transversely imbricate-punctate, more rugose at base, more polished beneath golden setae.

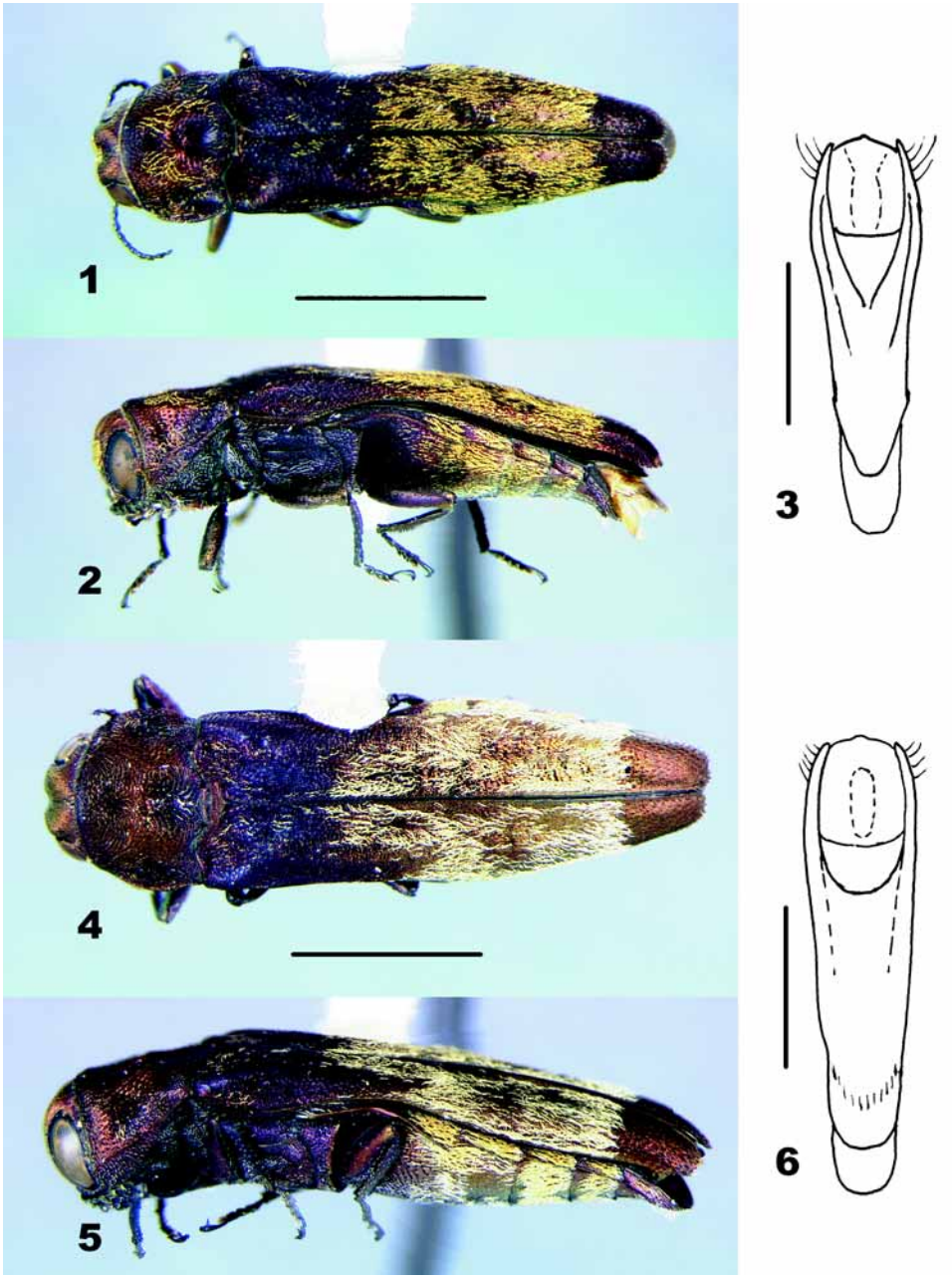
Prosternum with sides of prosternal process slightly narrowing between coxae, rounded-truncate at apex, prosternal lobe nearly transverse. Posterior coxae with posterior margin very slightly emarginate, upper angles sharply obtuse. Abdomen with distinct depression between ventrites 1 and 2, indistinctly depressed along midline of ventrite1, ventrite 5 broadly rounded and denticulate along apex; posterior dorsal portion of ventrite 1 distinctly wider than ventrite 2. Metatarsomere 1 slightly shorter in length than next two combined, tarsal claws similar on all feet, cleft with short inner tooth. Genitalia as in Figure 3.

Allotype Female: As holotype except 6.9 mm long, 1.9 mm wide; front between eyes and anterior faces of anterior femora purplish-red; antennae more compact.

Holotype (CMNC): México: Guerrero, 4.5 km S.W. Xochipala, 1400 m, 16.VII.1992, R.S. Anderson 92-012, thorn scrub, *Phoradendron nervosum* Olivier on *Ipomoea arborescens* (Humb. & Bonpl.) Don. det. Job Kunjit, 1992. Allotype (CMNC): México: same data as Holotype but 18.VII.1992. Paratypes: México, Sierra de Durango (1, MNHN); Guerrero, same data as Holotype (10, CMNC), same data as Holotype, but 15.VII.1992, R.S. Anderson 92-010 (18, CMNC), same data as Allotype (10, CMNC); 9.6 km S.W. Xochipala, 1500 m, 12.VII.1992, R.S. Anderson 92-001, 14.VII.1992, R.S. Anderson 92-007, oak/trop. dec. for., *Phoradendron nervosum* Olivier on *Ipomoea arborescens* (Humb. & Bonpl.) Don. det. Job Kunjit, 1992 (5, CMNC). Puebla, 6 km S Teontepec, 1890 m, 18.28.34 N 97.34.30 W, 25.VI.97, R.L. Westcott, beaten from one of three spp. of mistletoe (26, RLWE), 10 km S Teontepec, 1890 m, 18°28'N 97°36'W, 18.VII.96, R.L. Westcott, beaten from species of mistletoe (1, RLWE), 12 km SW/S Teontepec, 2075 m, 18.26.25, 97.36.09, 25.VI.97, Westcott & Burgos, beaten from mistletoe (3, RLWE). Paratypes will be distributed to BMNH, CHAH, CLBC, NMPC, and UNAM.

Etymology. Named in honor of Robert S. Anderson who collected one of the type series and has studied the beetle fauna associated with *Phoradendron* mistletoes (Anderson 1994).

Discussion. See discussion under the following species. Males from the type series from Guerrero measure 5.1–6.2 mm long (mean = 5.7 mm for 22 specimens), and females measure 5.4–7.2 mm long (mean = 6.4 mm for 23 specimens); males of the series from Puebla measure 5.5–6.6 mm long (mean = 6.0 mm for 11 specimens), and females measure 5.3–7.4 mm long (mean = 6.4 mm for 19 specimens).



FIGURES 1–3. *Agrilus andersoni* Hespenheide: 1. dorsal habitus; 2. lateral habitus (scale bar indicates 2.0 mm); 3. genitalia of male (scale bar indicates 0.5 mm).
FIGURES 4–6. *Agrilus howdenorum* Hespenheide: 4. dorsal habitus; 5. lateral habitus (scale bar indicates 2.0 mm); 6. genitalia of male (scale bar indicates 0.5 mm).

***Agrilus howdenorum* Hespenheide, new species**
(Figs. 4–7)

Description. Holotype male: Moderately robust, flattened above, more convex below in cross section, 6.8 mm long, 1.8 mm wide; more or less uniformly purplish-red throughout, except darker purple in basal depression of pronotum and elytra beneath yellow setae with coppery reflections, front and anterior faces of anterior femora metallic olive-green; front and above largely glabrous except for irregular patch of pale yellow setae for 3/5 length of elytra beyond anterior 1/4 (Fig. 4); pale yellow setae recumbent, inconspicuous, and more or

less uniform beneath, except slightly denser and semi-erect on prosternal process, on dorsal portions of ventrites 1–4, and on upper lateral portions of ventrites 1–2, and covering of ventrites 3–4 except along midline (Fig. 5).

Head with front convex, narrowly depressed along midline above middle, surface minutely punctate and shagreened; epistoma between antennal insertions 1/3 width of distance between inner margins of eyes, slightly emarginate below, eyes oval; antennae distinctly serrate from antennomere 4, antennomeres 4–11 triangular.

FIGURE 7. *Agrilus howdenorum* adult on mistletoe host plant near Diaz Ordaz, Oaxaca, México. The golden setae on the elytra are similar in color to the leaves of the mistletoe and may function as a disruptive color pattern. Photograph by C.L. Bellamy.

Pronotum slightly narrower than elytra at posterior margin, with sides shallowly expanded outward then gently rounded to apex; marginal and submarginal carinae slightly undulate, separated for entire length, widely so in front and converging toward base when viewed from side; from above anterior margin broadly rounded; basal margin angulately emarginate at middle of each elytron, transverse before scutellum; disk very irregular, with strong basal depression and weaker anterior depression along midline, smaller depressions lateral to anterior depression, and strong oblique depressions in front of prehumeral carinae to lateral margins; prehumeral carinae not conspicuous, 1/4 length of pronotum, angling medially from posterior angles; surface coarsely, irregularly rugose, rugae especially distorted at midline. Scutellum pentagonal with transverse ridge.

Elytra subequal in width at humeri and beyond middle with lateral margins indistinctly emarginate between, apices broadly, separately rounded, coarsely toothed and slightly emarginate between teeth; disk relatively flat, humeri narrow and prominent, each elytron with broad, shallow depression at base and irregular costa along suture to setal fascia, then stronger to end of fascia; surface transversely imbricate-punctate, more coarsely so on basal 1/4, more polished beneath yellow setae.

Prosternum with sides of prosternal process slightly emarginate between coxae, broadly rounded at apex, prosternal lobe shallowly emarginate. Posterior coxae with posterior margin shallowly emarginate, upper angles sharply acute. Abdomen with distinct depression between ventrites 1 and 2 at sides, ventrite 5 broadly rounded at apex; posterior dorsal portion of ventrite 1 distinctly wider than ventrite 2. Metatarsomere 1 slightly longer in length than next two combined, tarsal claws similar on all feet, cleft with short inner tooth. Genitalia as in Figure 6.

Allotype Female: As holotype except 6.7 mm long, 1.9 mm wide; front between eyes and anterior faces of

anterior femora purplish-red; antennae more compact.

Holotype (CMNC): México: Oaxaca, 5 mi SW Oaxaca, 4700', 4.viii.83, R. Anderson/W. Maddison, *Acacia* thorn scrub, on mistletoe. Allotype (CMNC): same data as Holotype. Paratypes: México, Oaxaca, Hwy 175 10 km NE Oaxaca, 1800 m, 11.VI.1979, H. & A. Howden (to be deposited in CMNC) 7 km NNW Diaz Ordaz, 2200 m, N17.00 W96.26, 11.VII.1992, C.L. Bellamy, beating mistletoe (1, CLBC), 7 km NW Diaz Ordaz (road to Villa Alta), 2170 m, N17°01' W96°28', 18.VII.2003, C.L. Bellamy CLB 846, beating mistletoe (2, CLBC).

Etymology. Named in honor of coleopterists Henry and Anne Howden, collectors of one of the paratypes.

Discussion. The holotype is the unique male; females measure 6.0–7.5 mm long (mean = 6.9 mm for 5 specimens). Both this and the preceding species are apparently related to but rather different from *Agrilus turnbowi* Nelson from Texas which also uses *Phoradendron* as a host. All three are generally purplish-red in coloration, have a deep medial depression at the base of the pronotum, a more or less complex pattern of golden setae on the middle half or more of the elytra, and similar male genitalia. As can be seen in the photograph of *Agrilus howdenorum* on its host plant (Fig. 7), the golden setae are similar in coloration to the leaves of *Phoradendron* and may serve to make the three species less conspicuous by disruptive coloration. *Agrilus turnbowi* differs from the two Mexican species in having the elytral setae continue to the base of the elytra, but broadly interrupted beyond the middle by an oblique glabrous band, and by having the golden setae on the abdomen restricted to small patches on the dorsal portion of ventrite 1 and lateral portions of abdominal ventrites 3 and 4. *Agrilus howdenorum* is superficially very similar to *A. andersoni* but differs in overall color, is larger, and has a glabrous, shagreened front and a different pattern of setae on elytra.

Acknowledgements

I thank Robert S. Anderson for loan of specimens and habitus images of the specimens. Charles Bellamy provided the photograph of *A. howdenorum* on its host and he and Richard Westcott provided specimens and assistance with the literature. R.H. Turnbow, Jr., provided material of *A. turnbowi*. Martha Logan (Logan Graphics, Hermosa Beach, CA) prepared the final plates.

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