# A new species of *Calligrapha* (Coleoptera: Chrysomelidae) from eastern North America

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**Abstract.** *Calligrapha androwi* is newly described from specimens collected in Ohio, Kentucky, West Virginia, and Alabama. It is placed in the subgenus *Bidensomela* Monros. *Acalligrapha* Monros and *Coreopsomela* Monros are reduced to subjective junior synonyms of *Bidensomela* Monros. A key to the striped species of *Calligrapha* occurring north of Mexico is adapted from Wilcox (1972) to include the new species.

***Calligrapha androwi,*** new species

**Diagnosis.** Of the North American *Calligrapha* with regular elytral stripes (that is, those species lacking numerous isolated spots), this is the only species in which the pronotum is dark except for the pale lateral margins. The pronotum in other species either has more extensive pale areas, or it is entirely dark. Moreover, this is the only striped species in which the lateral elytral interval has a small dark spot just behind the middle (Fig. 1).

Superficially, *C. androwi* resembles *Zygogramma suturalis* (Fabricius) and *Calligrapha bidenticola bidenticola* Brown. Specimens of the new species may be misplaced in collections under the latter two names because of the similar size and color. However, *C. androwi* has pale pronotal margins and the other two species do not. Unlike *Zygogramma*, *C. androwi* has divaricate tarsal claws (Fig. 2). Compared to *C. b. bidenticola*, the new species has a more deeply incised notch on the discal stripe of each elytron and pale, rather than dark, elytral epipleura. The median lobe of the aedeagus is nearly straight on the apical two-thirds in *C. androwi* (Fig. 5), and the flagellum is constricted near the middle (Fig. 6). In *C. b. bidenticola*, the median lobe is distinctly curved, and the flagellum lacks a median constriction (Powell 1941). The most similar North American *Calligrapha* with pale pronotal margins is *C. praecelsis* (Rogers), which is differentiated from *C. androwi* by characters presented in the key below.

**Description.** Shape oval, strongly convex dorsally. Color dark brown with testaceous vittae on lateral margins of prothorax and on median and lateral areas of elytra. Length 5.3-6.9 mm.; width 3.5-4.6 mm.

Head brown, usually darker on vertex than on frons, antennae, and mouthparts. Punctures rather fine, at least much smaller than those of pronotum; distance between punctures equal to two or more times diameter of each puncture; surface between punctures finely alutaceous; pubescence largely absent, except near eyes and on antennae and mouthparts. Antennae extending to near middle of elytra, distinctly and progressively widened towards apex, with antennomeres 8-11 distinctly wider than 2-6; antennomeres 1-7 with sparse long pubescence and sparse short pubescence; 8-11 with sparse long pubescence and dense short pubescence; antennomere 1 about twice as long and broad as 2, subequal in length with 3; 3-6 gradually decreasing in length; 6-10 subequal or slightly increasing in length; 11 longer than 10, about as long as and broader than 1. Terminal article of

maxillary palp apically flattened and truncate; sides nearly straight and subparallel (male) or weakly arcuate (female). Labrum with arcuate sides convergent, apex broadly emarginate.

Pronotum 1.9 times as wide as long, 1.6 times as wide as head, widest across basal corners; anterior margin arcuate, with lateral corners extended well beyond mesal area; lateral margins nearly straight and parallel in basal half, arcuate and convergent in anterior half; posterior margin not straight but extended backwards towards scutellum. Dorsal surface coarsely punctate, with punctures similar in size to those of elytral striae; lateral punctures larger and dense, the distance between some punctures less than diameter of a puncture; mesal punctures not as dense, separated by one to many times diameter of a puncture; surface between punctures minutely punctate and alutaceous. Color dark brown with pale lateral margins. Scutellum equilaterally triangular, testaceous to dark brown, alutaceous.

Elytra, as viewed from above, together slightly longer than wide, 1.2 times as wide as prothorax, widest near middle. Punctures arranged in regular strial rows in sutural and epipleural areas, somewhat confused in central areas; scutellar row consisting of six or fewer punctures; interspaces minutely punctate and alutaceous. Color cream colored to pale yellow, with the following areas dark brown: sutural stripe covering first and second intervals except near base, plus entire scutellar interval; broad discal stripe with third stria as mesal border, laterally leaving 1.5 intervals pale in basal half and 3-4 intervals pale in distal half, and with lateral margin of stripe (slightly behind middle) having a deep intrusion of pale color; spot on lateral interval, slightly behind middle. Hind wings vestigial in both sexes.

Venter and legs brown, except elytral epipleura pale; alutaceous microsculpture present throughout, though weak on some areas of some specimens; conspicuous sternal modifications lacking. Pronotal hypomeron impunctate, with a series of transverse rugae; prosternum impunctate anteriorly, densely punctate posteriorly in front of coxae, with punctures rather coarse but not so large as those of metasternum; punctures of mesothorax similar in size to those of prosternum; metathorax and basal abdominal segment coarsely punctate, with punctures nearly as large as those of pronotum and elytra; distal portion of abdomen finely punctate, with punctures similar in size to those of head. Tarsal claws simple, divaricate (Fig. 2); apex of distal tarsomere with two small denticles between the claws (Fig. 2, 3); males with basal tarsomere enlarged, about as broad as tibial apex; female with basal tarsomere narrower than tibial apex. Aedeagus with hooked lateral spiculae near apex and a median nodule at apex of median lobe (Fig. 4); flagellum translucent, swollen section pinched before middle (Fig. 5).

**Material examined.** West Virginia, Cabell Co., 1 mi. S. Dudley Gap, 29 May 1991, S. M. Clark and C. W. Haverty (male holotype, U.S. National Museum of Natural History); Alabama, [Madison Co.], Mt. Sano, VI-18-1934, H. P. Loding (1 female paratype, University of Alabama); Kentucky, Rowan Co., Warix Run above Cave Run Lake, 12-V-1994, R. W. Baumann and S. M. Clark (1 male paratype, California Academy of Sciences); Ohio, Ashland Co., Mohican St. Pk., 30 May 1984 (1 male paratype, J. F. Cavey collection); West Virginia, Fayette Co., Dowdy Creek, 1.5 mi. N. Prince, elevation 1400', 4 November 1989, R. Canterbury, pitfall trap (1 male paratype, U.S. National Museum of Natural History); West Virginia, Kanawha Co., Kanawha State Forest, 17 May 1989, S. M. Clark (1 female paratype, S. M. Clark collection).

**Biology.** The immature stages and biology are unknown for *C. androwi*. Collections of this rarely encountered species consist of single specimens, usually swept from mixed vegetation along roads or trails through relatively undisturbed forested areas. Both sexes are evidently flightless.

**Comments.** In their discussion of *C. bidenticola* Brown, Balsbaugh and Hays (1972:97) noted an Alabama specimen that appeared to be intermediate between *C. bidenticola* and *C. praecelsis* (Rogers). Upon examination, we discovered this specimen to be *C. androwi*, and it is therefore listed in the material examined section above. However, the pale incision on the lateral elytral stripe is almost as broad as long on this specimen, and thus wider than those on the Kentucky, Ohio, and West Virginia beetles.

On the specimen from Fayette County, West Virginia, the median dark stripe of each elytron is partially separated into two longitudinal vittae, the more lateral one being interrupted by the lateral intrusion of pale color mentioned in the above description. The separation is somewhat reminiscent of that found in *C. bidenticola meridionalis* (Monros).

Monros (1955) recognized that the species of *Calligrapha* from the United States and Canada constitute a heterogeneous assemblage. He erected several new genera, since reduced to subgenera of *Calligrapha* (Arnett 1960), to accommodate those taxa that did not seem to be closely related to the type species of *Calligrapha*. Three of these new taxa were separated by characters at the apex of the terminal tarsomere and at the apex of the aedeagus. *Acalligrapha* had small denticles between the tarsal claws, but was without lateral spiculae on the aedeagus; *Coreopsomela* lacked both the tarsal denticles and the aedeagal spiculae; *Bidensomela* also lacked tarsal denticles, but it did have aedeagal spiculae. However, with the discovery of this new species, which has both tarsal denticles and aedeagal spiculae, the validity of Monros' taxa becomes obscured. Until other differences are recognized, we recommend that at least *Acalligrapha*, *Coreopsomela*, and *Bidensomela* be treated as a single taxonomic unit, including *C. androwi*, and that *Bidensomela* (the name mentioned first in Monros' publication) be the name used for this subgenus. **NEW SYNONYMY.**

**Etymology:** The specific name, *androwi*, honors Robert A. Androw of Columbus, Ohio. He is a superb beetle collector and a good friend. Moreover, although his name does not appear on the label, he was the collector of the Ohio specimen of this new species.

Couplets 1-9 of the Wilcox (1972) key to North American *Calligrapha* are revised below to accommodate the subgeneric nomenclatural changes and the new species presented in this paper. We added couplet 9a, inverted Wilcox's couplets 2 and 3, and, for clarity, we added the first character in couplet 7 (after Johnson 1930).

## Key to North American species of *Calligrapha* Chevrolat with striped elytra (Modified from Wilcox 1972)

1. Elytra with longitudinal dark stripes, without numerous spots ..... 2
   Elytra pale with numerous small dark spots; spots may rarely form irregular stripes, but these forms also have separate spots; spots may also coalesce, in which case the elytra are black with pale spots; (subgenus *Calligrapha*) ..... see Wilcox (1972), couplet 10

2. Pronotum entirely dark ..... 3
   Pronotum with pale lateral margins; (subgenus *Bidensomela* Monros) ..... 8

3. Elytron with a scutellar row of punctures ..... 4
   Elytron without a scutellar row of punctures; each elytron with a sutural and two other regular brown stripes; on *Cephalanthus*; Florida; (subgenus *Calligramma* Monros) ..... *cephalanthi* (Schwarz)

4. Length 7-10 mm.; elytral epipleura at least partly pale; lateral margin of discal stripe not notched; color of stripes usually reddish brown; aedeagus with small spines on apical projection; (subgenus *Graphicallo* Monros) ..... 5
   Length 4.0-6.5 mm.; elytral epipleura dark; lateral margin of discal dark stripe with a notch near the middle; stripes usually dark brown; apical spines on aedeagus itself ..... 6

5. Discal brown stripe of elytra with a single yellow longitudinal stripe immediately outside 4th row of punctures; punctures between rows 4 and 9 completely irregular; Maine-Mass.-Colo.; on *Rosa* ..... *lunata lunata* (Fabricius)
   Discal brown pattern consisting of three more or less longitudinal stripes separated by pale ones; punctures between rows 4 and 9 tending to be arranged in rows; Mo.-Colo.-Manit.- Alta.; on *Rosa* ..... *lunata hybrida* (Say)

6. Elytron with discal dark stripe entire, not divided by a longitudinal stripe ..... 7
   Elytron with discal dark stripe divided by a pale longitudinal stripe in the space between the 4th and 5th rows of punctures; Ga.-Fla.; (subgenus *Bidensomela* Monros) ..... *bidenticola meridionalis* (Monros)

7. Sutural dark stripe of elytra, near base, not more than touching the scutellum and, on the declivity, abruptly, distinctly widened; apex of aedeagus broadly, evenly rounded, without an apical lobe; Kans.-Ill.-Manit.; (subgenus *Calligrapha*) ..... *incisa* (Rogers)
   Sutural dark stripe of elytra, near base, surrounding the scutellum and, on the declivity, not distinctly widened; apex of aedeagus with a small, truncate, apical lobe; on *Bidens*, *Coreopsis*, or *Ambrosia*; N.B.-Fla.-Colo.-Tex.; (subgenus *Bidensomela* Monros) ..... *bidenticola bidenticola* Brown

8. Basal margin of pronotum much paler than head; distal tarsomere without denticles between claws ..... 9
   Basal margin of pronotum as dark as head; distal tarsomere with two small denticles between claws ..... 9a

9. Dark discal stripe of elytron entire or weakly notched; on *Coreopsis*, *Bidens*, or *Ambrosia*; Atlantic to Pacific ..... *californica coreopsivora* Brown

Dark discal stripe of elytron divided by an obliquely transverse pale band; B.C.-Calif. ..... ..... *californica californica* Linell

9a. Anterior margin of pronotum pale; lateral elytral interval entirely pale; apex of aedeagus without lateral spiculae; Ohio-Nebr.-Okla. ..... ..... *praecelsis* (Rogers)

Anterior margin of pronotum dark, except at lateral corners; lateral elytral interval with a dark spot near mid-length; apex of aedeagus with lateral spiculae; Ohio-W.Virg.-Ala. ..... .....*androwi* Clark & Cavey

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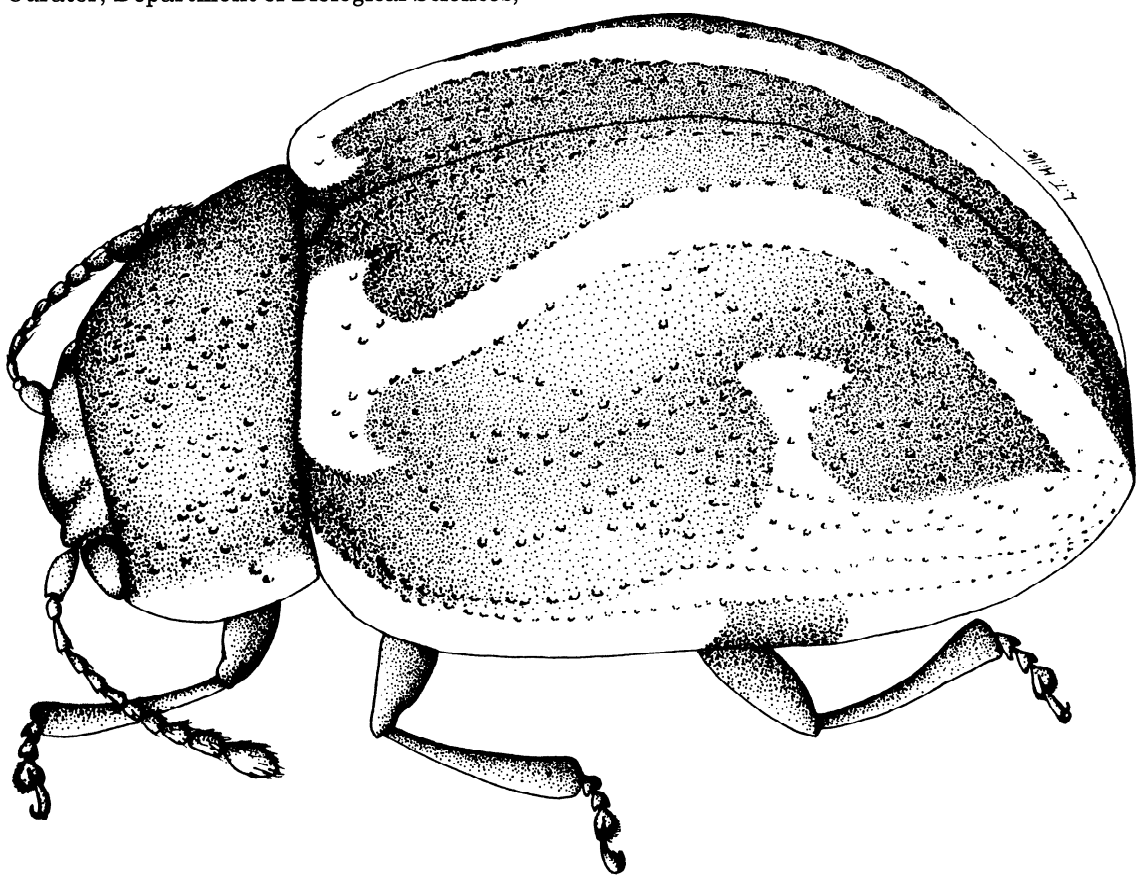
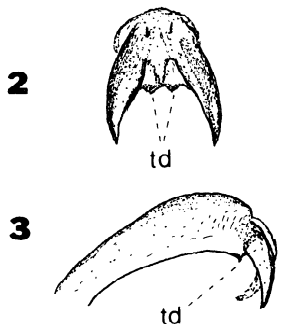
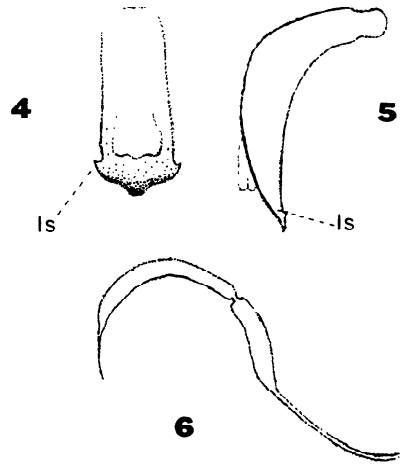


Figure 1. *Calligrapha androwi* Clark and Cavey, dorsolateral habitus.




**Figures 2-3.** *Calligrapha androwi*, 5th tarsomere. 2. distal view. 3. lateral view. td, tarsal denticles.




**Figures 4-6.** *Calligrapha androwi*, male genitalia. 4. aedeagus, dorsal view. 5. aedeagus, lateral view. 6. flagellum. ls, lateral spicule.