The Western North American Genus *Androlyperus* Crotch, 1873 (Coleoptera: Chrysomelidae: Galerucinae)

Shawn M. Clark
Plant Industries Division
West Virginia Department of Agriculture
1900 Kanawha Blvd., East
Charleston, WV 25305-0191

Abstract. The five previously known species of *Androlyperus* are redescribed and diagnosed. *Androlyperus nataliae* n. sp. is described from the Baja California Peninsula, Mexico. A taxonomic key is provided to facilitate species identification.

Introduction

Androlyperus is classified in the subfamily Galerucinae, tribe Luperini, subtribe Luperina, and section Scelidites. The section Scelidites is characterized, among other things, by the rectangular lobe at the apex of the male abdomen. Other sections with similar lobes include the Phyllobroticites (distinguished by reduced epipleura) and the Monoleptites (usually recognizable by the unusually long basal tarsomere of the hind leg).

Androlyperus was originally proposed by Crotch (1873) for the inclusion of a single newly described species, *A. fulvus* Crotch. The genus was expanded to include two species with the description of *A. maculatus* LeConte, 1883; however, this expansion was short-lived, as Horn (1893) erroneously transferred LeConte's species to *Malacorhinus* Jacoby. In 1889, Allard described *Malacosoma Cimex* (later synonymized with *A. maculatus*), but he apparently did not recognize its affinities with *A. fulvus*. In 1906, *Androlyperus* was once again expanded to two species, with the description of *A. incisus* Schaeffer. Oddly, Schaeffer described *Luperodes californica* and *Malacorhinus nigrescens* in the same paper with *A. incisus*, but he did not recognize that all three species were congeneric. In 1951, Wilcox proposed the genus *Malacamerus* for the inclusion of *A. maculatus* and *M. nigrescens*. Later (1965), he synonymized this generic name with *Androlyperus*, a genus in which he classified all of the species mentioned above. No taxonomic additions or changes have been made subsequently.

A short explanation is needed concerning the "material examined" sections that are to follow. Specimen data are generally reported as they appear on the specimen labels, perhaps including some misspellings and other errors. However, for the sake of clarity and uniformity, the sequence of data from each specimen and the format of dates have sometimes been altered. In some instances, specimens bear identical locality data but different dates or collectors. Recording of such specimens is combined. For example, a single entry may have several dates and collectors; however, this does not necessarily mean that the label of each specimen bears all of the dates and all of the collectors' names. Sometimes, the county is not included on the specimen label but was inferred from the specific locality. Comments included within brackets are my own and do not appear on the specimen labels. Collections housing the specimens are indicated by four-letter acronyms, a complete list of which is given in the acknowledgements section near the end of the paper.

Genus *Androlyperus* Crotch

Androlyperus Crotch, 1873:55 (Type: *Androlyperus fulvus* Crotch, 1873, by monotypy); Arnett, 1962:912, 934; Wilcox, 1965:16, 19, 97.

Malacamerus Wilcox, 1951:93 (Type: *Androlyperus maculatus* LeConte, 1883, by original designation); Arnett, 1962:934 (= *Androlyperus* Crotch, 1873).

Diagnosis. Males of this genus can, at once, be recognized by the distinct impression at the posterolateral angle of the elytron, the epipleuron being abruptly bent upward into this impression (fig. 1). Males of some species of *Malacorhinus* (tribe Metacyclini) have similar elytral modifications, but the impression is located at the midlength of each elytron. Either sex of *Androlyperus* can be distinguished from most other Scelidites by the very large genal space, the distance from the eye to the base of the mandible

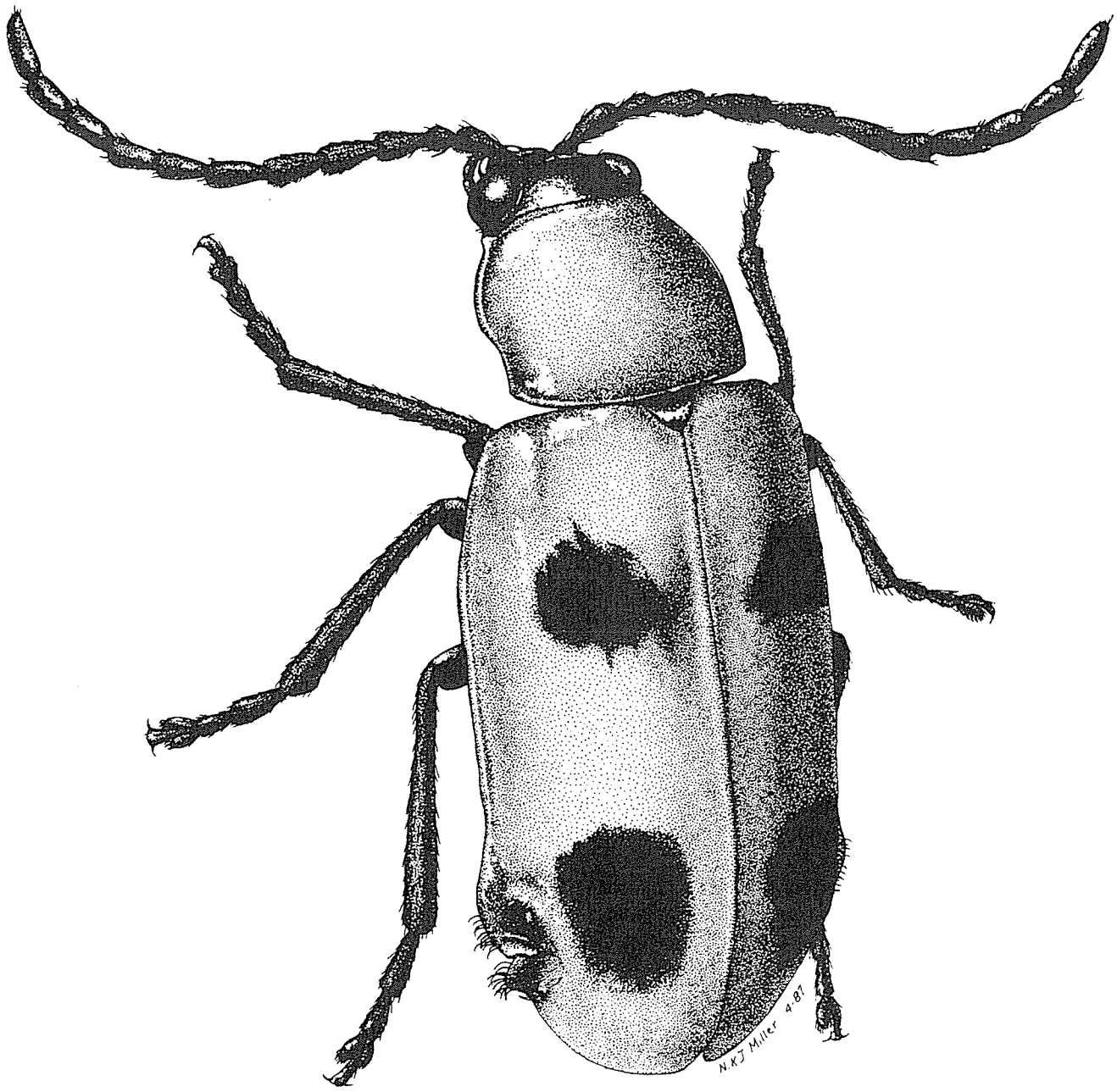


Figure 1. *Androlyperus nataliae*, new species, male.

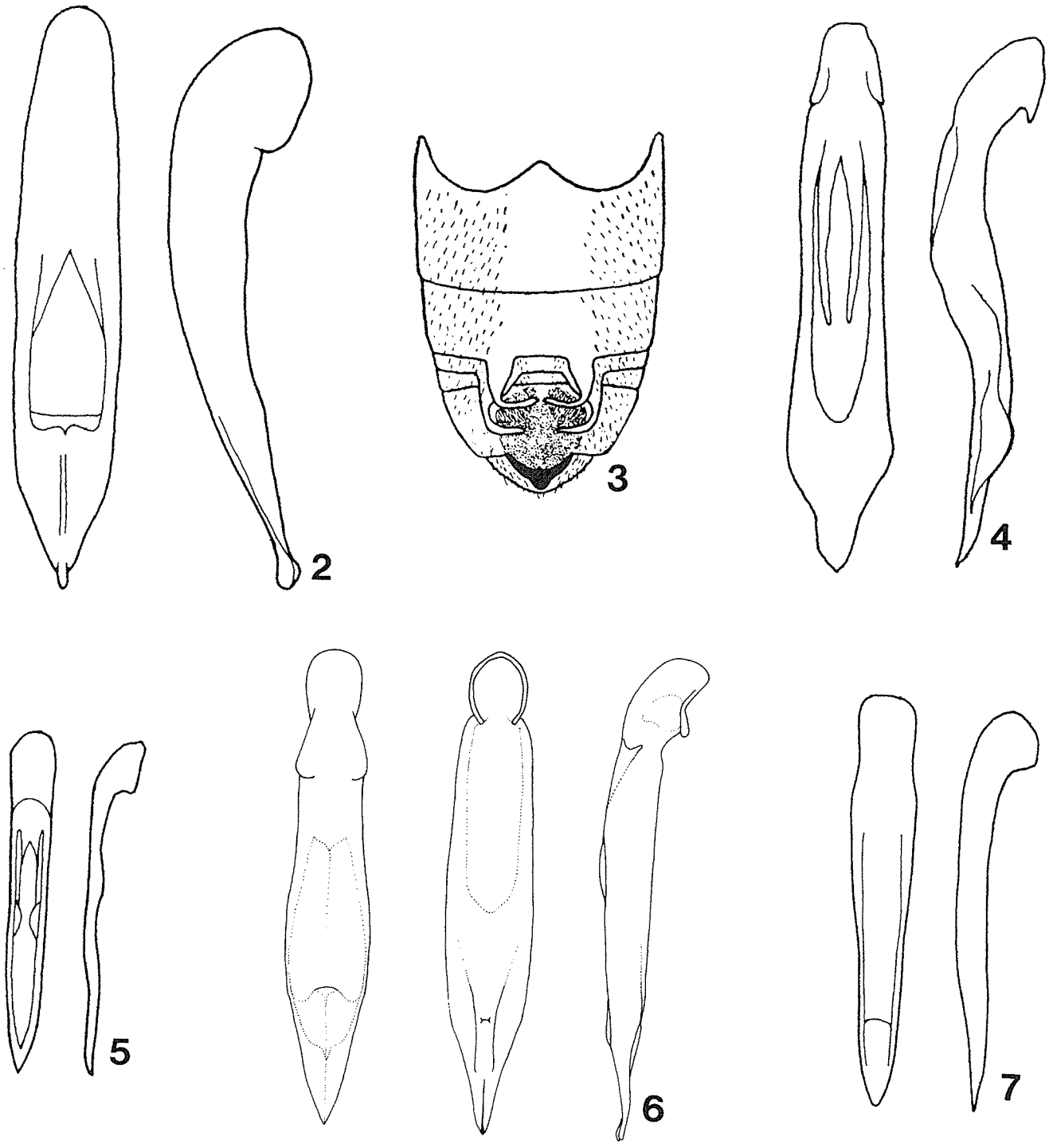
being as great as or much greater than the width of the basal antennal segment.

Description. Form elongate oval. Length 3-9 mm.

Frontal tubercles broadly contiguous mesially for a distance equal to or greater than width of antennomere I, well delimited behind by interocular sulcus. Genal length at least equal to width of antennomere I. Palpi rather stout, with terminal article conical and acute at apex. Antennae separated from each other by a distance subequal to width of antennomere I, slender; antennomere III longer than II, shorter than or subequal in length to IV.

Pronotum pale, reddish or yellowish brown, subquadrate, broader than long, widest at apical third. Basal bead present.

Elytra oval. Male with distinct impression at posterolateral angle. Epipleuron broad at base, ex-



Figures 2-7. Fig. 2, *Androlyperus maculatus* LeConte, aedeagus, dorsal and lateral aspects; Fig. 3, *A. fulvus* Crotch, male abdomen, ventral aspect (reproduced from Wilcox, 1965); Fig. 4, *A. fulvus*, aedeagus, dorsal and lateral aspects; Fig. 5, *A. incisus* (Schaeffer), aedeagus, dorsal and lateral aspects; Fig. 6, *A. nataliae* new species, aedeagus, dorsal, ventral, and lateral aspects; Fig. 7, *A. californicus* (Schaeffer), aedeagus, dorsal and lateral aspects.

tending to incision in male, extending to sutural angle in female.

Prosternum extending narrowly between front coxae, slightly expanded behind coxae. Terminal spurs present on middle and hind tibiae, lacking on front tibiae. Tarsomere I of hind leg subequal in length to II-III combined; tarsal claws appendiculate. Terminal abdominal sternite of male with distinct impression extending to or nearly to base of segment, with short, rectangular lobe at apex; terminal abdominal sternite of female rounded at apex, not impressed.

Aedeagus symmetrical, without basal spurs; orifice without sclerotized operculum; inner sac covered, in large part, by small dark cornuti.

Comments. The preceding description was modified from that of Wilcox (1965).

The elytral modification is quite distinctive. It is simple and lacking pubescence in *A. californicus*, but is much more complex in other species. In the species in which it is best developed, it may have a glandular function, but this has not been investigated.

Key to species of *Androlyperus*

1. Elytra distinctly bicolored or entirely pale 2
— Elytra entirely black; length of beetle 3.2-5.0 mm; Arizona, California, and Baja California .... *incisus* (Schaeffer)

2(1). Each elytron orange or red, with a large, distinctly delimited, dark spot before middle and with another such spot, well separated from the first, at apical third 3
— Dark elytral markings absent, confined to marginal areas, or occupying nearly entire disc 4

3(2). Distal fourth of aedeagus (fig. 2) with a dorsolateral flange; apex of aedeagus with a short, median, dorsal carina that extends beyond distal margin, thereby forming an acute tip; posterior dark spots of elytra broader than long, usually concave posterolaterally; length 7.1-8.8 mm; California and Baja California ..... *maculatus* LeConte
— Aedeagus without such flange or carina (fig. 6); posterior elytral spot longer than broad, not concave behind (fig. 1); length 6.0-7.5 mm; Baja California and Baja California Sur .... *nataliae*, new species

4(2). Elytral modification of male well developed, with conspicuously pubescent areas; sutural and lateral margins of elytra pale 5
— Elytral modification of male poorly developed, not conspicuously pubescent; elytra pale, usually with dark sutural and lateral margins; length 4.6-5.8 mm; California *californicus* (Schaeffer)

5(4). Abdomen of male with four long slender appendages (fig. 3); each elytron pale, often with a dark, elongate mark in posterior third; length 4.5-7.9 mm; California ..... *fulvus* Crotch
— Abdomen lacking appendages; elytra largely dark, with sutural and lateral areas pale; length 5 mm; Utah ..... *nigrescens* (Schaeffer)

Androlyperus californicus (Schaeffer) (Fig. 7)

Luperodes californica Schaeffer, 1906:245.
Luperodes californicus: Blake, 1942:58.
Androlyperus californicus: Wilcox, 1965:98, 99, 100.

Diagnosis. The distinctly punctate, pale, brownish yellow elytra, usually with darker margins, distinguish this from other species within the genus. The elytra of *A. fulvus* are also pale in color, but they are more orange and nearly impunctate. Additionally, *A. fulvus* is larger (5.9-7.9 mm long compared to 4.6-5.2 mm, in material that I have seen), and the male has unusual ventral appendages on the abdomen.

Description. Form elongate oval. Color pale, yellowish brown with dark head, antennae, metasternum, legs, and often margins of elytra. Length of male 4.9 mm; length of female 4.6-5.2 mm (these measurements based on material examined, but see comments section below).

Head with vertex and frons black or dark brown, with clypeus and mouthparts usually paler, reddish brown. Vertex evenly convex, not depressed behind frontal tubercles, very inconspicuously pubescent; surface smooth, shining. Antennae brown; antennomere I stout; II-XI slender, with distal articles slightly broader; II short; III subequal in length with I, about twice as long as II; IV slightly longer than III or V; V-X subequal in length; XI slightly longer than X.

Pronotum pale, yellowish brown, covered with minute, well separated punctures, lacking pubescence; surface shining.

Elytra brownish yellow, usually with darker margins; punctation distinct, fine, with most punctures separated by a distance equal to 3-4 times diameter of puncture; surface shining. Male with glabrous impression at posterolateral angle; epipleuron incised at posterolateral angle, not continuing posterior to incision. Female lacking obvious modifications.

Prosternum yellowish brown. Mesosternum pale brown. Metasternum brown, slightly darker than prosternum. Legs dark brown; male with basitarsus of middle and especially front legs expanded. Abdomen pale yellowish brown.

Aedeagus (fig. 7) nearly straight in lateral view. Ventral surface with weak median carina bordered on each side by shallow impression.

Type locality. Ha Ha Fall, Tulare Co., California.

Material examined. U.S.A.: California: Monterey Co., Arroyo Seco, 27-IV-1982, A. J. Gilbert coll., *Mentzelia pectinata* Kellogg (1 male, SMCI); Arroyo Seco, 15 mi. W. Greenfield, V-7-1981, A. J. Gilbert, *Mentzelia pectinata* Kellogg (1 female, SMCI). Tulare Co.: Ha Ha Fall (lectotype male, 1 paralectotype male, 1 other female, USNM); Kaweah, Hopping (3 males, 4 females, MCZC); Kaweah, 1500 ft., Hopping (2 males, 2 females, USNM). Country unknown: [no locality labels] (1 female, USNM).

In addition to material that I have personally examined, Arthur J. Gilbert (personal communication) has informed me of specimens in his personal collection and in the Tulare County Department of Agriculture collection: California, Monterey Co., Arroyo Seco, IV-27-1982, A. J. Gilbert coll., *Menzelia pectinata* Kellogg (27 males, 25 females); California, Tulare Co., Kaweah, 29 Apr. 1934 (7 males, 11 females); ditto except 30 Apr. 1934 (1 male); California, Tulare Co., Kaweah Power House Reservoir, 24 May 1931 (1 male); ditto except 27 May 1931 (1 female); California, Tulare Co., Springfield, 28 May 1933 (1 male, 1 female).

Comments. Wilcox (1965) reported specimens as small as 3.7 mm long and as large as 5.8 mm, but, as indicated in the above description, material examined in this study is not so extreme in size. In the original description, Schaeffer (1906) reported specimens as large as 6 mm. Arthur J. Gilbert (personal communication) has informed me of males measuring 3.8-4.5 mm and of females measuring 3.8-5.0 mm. Possibly, gravid females account for the large size in some of these accounts.

The elytral modification of the male, though distinct, is not as well developed in *A. californicus* as in other species in the genus.

Two male syntypes (USNM) have been examined during this study. One of these is hereby designated as lectotype and bears the following four labels: 1. "Ha Ha Fall Tulare Co. Cal." 2. "BROOKLYN MUSEUM COLL 1929" 3. "Cotype No. 42319 U.S.N.M." 4. "*Luperodes californicus* Schaeffer."

Androlyperus fulvus Crotch (Figs. 3, 4)

Androlyperus fulvus Crotch, 1873:55; Horn, 1893:119; Wilcox, 1965:98, 99.

Diagnosis. Males of this species can at once be recognized by the four slender appendages on the abdomen (fig. 3), in combination with the extreme modification of the elytra. The epipleuron is incised and bent abruptly upward into a distinct impression at the posterolateral elytral angle. Both sexes can be distinguished from other species of *Androlyperus* by the minutely, inconspicuously punctate elytra, each of which is entirely orange or less commonly orange with a small elongate spot in the apical third.

Description. Form elongate oval. Color orange with dark head, antennae, mesosternum, metasternum, legs, and apex of abdomen. Length of male 6.0-7.1 mm; length of female 5.9-7.9 mm (measurements based on material examined, but see comments section below).

Head black, sometimes with paler clypeus and mouthparts. Vertex sparsely, inconspicuously pubescent, nearly impunctate, with distinct, mesal impression behind frontal tubercles; surface without microsculpture, shining. Longitudinal interantennal carina acute. Antennomere I broad; II short; III about twice as long as II, slightly shorter than I; IV distinctly longer than III; IV-X subequal or gradually decreasing in length; XI longer than X; antennae of male slightly serrate, with intermediate articles expanded apically; antennae of female slender, not noticeably serrate.

Pronotum pale, orange, shining, minutely punctate, lacking pubescence. Scutellum brownish yellow, impunctate, shining.

Elytra orange, sometimes with short, brown, median vitta in posterior third. Pubescence absent except on margins near apex and in male modification. Surface minutely, inconspicuously punctate. Male elytron strongly impressed at posterolateral angle; epipleuron incised and upturned into impression, not continuing beyond impression; two small pubescent tubercles present within impression, one near anterior, dorsal margin, one near posterior margin.

Prosternum pale, brownish yellow, sparsely pubescent, impunctate, shining. Mesosternum brown, distinctly darker than prosternum. Metasternum dark brown or black. Legs dark brown or black; basitarsi of male similar to those of female, not obviously expanded. Abdominal sternites I-IV pale yellowish brown; four slender appendages present, two extending from distal margin of segment II, two from distal margin of III (fig. 3); terminal sternite of male black with lateral margins pale, very strongly impressed mesally; terminal segment of female pale in basal half, not impressed.

Aedeagus (fig. 4) strongly sinuate in lateral view, with strong dorsolateral flange at apical fourth. Apical half with 5 strong, lamelliform, ventral carinae.

Type locality. Coast Range, S. of San Francisco.

Material examined. U.S.A.: California: Kings Co.: 10 mi SW Avenal, 9 May 1973, A. J. Gilbert (2 males, 1 female, UCRV). Monterey Co.: Carmel, 31 May 1916 (5 females, UMMZ, USNM); Paraiso Spg, 13 May (1 male, 1 female, MCZC); Paraiso Hot Spgs., 1400', O. & L. Bryant, 15 June 1954, 4 July 1954 (5 females, CASC); Paraiso Springs, 31 May 1916 (1 male, 1 female, USNM). San Benito Co.: Hernandez Vy., 28 May 1960, D. C. Rentz (1 female, CASC); Junc. Cl. Creek & Coalinga Rds., 28 May 1960, D. C. Rentz, C. E. Wemmer (2 males, 4 females, CASC); Old Hernandez Rd., 19 June 1955 (19 males, 21 females, CASC); 3.8 mi. on New Idria Rd. from Panoche Rd. (17.9 mi. off I5), V-13-1978, G. Caseri, A. J. Gilbert collectors (1 male, 1 female, SMCI). County unknown: Coast Range, S. of San Francisco [locality not included with specimen but determined from original description] (lectotype female, MCZC).

In addition to material that I have examined, Arthur J. Gilbert (personal communication) has informed me of the following specimens in his collection: U.S.A.: California: Fresno Co.: 11.2 mi. E. Priest Valley, 36°05.28N 120°29.86W, 1500', 18 May 1995, A. J. Gilbert, F. Andrews (1 female). Kings Co.: 10 mi. SW Avenal, 19 May 1973, A. J. Gilbert, *Clarkia cylindrica* (6 males, 7 females); 10 mi. SW Avenal, 19 May 1973, A. J. Gilbert, *Eriophyllum confertifolium* (5 males, 10 females); Sunflower Valley, 15 May 1974, A. J. & M. E. Gilbert (2 males, 3 females); Sunflower Valley, 9 mi. SW Avenal, A. J. Gilbert, L. Bookout (2 females). San Benito Co.: 3.8 mi. on New Idria Rd. from Panoche Rd. (17.9 mi. off I-5), 13 May 1978, C. Caseri, A. J. Gilbert (5 males, 11 females).

Comments. Horn (1893) erred in not seeing terminal spurs on the middle and hind tibiae.

Wilcox (1965) reported specimens as small as 4.5 mm long. Arthur J. Gilbert (personal communication) has informed me of males as small as 5.1 mm and females as small as 5.8 mm. However, as indicated in the above description, all of the material that I have seen is somewhat larger.

The abdominal appendages of the male are distinctive (fig. 3). They are quite unlike those found in the genus *Scelida* or the genus *Pseudoluperus*, and they should probably not be considered homologous.

Crotch described this species from material in Horn's collection but did not specify how many specimens were involved. However, Horn (1893) indicated that there were two specimens, a male and a female. Now, there is only one specimen (a female) in the Horn Collection. It is hereby designated as lectotype and bears the following two labels: "Cal" and "Horn Coll H 6872".

Androlyperus incisus Schaeffer (Fig. 5)

Androlyperus incisus Schaeffer, 1906:247; Wilcox, 1965:98, 99.

Diagnosis. The pale head and pronotum, in combination with the dark, nearly black elytra, distinguish this from other species of *Androlyperus*. As in other species of the genus, the elytra of males are strongly modified at the posterolateral angles.

Description. Form elongate oval. Head and prothorax pale, brownish yellow; elytra, metasternum, and abdomen dark. Length of male 3.2-4.7 mm; length of female 3.9-5.0 mm (measurements based on material examined, but see comments section below).

Head yellowish brown. Vertex nearly impunctate, shining, distinctly impressed behind frontal tubercles. Antennae usually dark brown; antennomere III subequal in length with I, about twice as long as II, distinctly shorter than IV; V slightly longer than IV; V-X subequal in length; XI slightly longer than X.

Pronotum nearly as long as broad, pale brownish yellow, lacking pubescence, shining, minutely, very inconspicuously punctate. Scutellum pale, impunctate.

Elytra dark brown or black, shining in female, less shining in male, distinctly punctate, with interspaces subequal to three or four times diameter of a

puncture. Male with strong fovea at posterolateral angle; epipleuron upturned into fovea.

Prosternum yellowish brown, nearly glabrous, shining, extending narrowly between front coxae, slightly expanded behind coxae. Mesosternum yellowish brown. Metasternum dark brown. Legs dark brown; male with basitarsus of front leg slightly expanded. Abdomen dark brown.

Aedeagus (fig. 5) very feebly sinuate, nearly straight in lateral view; a broad, ventral, median groove extending nearly to lateral margins.

Type locality. Quartzside [Quartzsite, Yuma Co.], Arizona.

Material examined. Mexico: Baja California: Bah. d. L. Angeles, *Mentzelia hirsutissima*, 6 Mar. 1966, 24 Mar. 1966, G. S. Daniels (30 males, USNM); Is. Angel de la Guarda, Golfo de Calif., *Mentzelia hirsutissima*, 3 Mar. 1966, 25 Mar. 1966, G. S. Daniels (3 males, USNM); 16 mi. N Puertecitos, 30 Mar. 1993, F. Andrews & G. Gilbert, on *Lupinus arizonicus* (S. Watson) S. Watson (14 males, AJGC; 1 male, SMCI).

U.S.A.: Arizona: Yuma Co.: Quartzside [Quartzsite] (holotype male, 1 paratype male, USNM; 1 female, MCZC). County unknown: [no specific locality], June (1 female, MCZC). California: Imperial Co.: Coyote Mts., Painted Gorge, *Mentzelia involucrata*, 17 Mar. 1966, G. S. Daniels (1 male, USNM). Kern Co.: Mojave, 1 June, June (4 males, 5 females, MCZC). Riverside Co.: Berdoo Cyn., 26 Apr. 1978, J. C. Hall (2 males, UCRV); 11 miles S. of Highway 60, Blythe to Niland Rd., on *Mentzelia involucrata*, 13 Apr. 1949, Timberlake (1 male, UCRV); Chuckwalla Mts., 29 Mar. 1958, Apr. 1958, Donald Blackman, Gail M. Nicolls (2 males, 1 female, UCRV); 6 mi. S. Cottonwood Springs, on *Mentzelia involucrata*, 4 Apr. 1966, 23 May 1966, Timberlake (7 males, 5 females, UCRV); 4.5 mi. NW Desert Hot Spr., cyn betw. Midway & Whitehouse Cyns., Little S. Bdno Mts., *Mentzelia involucrata*, 18 Apr. 1967, 1 May 1967, G. S. Daniels, G. I. Stage (6 males, USNM); 4.5 mi. NW Desert Hot Spr., Little S. Brdno. Mts., Midway Cyn, *Mentzelia involucrata*, 22 Mar. 1967, G. I. Stage (2 males, USNM); 15 miles E. of Indio, on *Mentzelia involucrata*, 13 Apr. 1949, Timberlake (4 males, UCRV); 20 mi. E. Indio, 26 Apr. 1963, E. I. Schlinger (3 males, 1 female, UCRV); Josh. Tree NM, Pleasant Vlly., 7 Apr. 1966, 30 Apr. 1966, S. L. Jenkins, E. L. Sleeper (1 male, 1 female, UCRV); JTNM, Plsnt. Vlly, Fried Liver Wsh, 8 Apr. 1966, 9 Apr. 1966, S. L. Jenkins, E. L. Sleeper (6 males, 1 female, UCRV); 3 miles E. of Mecca, on *Mentzelia involucrata*, 27 Apr. 1952 (1 male, UCRV); 14 miles south 29 Palms, *Mentzelia involucrata*, 14 Apr. 1935, Timberlake (3 males, 6 females, UCRV); Palm Spgs, 20 May, A. Fenyes (1 male, MCZC); White Water, on *Mentzelia involucrata*, 19 Apr. 1937, 22 Apr. 1937, Timberlake (2 males, 2 females). County unknown: Joshua Tree NM [Riverside or San Bernardino Counties], 5 Apr. 1952, R. Whitmire (2 males, CASC); Morongo Pass [Not located. This is probably in Riverside or San Bernardino County, near Morongo Valley.], on *Mentzelia involucrata*, 22 Apr. 1937, Timberlake (1 male, 2 females, UCRV).

Beyond the material that I have examined, Arthur J. Gilbert (personal communication) has informed me of additional specimens in his collection: Mexico: Baja California: 24 mi. N. Ba. Sn. Luis Gonzaga, 14 April 1962, E. L. Sleeper, at blacklight (1 male); Cn. Guadalupe, Sa. Juarez, 8 April 1966, E. M. Fisher, J. A. Gruwell (2 males); Cn. Guadalupe, Sa. Juarez, 9 April 1966, E. M. Fisher (1 male); Mission Calamyget, E. L. Sleeper, at blacklight (1 female); 16 mi. N. Puertecitos, 30 March 1993, F. Andrews, A. Gilbert, *Lupinus arizonicus* (S. Watson) S. Watson (66 males, 180 females). U.S.A.: CALIFORNIA: Inyo Co.: Darwin Falls, 24 May 1980, A. J. Gilbert, beating *Larrea divaricata* Cav. (3 females); Westgard Pass, Tollhouse area, 25 June 1980, A. J. Gilbert, R. Gill, on *Eriogonum* (1 female); 4.7 mi E I-395, Westgaard Pass, Hwy. 168, 18 May 1993, N. J. Smith (2 females). Riverside Co.: Chuckwalla Mts., 29 March 1958, G. M. Nicolls (1 female); 2 mi. S. Desert Center, 26 April 1958, G. H. Nelson (1 female); Indio, 1 March 1958, G. H. Nelson, on *Oenothera* (1 male); 20 mi. E. Indio, 26 April 1963, E. I. Schlinger (1 male, 1 female)

Comments. Many male specimens have distinct, mesal emarginations or depressions on the second and third abdominal sternites. The modified area is generally pale in comparison with surrounding areas of abdomen. These modifications are not found on all males but are common enough to indicate that they are not due to malformation or distortion as may be thought upon first examination. Though not obviously similar, they may be homologous with the abdominal appendages of *A. fulvus*.

Arthur J. Gilbert (personal communication) has informed me of males measuring as large as 5.1 mm long and of females measuring as small as 3.2 mm. As noted in the above description, these extremes are beyond the size range of material I have examined.

Androlyperus maculatus LeConte (Fig. 2)

Androlyperus maculatus LeConte in LeConte & Horn, 1883:349; LeConte, 1884:28; Wilcox, 1965:98-99.
Malacorhinus maculatus: Horn, 1893:121.
Malacamerus maculatus: Wilcox, 1951:93.
Malacosoma Cimex: Allard, 1889:LXVIII; Horn 1893:121 (= *maculatus* LeConte, 1883).

Diagnosis. The extreme modifications at the posterolateral angles of the male elytra, together with the color pattern of the elytra, quickly distinguish this from most other chrysomelid species. Each elytron is reddish-orange with a black spot at the basal third and another at the apical third. However, this species is very similar to *A. nataliae*, from which it is best distinguished by aedeagal characters (fig. 2). The dorsolateral portion of the aedeagus distal to the orifice has a very distinct, laterally projecting flange. Such a structure is absent in *A. nataliae*, and the corresponding portion of the aedeagus is therefore much narrower. Furthermore, the aedeagus of *A. maculatus* has a short, median, dorsal carina at the apex, extending beyond the distal margin and thereby forming a narrow apical tip; such a carina is absent in *A. nataliae*. Also, the few specimens examined differ slightly from *A. nataliae* in color pattern. In *A. maculatus*, the posterior spots of the elytra are broader than long and are usually concave along the posterolateral margin (longer than broad and convex in *A. nataliae*), and the terminal abdominal sternite is entirely dark or dark with only the extreme anterior and basal margins pale (frequently dark only in posterior half in *A. nataliae*).

Description. Form elongate oval. Color dark brown or black, with orange pronotum and, in large part, orange elytra. Length of male 7.2-8.8 mm; length of female 7.1-7.8 mm.

Head black, with slightly paler, brown frons and mouthparts. Vertex strongly, mesially impressed behind frontal tubercles; surface minutely punctate, shining, lacking obvious pubescence. Longitudinal interantennal carina acute. Antennae dark brown or black; antennomere I broad, much longer than II, slightly shorter than III; III about three times as long as II, distinctly shorter than IV; V-VII gradually decreasing in length; VII-X subequal in length; XI slightly longer than X.

Pronotum orange, minutely, inconspicuously punctate. Scutellum brown or black, impunctate, shining.

Elytra orange, each with two median, black spots; anterior spot located at basal third, transverse or round; posterior spot located at distal third, broader than long, usually concave along posterolateral margin. Surface minutely, inconspicuously punctate. Male with distinct fovea at posterolateral angle of elytron, with two small, pubescent tubercles within fovea, one near anterior margin of fovea, one near posterior margin; epipleuron incised, abruptly upturned into depression, not continuing beyond fovea; elytral surface not or only very feebly shining. Female elytra without obvious modifications, shining.

Prosternum pale, yellowish brown, sparsely pubescent, nearly impunctate, shining. Mesosternum and metasternum dark brown or black. Legs dark brown or black; basitarsi of male not obviously expanded, similar to those of female. Abdomen, exclusive of terminal segment, yellowish brown; terminal segment entirely dark or dark with extreme lateral or basal margin pale.

Aedeagus (fig. 2) gently arcuate in lateral view; distal third with strong dorsolateral flange, with 3 strong, ventral, lamelliform carinae; apex with short, median, dorsal carina extending beyond distal margin, thereby forming acute tip.

Type localities. *Androlyperus maculatus*: San Diego, California. *Malacosoma Cimex*: "Californie."

Material examined. Mexico: Baja California: 12 mi. S Santo Tomas, 550', 26 May 1979, C. L. Bellamy (1 male, AJGC). U.S.A.: California: Riverside Co.: 10 mi. S. Palm Dst., el. 3000', 2 June 1977, C. Bellamy (1 male, AJGC); Pinon Flat, Santa Rosa M., 1 July 1941, D. J. & J. N. Knull (2 females, OSUC); Pinyon Flats, 4000', 2 June 1977, C. Bellamy (2 males, AJGC); Pinyon Flats, 1 July 1978, J. Fong, on *Salvia* (1 female, AJGC); Pinyon Flats, 7 June 1975, G. C. Walters, *Encelia farinosa* (1 male, AJGC); White Water Canyon, 6 May 1960, Carol Chaney (1 male, AJGC; 1 female, UCRV); Whitewater Canyon, 11 May 1980, C. L. Bellamy (1 female, AJGC); Whitewater Canyon, 3 May 1974, A. J. Gilbert, M. E. Gilbert, ex: *Sphaeralcea ambigua* (2 males, 3 females, AJGC; 1 male, 1 female, SMCI); ditto except 5 May 1974 (1 female, AJGC). San Diego Co.: Monument Peak, 25 May 1979, Brown, Faulkner (1 male, AJGC); Tecate Peak, 3885', 2 June 1980, Brown, Faulkner (1 male, AJGC). County unknown: Santa Rosa M. [Riverside and San Diego Counties], 27 May 1946, D. J. & J. N. Knull (3 males, OSUC); [no specific locality] (holotype female of *Androlyperus maculatus*, MCZC; holotype female of *Malacosoma Cimex*, IRSB; 3 other females,

2 males, MCZC). COUNTRY UNKNOWN: [No labels] (5 females, FMNH).

Comments. As in some of its congeners, the sexual dimorphism is remarkable in this species. In addition to the modifications on the terminal sternite and at the posterolateral angles of the elytra, males have opaque rather than shining elytra.

Androlyperus nataliae, new species (Figs. 1, 6)

Diagnosis. This species differs from most other New World chrysomelids by the color pattern of each elytron (reddish orange with two black spots), in combination with the extreme modification at the posterolateral angle of the male elytra. However, in these characters, it is nearly identical to *A. maculatus*, and genitalic examination is sometimes required for confident identification. The aedeagus of *A. nataliae* (fig. 6) has neither a dorsolateral flange in the distal fourth, nor a short dorsal, median carina that extends beyond the distal margin to form a narrow tip; both of these characters are present in *A. maculatus*. The few specimens examined indicate that color pattern may also be diagnostic. Unlike *A. maculatus*, the posterior elytral spot is longer than broad and is convex in all directions. Furthermore, the anterior half of the terminal abdominal sternite is frequently, but not always, pale (entirely dark, or with only the extreme anterior margin pale, in *A. maculatus*).

Description. Form elongate oval. Color dark brown or black, with orange prothorax; each elytron orange with two black spots (fig. 1). Length of male 6.4-7.5 mm; length of female 6.0 mm.

Head black, sometimes with clypeus slightly paler, dark brown. Vertex with distinct mesal impression behind frontal tubercles; surface nearly glabrous, shining. Longitudinal interantennal carina acute. Antennae black or dark brown; antennomere III slightly longer than I, more than twice as long as II, subequal in length with IV; IV longer than V; V-X subequal in length; XI longer than X.

Pronotum orange, minutely, inconspicuously punctate, shining.

Scutellum variable in color, black, testaceous, or bicolored; surface shining, impunctate.

Elytra orange; black or dark brown, discal spot present at basal third, variable in shape, with diameter roughly equal to half width of elytron, well separated from sutural and epipleural margins; black or dark brown discal spot present in posterior third, distinctly larger than more basal spot, round or oval, at least as long as broad, well-separated from sutural, apical, and lateral margins. Male elytra opaque or very feebly shining; large fovea present at posterolateral angle; two small, pubescent tubercles present within fovea, one near posterior margin, one near anterior margin; epipleuron incised at posterolateral angle, abruptly upturned into fovea, not continuing beyond fovea, densely pubescent at upturned apex. Female elytra without obvious modifications, shining.

Prosternum orange, sparsely pubescent. Mesosternum and metasternum dark brown or black. Legs dark brown or black; basitarsi of male not noticeably expanded, similar to those of female. Abdomen yellowish orange; distal half, at least, of terminal segment dark brown.

Aedeagus (fig. 6) nearly straight in lateral view, with three acute, ventral carinae in apical half.

Material examined. Holotype: MEX. Baja Calif., 12 mi. E. El Rosario, III-25-1979, John D. Pinto Collector (male, CASC).

Paratypes: Mexico: Baja California: 3 mi. S. Chapala, III-28-1973, J. Doyen (1 male, CISC); K55 Mex. 1, V-4-62, R. & A. R. Hardy Collr. (1 male, UCRV); Mission Calamyget, E. L. Sleeper, collr. (1 male, 1 female, AJGC); 3 mi. NW Rancho Santa Ynez, III-27-1973, J. Powell collr., *Viguiera lacinata* (1 female, CISC); San Borja Mtns, canyon 25 mi. N. Punta Prieta, IV-2-1973, S. L. Szerlip, *Oenothera* (1 male, 1 female, CISC); ditto except swept from *Encelia* (17 males, 23 females, CISC; 2 males, 2 females, SMCI); S end Diablo Dry Lake, San Felipe Valley, IV-6-1973, J. A. Powell (1 male, CISC). BAJA CALIFORNIA SUR: San Jose del Cabo (1 male, MCZC; 1 female, USNM); San Jose del Cabo, Horn (1 male, MCZC); Cape San Lucas (1 female, INHS).

Comments. Sexual dimorphism in this species is similar to that found in *A. maculatus*. The specific name, *nataliae*, honors my daughter, Natalie Clark.

Androlyperus nigrescens (Schaeffer)

Malacorhinus nigrescens Schaeffer, 1906:248.
Malacamerus nigrescens: Wilcox, 1951:93.
Androlyperus nigrescens: Wilcox, 1965:99.

Diagnosis. Beyond locality (this is the only species of *Androlyperus* known to occur in Utah), the elytral coloration is sufficient to distinguish this from other

species of *Androlyperus* or of related genera of Scelidites. Each elytron is dark brown with orange sutural and lateral margins. In some specimens, the brown area is somewhat paler near the basal third, and each elytron appears to have two weakly separated, dark maculae. The elytra of *A. maculatus* and *A. nataliae* are also orange, each with two dark maculae, but the dark areas are smaller and separated from each other by a considerable distance, often by a distance as great as the diameter of the dark areas.

Description. Form elongate. Color orange with dark brown areas on head, elytra, and ventral surface. Length 5 mm.

Head with vertex, frontal tubercles, and labrum dark brown, and with clypeus pale, yellowish brown. Vertex nearly glabrous, not obviously impressed behind frontal tubercles. Frontal tubercles well delimited behind. Antennae brown; antennomere I stout; II short, less than twice as long as broad; length of III about twice that of II, distinctly less than that of IV; V-X subequal in length, distinctly shorter than IV; XI longer than X.

Pronotum orange, nearly impunctate; surface shining. Scutellum orange.

Elytra finely punctate, dark brown with sutural margin narrowly orange, with lateral margin broadly orange; dark area often interrupted by paler brown or orange near basal third. Posterolateral angle of male with distinct fovea; epipleuron incised and bent abruptly upward into fovea.

Ventral areas of prothorax orange, nearly glabrous; metasternum dark brown. Abdomen, except terminal segment, brownish yellow; terminal segment of male dark brown, with strong impression extending entire length of segment, with rectangular, apical lobe. Legs dark brown or black; middle and hind tibiae with terminal spurs; tarsal claws appendiculate.

Type locality. Utah.

Material examined. U.S.A.: Utah: County unknown: [no specific locality] (holotype male, USNM; 2 other males, 3 females, MCZC, USNM).

Comments. The aedeagus has not been examined. Even so, this species is quite distinct and is not likely to be confused with others.

Terminal spurs are present on the middle and hind tibiae. They were not observed on the front tibiae, but this may be due to the position of the legs.

Acknowledgments

I express my appreciation to the following individuals and institutions that have loaned specimens: Arthur J. Gilbert, personal collection [AJGC]; David H. Kavanaugh, California Academy of Sciences [CASC]; Cheryl B. Barr, University of California, Berkeley [CISC]; John B. Kethley, Field Museum of Natural History [FMNH]; Kathryn C. McGiffen, Illinois Natural History Survey [INHS]; Dr. Baert, Institut Royal des Sciences Naturelles de Belgique [IRSB]; Alfred F. Newton, Jr., Museum of Comparative Zoology [MCZC]; Charles A. Triplehorn, Ohio State University [OSUC]; Saul I. Frommer, University of California, Riverside [UCRV]; Mark F. O'Brien, University of Michigan [UMMZ]; Richard E. White, United States National Museum [USNM]. (The acronyms following the above-mentioned collections have been cited in the preceding text of this paper. My personal collection has been referred to by the acronym SMCI.)

I appreciate Niki Jeffries and Laura T. Miller for their assistance in the preparation of illustrations. Also, I extend special thanks to Charles A. Triplehorn who contributed advice throughout much of this study and to John A. Wilcox who generously shared his expertise of the Galerucinae and who permitted reproduction of his previously published drawing of the abdomen of *A. fulvus*. Charles L. Staines reviewed a draft of the manuscript. Arthur J. Gilbert also reviewed a draft and was particularly helpful, providing reliable distribution records beyond those obtained from the specimens that I had examined. Finally and most importantly, I thank my family that has patiently supported me in my entomological investigations.

References

Allard, E. 1889. Note sur les galérucides, coléoptères phytophages. Comptes-Rendus des Séances de la Société Entomologique Belgique, ser. 3, No. 112, pp. LXVI-LXXXIII.

Arnett, R. H. 1962. The Beetles of the United States (A Manual for Identification), xiii + 1112 pp. Ann Arbor, Michigan.

Blake, D. H. 1942. The chrysomelid beetles *Luperodes bivittatus* (Leconte) and *varicornis* (Leconte) and some allied species. Proceedings of the United States National Museum 92:57-74.

Crotch, G. R. 1873. Materials for the study of the Phytophaga of the United States. Proceedings of

the Academy of Natural Sciences of Philadelphia 25:19-83.

Horn, G. H. 1893. The Galerucini of boreal America. Transactions of the American Entomological Society 20:57-136.

LeConte, J. L. 1884. Short studies of North American Coleoptera (No. 2). Transactions of the American Entomological Society 12:1-32.

LeConte, J. L. and G. H. Horn. 1883. Classification of the Coleoptera of North America. Prepared for the Smithsonian Institution. Smithsonian Miscellaneous Collections 26(4):i-xxxvii, 1-567.

Schaeffer, C. F. A. 1906. On new and known genera and species of the family Chrysomelidae. Science Bulletin of the Museum of the Brooklyn Institute of Arts and Sciences 1(9):221-253.

Wilcox, J. A. 1951. A new species and new genus of Galerucinae (Chrysomelidae: Coleoptera). Ohio Journal of Science 51(2):90-94.

Wilcox, J. A. 1965. A synopsis of the North American Galerucinae (Coleoptera: Chrysomelidae). New