

REVIEW OF THE *CERATOCAPSUS LUTESCENS* GROUP, WITH
DESCRIPTIONS OF SEVEN NEW SPECIES FROM THE
EASTERN UNITED STATES
(HEMIPTERA: MIRIDAE)¹

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Abstract.—The generic boundaries of *Ceratocapsus* are redefined and the species belonging to the *lutescens* group are presented. Of the 23 species treated *blatchleyi*, *knighti* and *pubescens* from Georgia, *cecilsmithi* and *hirsutus* from Georgia and New Jersey, *piceatus* from the eastern U.S., and *wheeleri* from North Carolina are described as new. Lectotypes are designated for *insperatus* Blatchley and *modestus* (Uhler), and a neotype is selected for *adventus* Blatchley. Male genitalia of all species and adults of *pubescens*, *rubricornis*, and *vicinus* are illustrated, and a key to species is provided.

Reuter (1876) erected the genus *Ceratocapsus* for the species *lutescens* from Texas and *punctulatus* from Cuba. Kirkaldy (1906) fixed *lutescens* as the type. Since Reuter's original proposal, numerous species have been described in *Ceratocapsus*, but several species described by other early workers were placed in different genera (e.g., *Trichia* Reuter, 1876, type *punctulatus*; *Dermarata* Distant, 1884, type *villosa*; *Melinna* Uhler, 1887, type *modesta*) and later transferred to *Ceratocapsus*.

The generic boundaries of *Ceratocapsus* as previously understood have been rather broad. After considering the general body form, antennae, structure and surface development of the pronotum and the form of the genital capsule and genitalia, ♂ have determined that the true *Ceratocapsus* are

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much fewer than the present assignment of 67 species would indicate. At least four species groups should have their own generic status.

This paper is the beginning of a revisional study of the *Ceratocapsus*. For this work, I have examined type-material of nearly all the North American species and numerous undetermined specimens from North, Central and South America. In this paper, I am redefining the generic limits of *Ceratocapsus* and reviewing the *lutescens* group, one of 3 distinct species groups that I am retaining in the genus. The species treated in this group are, for the most part, limited to eastern North America. Of the 23 species presented, 7 are described as new, and lectotypes are designated for *insperatus* Blatchley and *modestus* (Uhler). A neotype is selected for *advenus* Blatchley. Male genitalia of all species and adults of *pubescens*, *rubricornis*, and *vicinus* are illustrated; and a key to species is provided.

The following abbreviations are used for institutions cited in this paper: AMNH, American Museum of Natural History, New York; PDA, Pennsylvania Department of Agriculture, Harrisburg; PSU, Pennsylvania State University, University Park; PU, Purdue University, West Lafayette, Indiana; TJH, T. J. Henry collection; UG, University of Georgia, Athens (including the C. L. Smith collection); USNM, U.S. National Museum of Natural History, Washington, D.C. Diameter is abbreviated as diam.

Ceratocapsus Reuter, 1876:87

Type-species: *Ceratocapsus lutescens* Reuter (designated by Kirkaldy, 1906:127).

Description.—Medium-sized mirids, length 3.0–5.8 mm, generally subparallel to broadly oval; dorsum pallid or testaceous to black; impunctate to strongly punctured; pubescence silky or tomentose, simple recumbent, long, erect or pilose. Head much broader than long, base nearly straight, touching anterior margin of pronotum, base of vertex distinctly carinate, eyes granulate (more so in ♂), often pubescent, vertex and front often with weak median groove, front sometimes weakly and transversely striated, surface smooth to finely granulate. Rostrum reaching mesocoxae to just beyond metacoxae. Antennae set into eye emarginations on either side of base of tylus; segment I shortest and thickest; II, longest, about 3× segment I, gradually enlarged apically, apex often approaching diam of I; III and IV subequal, III always slightly longer; clothed with thickly set recumbent setae, sometimes intermixed with or replaced by longer, erect setae. Pronotum trapeziform, base 2× or more width of apex, lateral margin straight, base broadly rounded, anterior margin with narrow, but distinct flattened collar, calli indistinct, at most weakly raised, surface finely granulate to distinctly punctate; mesoscutum narrowly exposed, often not visible from dorsal aspect, scutellum subequilateral, length of base only slightly longer

than sides. Hemelytra well developed, embolium and radial veins distinct, width of cuneus subequal to length, pubescence tomentose (on scutellum, clavus, and corium), simple, recumbent or pilose; membrane well developed with 2 closed cells, surface often finely pubescent. Claws typically orthotylinae with convergent parempodia.

Genital opening large; parameres well developed, often spined and clothed with long, pilose setae; left paramere usually 3-pronged, basal prong usually shortest and straight or curved distally or basally, sometimes apically bifurcate, middle prong longest, curved up or back towards base, apical prong bent distad, often twisted, apex acutely produced, truncate or broadly flared; right paramere stout, usually simple, gradually bent, usually with a basal process, apex and basal process sometimes strongly produced forming a C-shaped structure or basal process single or doubled and extending back and around stouter base; phallosome generally elongate with the apex acutely produced, truncate or bifurcate.

Remarks.—The species I have included in the *lutescens* group are easily distinguished from other *Ceratocapsus* by the impunctate dorsum (sometimes appearing finely punctured or alutaceous), the finely pubescent membrane (thickly clothed with simple microsetae which to the eye appear as a fine scale-like covering) and the male genitalia. The left paramere is 3-pronged; the basal prong is usually short and stout, acutely produced or bifurcate and often armed with short spines; the middle prong is usually the largest and may be curved up or back towards the base; the apical prong is generally long and slender, twisted at the middle and apically truncate. The right paramere is generally short and stout, with the apex curved and often acutely and narrowly produced; the basal process is usually short and blunt, but may be spine-like, bifid or broadly truncate (note: figures of the right paramere are drawn so that the basal process is most visible). The phallosome is slender and acutely produced at the apex; the dorsal subapical edge is often finely serrate.

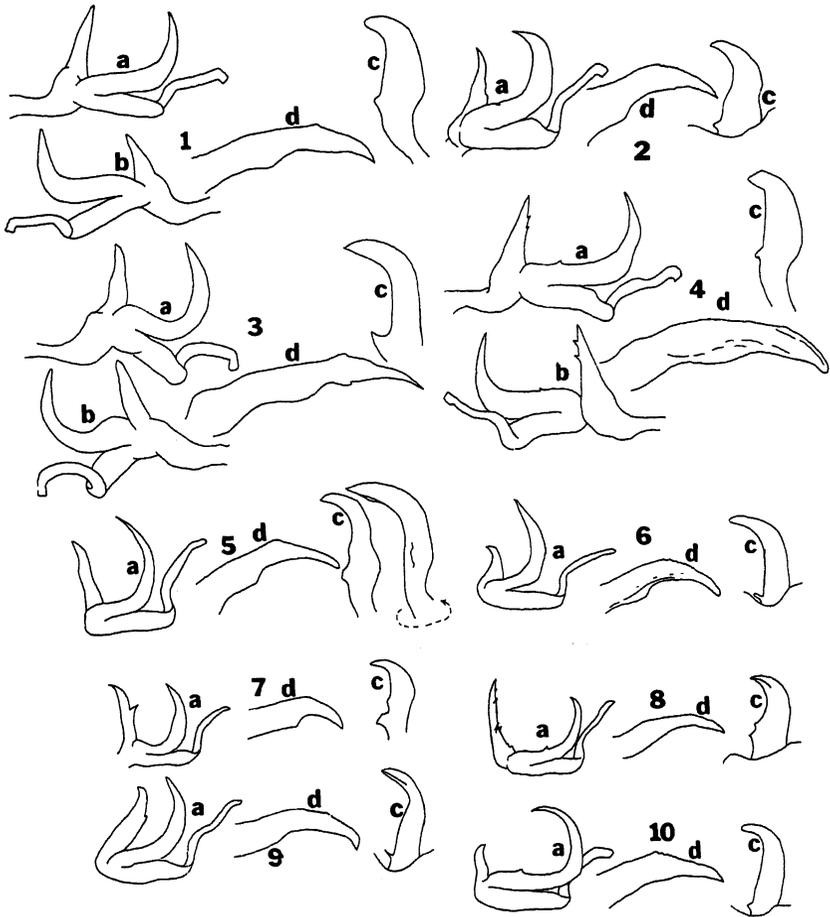
KEY TO SPECIES OF *CERATOCAPSUS LUTESCENS* GROUP²

1. Dorsum clothed with only simple, erect, semierect or pilose setae . . 2
- Clavus and middle of corium clothed with silky or tomentose pubescence intermixed with simple, erect, semierect or pilose setae . 15

² *Ceratocapsus mcateei* Knight (1927:151) is known only from three females and seems to fit into the *C. lutescens* group; however, I can not be totally certain until males are examined. This species is easily separated from all other *Ceratocapsus* by the brown head, darker brown, impunctate pronotum, pale hemelytra, reddish cuneus, the pale testaceous legs with only the metafemora red, the short, sparsely set, simple setae on the dorsum, and the length of the rostrum which reaches the posterior margin or just beyond the metacoxae.

2. Dorsum pale testaceous or off white; head scarlet red, antennae, at least in part, scarlet red 3
 - Dorsum brown, dark brown or black, head sometimes paler, but never distinctly red 5
3. Head and all antennal segments red; setae on hemelytra semierect, few, if any pilose setae (Fig. 26); ♂ genitalia (Fig. 12); host: *Quercus* spp. *rubricornis* Knight
 - Head and only apical ¼ of antennal segment 2 red; setae on hemelytra semierect or largely pilose 4
4. Dorsum very pale, testaceous or off white; hemelytra distinctly and uniformly pilose; ♂ genitalia (Fig. 11); host: probably *Quercus* spp. *bifurcus* Knight
 - Dorsum more testaceous; hemelytra not distinctly pilose, setae shorter, more semierect; ♂ genitalia (Fig. 14); host: probably *Quercus* spp. *lutescens* Reuter
5. Hemelytra and pronotum thickly pubescent, setae sometimes giving a woolly appearance; eyes distinctly pubescent (Fig. 27) 6
 - Pronotum nearly glabrous, hemelytra sparsely set with pilose setae and/or short, recumbent setae; eyes, at most, with only a few extremely short setae 8
6. Strongly pubescent, setae on eyes subequal to length of setae on front and tylus (Fig. 27a); appendages thickly pilose, setae on 2nd antennal segment and tibiae longer than diam of segment (Fig. 24), tibial spines obscured by pilosity; ♂ genitalia (Fig. 3); host: probably *Pinus* spp. *pubescens*, new species
 - Setae on eyes much shorter than setae on front or tylus; appendages pubescent, but not pilose, setae never longer than diam of segments, tibial spines not obscured by pilosity 7
7. Uniform yellow brown, clothed with semierect, golden pubescence; antennal segments pale or testaceous; eyes bearing only short setae (Fig. 27c); ♂ genitalia (Fig. 6); host: *Pinus rigida* *cecilsmithi*, new species
 - Fuscous, clavus and corium more brown, thickly clothed with semi-erect and erect, brown pubescence; antennal segments brown; eyes with rather long setae (Fig. 27b); ♂ genitalia (Fig. 5); host: *Pinus virginiana* *barbatus* Knight
8. Hemelytra clothed with only short, sparsely set, recumbent setae, scutellum occasionally bearing a few pilose setae 9
 - Hemelytra and scutellum clothed with pilose setae, intermixed with short, recumbent setae 12
9. Length 4.4 mm, width 1.7 mm; yellow brown, some specimens approaching black, but with head, base of pronotum and apex of scutellum, clavus and base of corium paler; 2nd antennal segment

- distinctly longer than basal width of pronotum; ♂ genitalia (Fig. 1); host: *Quercus* and *Vitis* *modestus* (Uhler)
- Length less than 4.0 mm or general color uniformly dark brown to fuscous; 2nd antennal segment subequal to or shorter than basal width of pronotum 10
10. Length 4.0–4.4 mm; color very dark brown to nearly black, especially on pronotum, cuneus frequently fusco-reddish; length of 2nd antennal segment subequal to basal width of pronotum; ♂ genitalia (Fig. 23); host: *Quercus* spp. *wheeleri*, new species
- Length 3.3–3.7 mm; hemelytra with paler brown or reddish-brown areas, especially on clavus; cuneus generally fuscous; length of 2nd antennal segment less than basal width of pronotum 11
11. Length 3.4–3.7 mm; hemelytra sparsely clothed with very short, recumbent setae; antennae pale or testaceous with 3rd and 4th and apical 3rd of 2nd segment reddish; length of 1st segment distinctly greater than width of vertex; ♂ genitalia (Fig. 8); host: unknown
- *blatchleyi*, new species
 - Length slightly smaller, 3.3 mm; hemelytra rather thickly clothed with recumbent and a few semierect setae; antennae testaceous or brown; length of 1st segment subequal to width of vertex; ♂ genitalia (Fig. 22); host: unknown *knighti*, new species
12. Large, slender species, length 5.8 mm, width 2.0 mm; hemelytra and, sometimes pronotal disc, set with pilose setae; 2nd antennal segment fuscous or black, clothed with fine, short, recumbent setae; ♂ genitalia (Fig. 4); taken on *Platanus* *spinus* Henry
- Smaller species, not over 5.0 mm; genitalia not as in Fig. 4 13
13. Antennae yellow, thickly clothed with erect, pale setae; ♂ genitalia (Fig. 15); host: unknown *seticornis* Knight
- Antennae reddish brown or fuscous, thickly clothed with short, recumbent setae 14
14. General color usually brown or chestnut; right paramere slender, basal process spinelike, basal prong of left paramere apically curved and bent in towards middle prong (Fig. 9); host: unknown
- *insperatus* Blatchley
 - General color largely fuscous or black, especially pronotum, scutellum, cuneus and abdomen; right paramere and basal process stoutly produced, basal prong of left paramere straight and erect, not leaning towards middle prong (Fig. 2); host: numerous deciduous trees, including *Alnus* and *Quercus* *piceatus*, new species
15. Dorsum clothed with pilose setae 16
- Dorsum with only shorter, more recumbent setae 19
16. Appendages dark brown or reddish brown 17
- Appendages yellowish or pale testaceous 18



Figs. 1-10. Male genitalia of *Ceratocapsus*; a, left paramere, lateral view; b, left paramere inside lateral view; c, right paramere, lateral view; d, phallosome, lateral view. 1, *modestus*. 2, *piceatus*. 3, *pubescens*. 4, *spinosus*. 5, *barbatus*. 6, *cecilsmithi*. 7, *advenus*. 8, *blatchleyi*. 9, *insperatus*. 10, *husseyi*.

- 17. Pronotum, scutellum and cuneus brown or reddish brown; venter reddish brown, 3rd and 4th antennal segments thickened, subequal to diam of 1st segment; ♂ genitalia (Fig. 7); host: probably *Pinus* spp.
 *advenus* Blatchley
- Pronotum, scutellum and cuneus fuscous or black, venter mostly fuscous to black; 3rd and 4th antennal segments slender, not equal to diam of 1st segment; ♂ genitalia (Fig. 21); host: unknown
 *hirsutus*, new species

18. Second antennal segment yellowish or testaceous, apex fuscous; ♂ genitalia (Fig. 10); host: *Prunus* *husseyi* Knight
 – Second antennal segment uniformly yellowish or testaceous; ♂ genitalia (Fig. 16); taken on *Quercus* *sericus* Knight
19. Length 4.5 mm or more, general color fuscous to black, head often paler with a reddish tinge; antennae dark reddish brown to fuscous; ♂ genitalia (Fig. 13); host: *Carya* *nigellus* Knight
 – Length not over 4.0 mm, color yellowish or reddish brown to orange red; antennae mostly pale or testaceous 20
20. Dorsum reddish brown, cuneus and apical ½ of corium dark brown or fuscous (Fig. 25), venter reddish brown, abdomen fuscous or black; membrane pale, apical ½ infuscated; 2nd antennal segment uniformly yellowish, segments 3 and 4 reddish; ♂ genitalia (Fig. 19); host: *Quercus* *vicinus* Knight
 – Dorsum yellowish brown, reddish or orange red; abdomen never fuscous, apex of 2nd antennal segment pale, red or fuscous 21
21. Dorsum yellow brown, legs testaceous; 2nd antennal segment testaceous, apex brown to reddish brown, segments 3 and 4 red to reddish brown; ♂ genitalia (Fig. 17); host: *Picea* and *Pinus*
 *luteus* Knight
 – Dorsum reddish or reddish orange, appendages light yellowish 22
22. Dorsum bright orange to orange red, length 3.4 mm; apex of 2nd antennal segment, apical ½ of 3rd and all of 4th reddish; ♂ genitalia (Fig. 18); host: unknown *aurantiacus* Henry
 – Dorsum reddish to light brownish red, length 3.1 mm or less; all antennal segments, except reddish 4th, uniform light yellow; ♂ genitalia (Fig. 20); host: *Taxodium distichum* *taxodii* Knight

Ceratocapsus advenus Blatchley, 1926:823

Fig. 7

Ceratocapsus advenus was described from Dunedin, Florida where it was taken on branches of a recently felled pine and apparently from a specimen from Crescent City, Florida. I have examined single males from Highlands Co. at Sebring, VIII-10-1930, C. T. Parsons coll. (AMNH) and the Archbold Biological Station, May 1, 1977, B. Stinner coll., at BLT (PDA).

Neither the specimen from Dunedin or Crescent City could be located in the Purdue University collection. Because *C. advenus* is known from only two specimens and they are apparently lost, I am designating the above American Museum specimen from Sebring as a NEOTYPE to preserve Blatchley's concept of this species.

Blatchley (1926) suggested this species was related to *C. nigrocephalus* Knight, but I have studied the type of *C. nigrocephalus* and have found that the two species are considerably different, both in general body form and

male genitalia. *Ceratocapsus advenus* more closely resembles *C. modestus* or *C. insperatus*, but can be separated by the combination of tomentose and pilose setae and the male genitalia.

Ceratocapsus aurantiacus Henry, 1978:385

Fig. 18

This species is known only from the Archbold Biological Station, Highlands Co., Florida where it was taken at light traps, May 3–5, 1967 by S. W. Frost (PSU). *Ceratocapsus aurantiacus* resembles *C. taxodii* but can be separated by the larger size, brighter orange color and male genitalia.

Ceratocapsus barbatus Knight, 1927:150

Figs. 5, 27b

Ceratocapsus barbatus was described from the District of Columbia, Maryland, and Virginia and is known to breed on *Pinus virginiana*. Wheeler and Henry (1975) showed that Uhler's (1887) description of *Melinna modesta* was actually of *C. barbatus* (see discussion under *C. modestus*). Wheeler and Henry (1977) pointed out that several of the specimens from pine recorded by Wirtner as *Melinna modesta* Uhler were actually *C. barbatus*.

Ceratocapsus barbatus resembles *C. cecilsmithi* and *C. pubescens* but is easily separated by the intermediate-type pubescence and coloration and the male genitalia.

Ceratocapsus bifurcus Knight, 1927:144

Fig. 11

Ceratocapsus bifurcus is known only from Florida. I have examined numerous specimens collected at Highlands Co., Archbold Biological Station, May 5, 1977, B. Stinner, at light (PDA, TJH). I have studied the *Ceratocapsus* Frost (1964) listed as *C. lutescens* and find them to be *C. bifurcus*; Blatchley's (1926) record of *C. lutescens* from Florida probably also refers to *C. bifurcus*.

This species is most closely related to *C. lutescens* and *C. rubricornis* but can be separated from these species by the paler, almost whitish dorsum, pilose setae on the hemelytra, and by the male genitalia.

Ceratocapsus blatchleyi Henry, NEW SPECIES

Fig. 8

Holotype male.—Length 3.36 mm, width 1.40 mm, generally dark brown to fuscous with very short recumbent setae. *Head*: Length 0.40 mm, width 0.80 mm, rufotestaceous, tinged with fuscous, front finely granulate, weakly and transversely striate; vertex 0.24 mm, dorsal width of eye 0.28 mm. *Rostrum*: Length 1.34 mm, brown, reaching middle of metacoxae.

Antennae: Pale or testaceous, 3rd and 4th and apical 3rd of 2nd segment reddish; I, length 0.34 mm, II, 1.08 mm; III, 0.54 mm; IV, 0.50 mm. *Pronotum*: Length 0.68 mm, width at base 1.18 mm, fuscous, lighter brown along posterior margin, surface finely granulate; mesoscutum not visible from dorsal aspect, scutellum black, brown at apex, transversely rugose. *Hemelytra*: Fuscous to black, clavus and basal area of corium more brown to reddish brown; membrane smoky translucent to fumate, paler along cuneal border. *Venter*: Shiny, fuscous to black, genital segment more brown, ostiolar peritreme reddish brown, abdomen with rather short, semierect setae, those on genital segment longer. *Legs*: Testaceous, coxae tinged with red, hind tibiae reddish brown. *Genitalia*: See Fig. 8.

Female.—Unknown.

Types.—*Holotype*: ♂, Georgia, Clarke Co., Stonehenge 5/IX/1973, C. L. Smith, at light (USNM type no. 75741). *Paratype*: ♂, New Jersey, Cape May Co., 1 mi W of Rio Grande, 11–18/VII/1976, C. L. Smith at black light trap (UG).

Remarks.—*Ceratocapsus blatchleyi* is similar to a smaller *C. modestus* but is easily separated by the small size, pale red-tinged antennae, and distinctive left paramere. It also resembles *C. hirsutus* and *C. knighti* in general size and color but is easily separated by the short, recumbent setae on the dorsum and the long, slender, spined basal prong of the left paramere. The paratype from New Jersey closely resembles the Georgia holotype in all respects, except for the absence of the stout spine on the dorsal margin of the middle prong on the left paramere.

I have named this species after W. S. Blatchley whose efforts on the *Heteroptera of Eastern North America* (1926) greatly helped students of hemipterology.

Ceratocapsus cecilsmithi Henry, NEW SPECIES

Figs. 6, 27c

Holotype male.—Length 4.20 mm, width 1.80 mm. Generally uniform yellowish brown, head slightly more reddish; clothed with short, recumbent, pale pubescence. *Head*: Length 0.40 mm, width 0.86 mm, rufotestaceous, front transversely striated, striae weakly raised, tinged with red; vertex 0.32 mm; dorsal width of eye 0.28 mm. *Rostrum*: Length 1.38 mm, reaching posterior margin of mesocoxae, testaceous, apical segment fuscous. *Antennae*: Testaceous; I, length 0.38 mm, II, 1.24 mm, slender, slightly enlarged to apex, clothed with semierect, pale setae; III, 0.58 mm, brown; IV, 0.48 mm, brown. *Pronotum*: Length 0.78 mm, width at base 1.44 mm, surface shallowly roughened, not distinctly punctured; calli vaguely raised, surface more grainy than disc; clothed with semierect, pale pubescence; mesoscutum visible only at lateral angles (from dorsal aspect); scutellum uniformly yellow brown, rugose, clothed with pale, semierect setae. *Hemelytra*: Uni-

form yellow brown, closely set with semierect, pale setae; membrane smoky brown, veins indistinct, colored as membrane. *Venter*: Shiny yellow brown, abdomen strongly tinged with red; mesopleura with a glaucous bloom; abdomen sparsely set with pale, semierect setae, these longer on genital segment. *Legs*: Yellowish brown or testaceous. *Genitalia*: See Fig. 6, similar to *C. barbatus* in general form but differing in the shorter, curved basal prong of the left paramere.

Allotype female.—Length 4.08 mm, width 1.88 mm. *Head*: Length 0.38 mm, width 0.84 mm, vertex 0.38 mm, dorsal width of eye 0.24 mm. *Rostrum*: Length 1.40 mm, reaching posterior margin of mesocoxae. *Antennae*: I, 0.36 mm; II, 1.26 mm; III, 0.60 mm; IV, 0.48 mm. *Pronotum*: Length 0.78 mm, width at base 1.40 mm.

The female is very similar to the male in coloration and pubescence, but is more broadly formed.

Types.—*Holotype*: ♂, Georgia, Madison Co., 1 mi NW of Hull, 16/VI/1971, at light, C. L. Smith coll. (USNM type no. 75738). *Allotype*: ♀, same locality as holotype, 23/VI/1971 (USNM). *Paratypes*: 9 ♂, 5 ♀, same locality as holotype, 16–23/VI/1971 (UG, USNM, TJH); 1 ♂, 2 ♀ (reared), New Jersey, Atlantic Co., nr. New Gretna, June 13, 1977, taken on *Pinus rigida*, T. J. Henry and A. G. Wheeler, Jr. coll. (TJH, PDA); 1 ♀, Lakehurst, New Jersey, July 4, 1909, C. E. Olsen (AMNH).

Remarks.—In color, *C. cecilsmithi* resembles a larger, broader *C. luteus* without tomentose pubescence; in vestiture, it is most similar to *C. barbatus* and *C. pubescens* but has shorter setae.

I have dedicated this species to Cecil L. Smith (UG) who has provided me with many interesting mirids, including this species and representatives of several other new species used in this study.

Ceratopsus hirsutus Henry, NEW SPECIES

Fig. 21

Holotype male.—Length 3.48 mm, width 1.48 mm, dark brown, clothed with long, erect setae. *Head*: Length 0.40 mm, width 0.78 mm, brown, undersurface paler, tinged with red, front clothed with several long, erect setae; vertex 0.30 mm, dorsal width of eye 0.24 mm. *Rostrum*: Length 1.24 mm, reddish brown, apical segment brown, nearly reaching apex of metacoxae. *Antennae*: Brownish, apex of 2nd, 3rd, and 4th segments reddish brown; I, 0.34 mm; II, 1.12 mm; III, 0.58 mm; IV, 0.50 mm. *Pronotum*: Length 0.66 mm, width at base 1.20 mm, shiny fuscous to black, clothed with pilose brown setae; mesoscutum not visible from dorsal aspect, scutellum fuscous, pale apically, transversely rugose. *Hemelytra*: Dark brown, cuneus more fuscous, clothed with very short, tomentose setae, especially along margin of scutellum and clavus, intermixed with long, erect, brown setae; membrane black or fumate, pale along cuneal border. *Ven-*

ter: Shiny, fuscous to dark reddish brown, abdomen clothed with long, semierect setae. *Legs*: Testaceous, tinged with reddish, tibiae darker reddish brown. *Genitalia*: See Fig. 21.

Allotype female.—Length 3.60 mm, width 1.56 mm. *Head*: Length 0.36 mm, width 0.76 mm, vertex 0.34 mm, dorsal width of eye 0.20 mm. *Rostrum*: Length 1.28 mm, reaching middle of metacoxae. *Antennae*: I, 0.34 mm; II, 1.14 mm; III, 0.64 mm; IV, broken. *Pronotum*: Length 0.60 mm, width at base 1.20 mm. Very similar to males in color and pubescence.

Types.—*Holotype*: ♂, Georgia, Oconee Co., Durham Farm, 20/VII/1971, C. L. Smith, at light trap (USNM type no. 75837). *Allotype*: ♀, Georgia, Clarke Co., 5 mi W of Athens, 7–13/VIII/1977, C. L. Smith at light (USNM). *Paratype*: ♀, Georgia, Clarke Co., Whitehall Forest, 5–10/VII/1975, R. Turnbow, black light trap (UG).

Remarks.—*Ceratocapsus hirsutus* can be separated from other *Ceratocapsus* by the dark color, small size, brown to reddish-brown antennae, the long pilose setae on the dorsum sparsely intermixed with tomentose pubescence and by the male genitalia.

Ceratocapsus husseyi Knight, 1930:196

Fig. 10

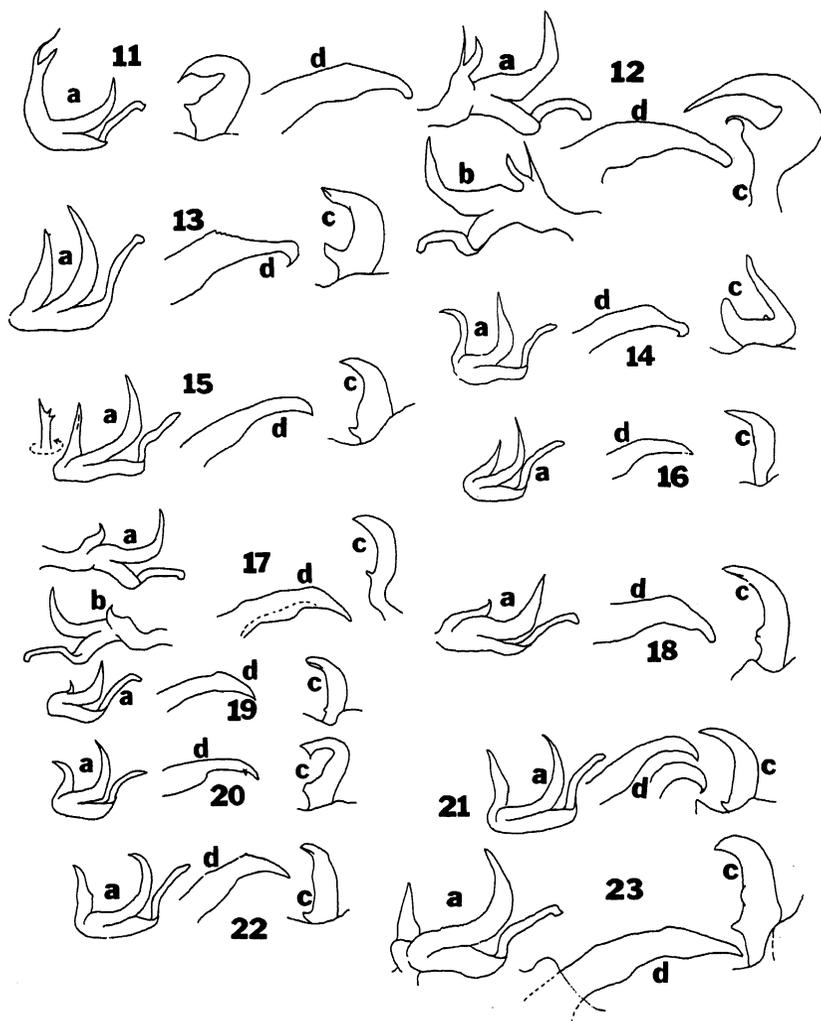
The single male from Michigan that Knight used to describe *husseyi* was first described as the male (allotype) of *C. sericus* (Knight, 1923). Knight (1941) later reported *C. husseyi* from Illinois. I have one male from Pennsylvania collected in Cambria Co. on *Prunus* sp., July 24, 1975 by A. G. Wheeler, Jr. and 9 males and 1 female and nymphs from Butler Co., on a plum, *Prunus* sp., July 13, 1978 by A. G. Wheeler, Jr. (PDA). I also have 6 specimens from Clinton, Cumberland, and Indiana counties taken in August and September on *Pinus* sp. and 6 specimens from Patton, Cambria Co., taken (by M. Wirtner) July 22 on pine.

The male genitalia provide the most reliable way to separate *C. husseyi* from *C. sericus*. The basal prong of the left paramere is short and sharply curved in towards the middle prong. Knight suggested that *C. husseyi* could also be separated from *C. sericus* by the apically infuscated 2nd antennal segment; this specific character is also present on all the Pennsylvania specimens.

Ceratocapsus insperatus Blatchley, 1928:12

Fig. 9

Ceratocapsus insperatus was described from 2 males taken at Dunedin, Florida; only one specimen is in the Blatchley collection at Purdue University. Since Blatchley did not designate a type for *insperatus* and because only a single Blatchley specimen remains, I am designating this single male as the LECTOTYPE of *insperatus*; it is labeled: "Dunedin, Fla., W.S.B.



Figs. 11-23. Male genitalia of *Ceratocapsus*; a, left paramere, lateral view; b, left paramere inside lateral view; c, right paramere, lateral view; d, phallosome, lateral view. 11, *bifurcus*. 12, *rubricornis*. 13, *nigellus*. 14, *lutescens*. 15, *seticornis*. 16, *sericus*. 17, *luteus*. 18, *aurantiacus*. 19, *vicinus*. 20, *taxodii*. 21, *hirsutus*. 22, *knighti*. 23, *wheeleri*.

coll., 3-18-25"; "Purdue Blatchley collection"; "Lectotype: *Ceratocapsus insperatus* Blatchley, Det. T. J. Henry 1978" (red label). Blatchley (1928) noted his Florida record for *C. modestus* (Blatchley, 1926) refers to this species. I have one additional male taken in Highlands Co. at the Archbold

Biological Station, 10 mi south of Lake Placid, March 30, 1969 at U-V light by A. G. Wheeler, Jr. (PDA) and 5 males from Madison and Clarke counties, Georgia taken from June 1, 1971 to May 3, 1975 at lights by C. L. Smith (PDA, TJH, UG).

Ceratopsus insperatus resembles *C. advenus* and *C. hirsutus* in general color and body form but can be separated by the larger size, by the lack of tomentose pubescence on the dorsum, and by the male genitalia. Blatchley (1928) noted that *C. insperatus* resembled *C. modestus* and would run to couplet "e" in his key for group I of *Ceratopsus* (Blatchley, 1926:821). This species keys out with *C. piceatus* but can be distinguished by the lighter brown color, by the longer, pilose setae on the dorsum, and by the male genitalia.

Ceratopsus knighti Henry, NEW SPECIES

Fig. 22

Holotype male.—Length 3.28 mm, width 1.36 mm, general color dark brown, appendages paler. *Head*: Length 0.30 mm, width 0.82 mm, reddish brown, vertex 0.30 mm, dorsal width of eye 0.26 mm. *Rostrum*: Length 1.20 mm, brownish, 1st segment reddish brown, apical segment fuscous, reaching middle of metacoxae. *Antennae*: Brown, 1st segment paler, thickly set with recumbent brown setae; I, length 0.30 mm; II, 0.92 mm; III, 0.48 mm; IV, 0.40 mm. *Pronotum*: Length 0.62 mm, width at base 1.14 mm, shiny, dark brown or fuscous, very finely punctate, sparsely clothed with recumbent brown setae; mesoscutum (only lateral angles visible from dorsal aspect) and scutellum dark brown, setae short, recumbent. *Hemelytra*: Dark brown (but lighter than pronotum), embolium and clavus sometimes paler, cuneus fuscous; thickly clothed with recumbent brown setae, especially on clavus and middle of corium; membrane fumate, transparent along border of cuneus. *Venter*: Shiny reddish brown. *Legs*: Testaceous, apex of hind femora and tibiae sometimes tinged with red. *Genitalia*: See Fig. 22.

Allotype female.—Length 3.40 mm, width 1.52 mm. *Head*: Length 0.34 mm, width 0.78 mm, vertex 0.34 mm, dorsal width of eye 0.22 mm. *Rostrum*: Length 1.20 mm, reaching middle of metacoxae. *Antennae*: I, 0.28 mm; II, 0.92 mm; III, 0.48 mm; IV, 0.40 mm. *Pronotum*: Length 0.64 mm, width at base 1.22 mm. The female is very similar to males in pubescence and color and differs mainly in the broader form.

Types.—*Holotype*: ♂, Georgia, Clarke Co., Stonehenge, 8–14/VIII/1975, C. L. Smith at light (USNM type no. 75838). *Allotype*: ♀, Georgia, Oconee Co., Durham Farm, 15/VII/1971, C. L. Smith, at light (USNM). *Paratypes*: 4 ♂, Georgia, Clarke Co., Stonehenge, 27–28/VIII/1973, 8–14/VII/1974, 1–7/VIII/1975, C.L.S., at light (PDA, TJH, UG).

Remarks.—*Ceratocapsus knighti* can be separated from other *Ceratocapsus* by its small size, by the dark brown dorsum clothed with recumbent brown setae, by the testaceous legs, and by the male genitalia.

I have named this species in honor of the late H. H. Knight, a man who had a remarkable perception of mirid taxonomy and whose many fine contributions to miridology clearly made him North America's greatest mirid specialist.

Ceratocapsus lutescens Reuter, 1876:87

Fig. 14

Ceratocapsus lutescens was originally described from Texas. Since then it has been recorded from Florida to Kansas and north to New York and Wisconsin, but these records may be based on misidentifications of *C. bifurcus* and *C. rubricornis*. All the specimens I have examined from the east are *C. rubricornis* and those from Florida are *C. bifurcus*.

I have examined the holotypes of *C. bifurcus* and *C. rubricornis* and 2 specimens of *C. lutescens* from Texas (determined as *C. lutescens* by Knight). *Ceratocapsus lutescens* can be separated from *C. rubricornis* by the partially (rather than totally) red antennae and from *C. bifurcus* by the short, semierect (rather than pilose) setae on the dorsum. The male genitalia are distinct for each species.

Ceratocapsus luteus Knight, 1923:527

Fig. 17

Ceratocapsus luteus was originally described from New York and West Virginia and later reported from Ohio (Watson, 1928) and Illinois (Knight, 1941). This species is common throughout Pennsylvania on both *Pinus* spp. (mostly *sylvestris*) and *Picea* spp. (mostly *abies*).

Although Knight (1923) suggested *C. luteus* resembled *C. lutescens*, it now can be more closely associated with *C. cecilsmithi*. It can be separated from both species by the smaller, more slender form, uniform yellow-brown color, tomentose pubescence, and distinctive male genitalia.

Ceratocapsus modestus (Uhler), 1887:69

Fig. 1

There has been considerable confusion over the identify of *C. modestus*. Uhler clearly noted that the species he was describing was common on pine trees. Blatchley (1926) noticed a problem when he noted that Uhler's description of the pronotum as being "coarsely unevenly punctate" did not agree with specimens Knight had determined as *C. modestus*. Knight, possibly not aware of the *C. modestus* problem, apparently based his concept of *C. modestus* on the single female in the USNM type collection and not on Uhler's description. Wheeler and Henry (1975) have shown that Uhler's

original description was actually of the species Knight described as *C. barbatus*. Although Uhler did not make holotype selections, someone (most likely Heidemann) selected a specimen from Uhler's mixed "type series" to represent *C. modestus*. This specimen has served to form the concept Knight and subsequent hemipterists have had of *C. modestus*. Since I could not find a better specimen of *C. modestus* from the Uhler collection and to preserve this accepted thinking, I am designating the following specimen as the LECTOTYPE. Lectotype female in USNM type collection with labels: "PR Uhler collection"; *Megacoelum modestum* Uhler"; "*Megacoelum modestum* Uhler, Det. Uhler"; "Lectotype: *Ceratocapsus modestus* (Uhler), ♂, USNM type no. 75742" (red label).

Ceratocapsus modestus is known from most of eastern North America (see Carvalho, 1958) and breeds mainly on *Quercus* spp. and *Vitis* sp. This species may be separated from other *Ceratocapsus* by the lack of pilose or tomentose pubescence on the hemelytra, the overall yellowish-brown color with the more fuscous pronotum, scutellum and apical portion of the hemelytra, and the male genitalia.

Knight (1941) mentioned that some specimens bear a few pilose setae on the clavus and corium. I have examined several hundred specimens (including freshly reared and collected specimens) and none has this type pubescence (rarely some may have a few erect, but not long, setae on the clavus). However, the dark form of *C. modestus* that Knight (1923) refers to when describing *C. nigellus*, in most cases is *C. piceatus*, a species that has long, erect setae on the clavus and corium. Knight probably confused *C. modestus* with this dark, pilose species.

Ceratocapsus nigellus Knight, 1923:528

Fig. 13

Ceratocapsus nigellus was described from Georgia, Maryland, Minnesota, North Carolina, New Jersey, and New York on *Carya* sp. and later reported from Ohio (Watson, 1928) and Illinois (Knight, 1941). I have also examined specimens from Indiana (PU), Iowa (TJH), Massachusetts and Virginia (AMNH). In Pennsylvania, this species is also occasionally found on *Quercus* spp. The *Ceratocapsus* sp. listed by Wheeler and Henry (1977:155) from Patton, Pa. (July) is *C. nigellus*.

This species resembles *C. piceatus* and darker forms of *C. modestus* but can be separated by the fuscous to black dorsum and paler red-tinged head, the thickly set tomentose pubescence, and the male genitalia.

Ceratocapsus piceatus Henry, NEW SPECIES

Fig. 2

Holotype male.—Length 4.48 mm, width 1.72 mm. Generally fuscous to black; clothed with brown, pilose setae. *Head*: Length 0.44 mm, width

0.84 mm; vertex 0.32 mm; dorsal width of eye 0.26 mm; fuscous, nearly black, jugum more brownish; middle of front vaguely impressed, base distinctly carinate, surface finely granulate. *Rostrum*: Length 1.52 mm, reaching apices of mesocoxae, brown to fuscous. *Antennae*: I, length 0.50 mm, testaceous, invaded by fuscous; II, 1.46 mm, dark, reddish brown, gradually enlarged to apex, finely clothed with short, recumbent setae; III, 0.92 mm, reddish brown; IV, 0.60 mm, reddish brown. *Pronotum*: Length 0.90 mm, width at base 1.44 mm, black, surface finely granulate; calli barely raised, roughened; collar flattened, shiny; lateral margins straight, base gently rounded; mesoscutum black, hardly visible from dorsal aspect; scutellum black, apex brown, transversely rugose. *Hemelytra*: Fuscous, cuneus black, clavus lighter brown; sparsely set with very short, recumbent brown setae; clavus, inside $\frac{1}{3}$ of corium and inside margin of paracuneus set with brown, pilose setae; membrane fumate or smoky brown, veins similarly colored. *Venter*: Fuscous to black, abdomen sparsely clothed with short, recumbent brown setae, these longer near genital segment; mesopleura with a glaucous sheen. *Legs*: Dark brown or fuscous, tibiae darker, metacoxae with a glaucous sheen, sparsely clothed with short, brownish setae, apical $\frac{1}{4}$ of protibiae thickly pubescent beneath. *Genitalia*: See Fig. 2.

Allotype female.—Length 4.56 mm, width 1.80 mm, similar to male in color and pubescence. *Head*: Width 0.84 mm, vertex 0.36 mm, dorsal width of eye 0.24 mm. *Rostrum*: Length 1.64 mm, reaching hind coxae. *Antennae*: I, length 0.48 mm; II, 1.56 mm; III, 0.70 mm; IV, 0.66 mm. *Pronotum*: Length 0.84 mm, width at base 1.44 mm.

Types.—*Holotype*: ♂, Pennsylvania, Erie Co., Presque Isle, 27 July 1978 A. G. Wheeler, Jr. coll., on *Alnus rugosa* (USNM type no. 75739). *Allotype*: ♀, same data as holotype (USNM). *Paratypes*: (sex?), District of Columbia, July 21, N. Banks (AMNH); 1 ♂, Georgia, Madison Co., 1 mi NW of Hull, 23/VI/1971, at light, C. L. Smith (UG); 1 ♀, Massachusetts, Wareham, July 20–31, 1898, O'Bangs (AMNH); 6 ♂, New Jersey, Cape May Co., 1 mi W of Rio Grande, 11–18/VII/1976, black light trap, C. L. Smith (UG, TJH); 1 ♀, New York, Ft. Montgomery, Aug. 6, 1923, F. M. Schott (det. as *modestus* by Knight) (AMNH); 1 ♀, New York, Tompkins Co., Ithaca, Cornell Campus, 20 Aug. 1978, A. G. Wheeler, Jr. coll., on *Gleditsia triacanthos* (PDA); 1 ♂, 2 ♀, Pennsylvania, Northampton Co., Hellertown, Christ Luterhan Cemetery, Aug. 9, 1973, on *Liriodendron tulipifera* (PDA); 1 ♀, Pennsylvania, Erie Co., I 90 & Rt. 19, 25 July 1978, A.G.W. coll., on *Populus tremuloides* (PDA); 2 ♂, Pennsylvania, Erie Co., Fairview, July 31, 1975, July 26, 1978, H. Wolff, A. G. Wheeler, Jr., on *Quercus palustris* and *Betula pendula* (PDA).

Remarks.—*Ceratopsus piceatus* has been somewhat of an enigma and, in many cases, is what Knight considered the dark variety of *C. modestus*,

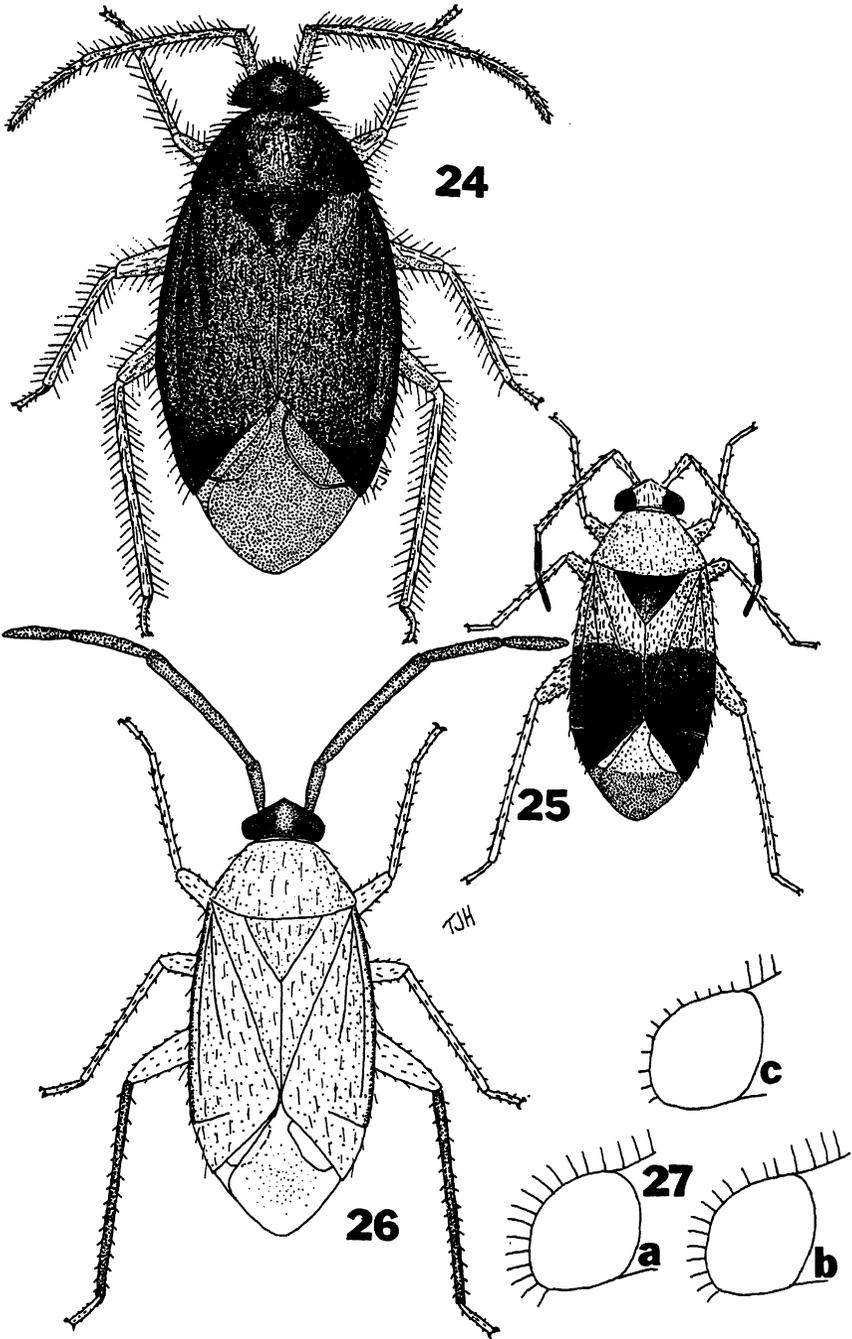
but is clearly separated from *C. modestus* by the presence of pilose setae on the hemelytra and to a lesser extent by the male genitalia. This new species is very similar to *C. insperatus* and may be difficult to separate. The characters of *C. piceatus* most useful for distinguishing it from *C. insperatus* are the stoutly formed right paramere (rather than very slender), the erect basal prong of the left paramere (rather than curved in towards the middle prong and apically curved with a subapical spine), and the nearly black color frequently found on the head, pronotum, cuneus, and abdomen (rather than dark brown or chestnut coloration).

I also have material of what may be *C. piceatus* from Indiana, Michigan, and Minnesota; but I hesitate in including them as paratypes because I suspect there are several other undescribed species involved in this difficult complex of species. More careful collecting of host data and biological observations may be needed to fully clarify the relationship of these dark, pilose mirids.

Ceratopsus pubescens Henry, NEW SPECIES

Figs. 3, 24, 27a

Holotype male.—Length 5.00 mm, width 2.04 mm. Generally fuscous with testaceous appendages; strongly pubescent. *Head*: Length 0.50 mm, width 0.92 mm, dark brown, somewhat lighter than pronotum, base distinctly carinate, front weakly depressed and roughened; vertex 0.34 mm; dorsal width of eye 0.28 mm, reddish. *Rostrum*: Length 1.68 mm, reaching middle of metacoxae, testaceous to brown, basal segment reddish. *Antennae*: Testaceous; thickly clothed with erect, pale setae; segment I, length 0.50 mm; II, 1.64 mm, gradually thickened to apex, clothed with erect, pale setae 1.5–2.0 × diam of segment; III, 0.64 mm, red tinged; IV, 0.56 mm, red tinged. *Pronotum*: Length 0.88 mm, width at base 1.56 mm, shiny fuscous, basal area more brown, calli weakly raised and roughened, disc indistinctly punctured; lateral margins straight, base softly rounded; clothed with erect, pale to brownish pubescence, especially around margins; scutellum dark brown, apex paler, clothed with erect, pale setae, transversely rugose. *Hemelytra*: Dark brown, somewhat lighter brown around apex of clavus and adjacent area of corium, cuneus approaching fuscous; thickly clothed with erect, pale setae; membrane fumate, veins similarly colored, small areole indistinct. *Venter*: Dark brown to reddish brown; pleura more fuscous, sternum and abdomen reddish brown, metapleura with a glaucous sheen. *Legs*: Uniformly testaceous, meso- and metatibiae darker brown, especially on basal ½, clothed with pale, pilose setae, tibial spines masked by thickly set pilose setae longer than diam of segment. *Genitalia*: See Fig. 3, typical of genus; left paramere, basal prong stout, apex recurved, middle prong long, slender, and recurved towards base, distal prong curved around and away from base, apex truncate, bent down; right paramere,



elongate, stouter at base, gently curved forward on apical $\frac{1}{3}$, basal node distinct, acutely produced; theca as figured, apex slender, acutely produced.

Allotype female.—Length 5.33 mm, width 2.33 mm. *Head*: Length 0.46 mm, width 0.94 mm, vertex 0.42 mm, dorsal width of eye 0.38 mm. *Rostrum*: Length 1.76 mm, reaching anterior margin of metacoxae. *Antennae*: I, length 0.50 mm; II, 1.76 mm; III, 0.68 mm; IV, 0.60 mm. *Pronotum*: Length 0.92 mm, width at base 1.68 mm.

Both the male and female have similar coloration and pubescence, but the female is slightly larger and broader.

Types.—*Holotype* ♂, Georgia, Madison Co., 1 mi NW of Hull, 23/VI/1971, at light, C. L. Smith coll. (USNM type no. 75740). *Allotype*: ♀, same data as holotype (USNM). *Paratypes*: 1 ♂, 4 ♀, same data as holotype (UG, 1 ♀ TJH); 12 ♂ same locality as holotype, 17–19/VI/1971 (UG, 2 ♂ USNM, 2 ♂ TJH); 1 ♂, Georgia, Clark Co., Stonehenge, 22–29/VI/1974, at light, C. L. Smith coll. (UG).

Remarks.—*Ceratocapsus pubescens* is one of our most distinct *Ceratocapsus*. It is most similar to *C. barbatus* and *C. cecilsmithi* but differs in the more uniform, dark brown color, thickly pubescent dorsum (which gives a woolly appearance), eyes (where the setae are subequal to those on the front and tylus), antennae and legs (where the setae are distinctly longer than the diameter of these segments), and the male genitalia.

Ceratocapsus rubricornis Knight, 1927:145

Figs. 12, 26

Ceratocapsus rubricornis was originally described from Mississippi and later recorded from the District of Columbia and Illinois on *Tilia americana*. I have examined numerous specimens from Pennsylvania, taken on *Quercus* spp. and *Castanea mollissima*, July 18, 1973–Aug. 15, 1974, T. J. Henry and A. G. Wheeler, Jr. coll. (PDA).

The figure of the left paramere by Knight (1941:110) shows the basal prong abruptly truncate with a sharply curving apical process. My Pennsylvania specimens all have a bifurcate basal prong, not too dissimilar from *C. bifurcus*. After comparing specimens to Knight's holotype, it appears that his original specimen has the longer, more slender subapical spine broken (Fig. 12). I studied several dozen males from Pennsylvania and finally found one specimen with this process broken in a similar fashion.

Ceratocapsus rubricornis can be separated from *C. bifurcus* and *C. lu-*

←

Figs. 24–26. Dorsal habitus of *Ceratocapsus*. 24, *pubescens*. 25, *vicinus*. 26, *rubricornis*. Fig. 27. Dorsal view of eyes of *Ceratocapsus*.; a, *pubescens*. b, *barbatus*. c, *cecilsmithi*.

tescens by the uniformly red antennal segments, the semierect, simple pubescence on the hemelytra, and the distinctly formed male genitalia.

Ceratocapsus sericus Knight, 1923:530

Fig. 16

This species was originally described from two females taken in New Jersey, a male (allotype) taken in Michigan and a third female from New York. Knight (1930) later decided the male allotype represented another species, *C. husseyi*; thus, the Michigan record for *C. sericus* actually refers to *C. husseyi*. I have examined the holotype and three specimens from Dauphin and Cambria counties, Pennsylvania taken on *Quercus rubra* (July 14–Aug. 21) (PDA).

Ceratocapsus sericus is very similar to *husseyi*, but may be easily separated by the uniform yellow second antennal segment (especially useful for separating females), the overall darker color and by the male genitalia.

Ceratocapsus seticornis Knight, 1953:510

Fig. 15

Ceratocapsus seticornis was described from a single male taken at Holcomb, Missouri. I have examined the holotype which appears most similar to *C. piceatus* and *C. spinosus*. It can be separated from both species by the polished dorsum, and a combination of the yellow second antennal segment clothed with long erect setae, the smaller size, the pilose setae on the pronotum and the male genitalia.

Ceratocapsus spinosus Henry, 1978:383

Fig. 4

Ceratocapsus spinosus was described from western Pennsylvania from two males taken at light traps. I have seen one additional specimen collected in Chester Co., Pa., July 9, 1976 by E. E. Emel on *Platanus occidentalis* (PDA). This is our largest *Ceratocapsus*, measuring more than 5.8 mm. It can be separated from other species on size alone; but the dark color, pilose pubescence, and the distinctive male genitalia will aid in identifying this species.

Ceratocapsus vicinus Knight, 1923:529

Figs. 19, 25

This species was originally described from New Jersey and New York and later reported from Illinois (Knight, 1941) and Missouri (Froeschner, 1949). I have examined seven specimens from New Jersey and New York (AMNH) and single males taken July 18 at Odenton, Maryland, N. Banks (AMNH) and Aug 15, 1974, Millersville, Lancaster Co., Pennsylvania on *Quercus phellos*, T. J. Henry and W. Blosser (PDA).

Ceratocapsus vicinus keys out most closely to *C. luteus* but can be separated from this and other species by the reddish-brown dorsum (with the apical half of the hemelytra and membrane fuscous) and antennal segments, the black abdomen, and the male genitalia.

Ceratocapsus wheeleri Henry, NEW SPECIES

Fig. 23

Holotype male.—Length 4.00 mm, width 1.60 mm, generally very dark brown to black, clothed with short, sparsely set, recumbent setae. *Head*: Width 0.86 mm, fuscous or black, vertex 0.34 mm, dorsal width of eye 0.26 mm, eyes reddish. *Rostrum*: Length 1.58 mm, reaching middle of metacoxae, fuscous. *Antennae*: Brown to fuscous; I, length 0.42 mm, brown, set with 3 stout, black setae; II, 1.42 mm, gradually enlarged to apex, thickly clothed with recumbent, pale setae (except at base); III, 0.74 mm; IV, 0.62 mm. *Pronotum*: Length 0.86 mm, width at base 1.40 mm, fuscous to black; (basal area sometimes paler in some specimens), impunctate, finely granulate, weakly shining, calli weakly raised; mesoscutum fuscous, narrowly visible; scutellum fuscous, transversely rugose, set with 2 or 3 pilose setae. *Hemelytra*: Uniformly fuscous (some specimens are dark brown, but not quite fuscous and the cuneus is frequently fusco-rufous), clothed with sparsely set, very short, recumbent setae; membrane and veins fumate to black. *Venter*: Fuscous to distinctly black, ostiolar peritreme opening and metapleura more brown. *Legs*: Coxae brown; femora brown, hind femora darker brown; tibiae brown, hind tibiae somewhat reddish brown; tarsi and claws brown. *Genitalia*: See Fig. 23.

Allotype female.—Length 4.40 mm, width 1.80 mm, very similar to the male in color and pubescence. *Head*: Width 0.84 mm, vertex 0.40 mm, dorsal width of eye 0.22 mm. *Rostrum*: Length 1.64 mm, reaching base of metacoxae. *Antennae*: I, length 0.50 mm; II, 1.44 mm; III, 0.72 mm; IV, 0.60 mm. *Pronotum*: Length 0.90 mm, width at base 1.40 mm.

Types.—*Holotype*: ♂, North Carolina, Mecklenburg Co., Rt. 51, 1 mi W of Rt. 16, nr. Matthews, 15 June 1975, A. G. Wheeler, Jr. collector, taken on *Quercus stellata* (USNM type no. 76046). *Allotype*: ♀, same data as holotype (USNM). *Paratypes*: ♂, North Carolina, Union Co., Rt. 74, 1.6 mi N of Monroe, 14 June 1975, A.G.W. coll., taken on *Quercus stellata* (PDA); 2 ♂, 2 ♀, same data as holotype (PDA); 6 ♂, 5 ♀, same data as holotype, 13–17 June 1978, A.G.W. coll., taken on *Quercus alba*, and *Q. stellata* (PDA).

Remarks.—*Ceratocapsus wheeleri* keys to *C. modestus* but can be separated by its more uniform fuscous coloration and the shorter second antennal segment which is subequal to the basal width of the pronotum. This species is also similar to *C. blatchleyi* and *C. knighti* but is easily distin-

guished by its larger size, darker color, proportionately longer second antennal segment, and the male genitalia.

I am naming this species after Dr. A. G. Wheeler, Jr. who has a phenomenal ability to collect rare or new Miridae, including the species described above.

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