

REVIEW OF THE GENUS COENUS DALLAS, WITH THE DESCRIPTION OF C. EXPLANATUS, NEW SPECIES (HETEROPTERA: PENTATOMIDAE)

D. A. RIDER

Department of Entomology, North Dakota State University, Fargo, North Dakota 58105

Abstract.—*Coenus explanatus*, new species, is described from Alabama and Georgia. Diagnoses are provided for the genus as well as both previously described species, *C. delius* (Say) and *C. inermis* Harris and Johnson. A key to aid in the identification of species of *Coenus* is given.

While sorting through pentatomid specimens at the National Museum of Natural History, six specimens of an apparently undescribed species of *Coenus* Dallas were discovered. Credit for this discovery, however, must be given to H. G. Barber as one of the specimens bears the label: "*Coenus* n. sp. det. HG Barber." He apparently never described the species. It is described herein, along with a review of the genus.

The genus *Coenus*, which lacks a medial spine or tubercle on the third abdominal segment, has been placed in section one of the Pentatomini (*sensu* Rolston et al., 1980), and is included in a key to section-one genera provided by Rolston and McDonald (1984).

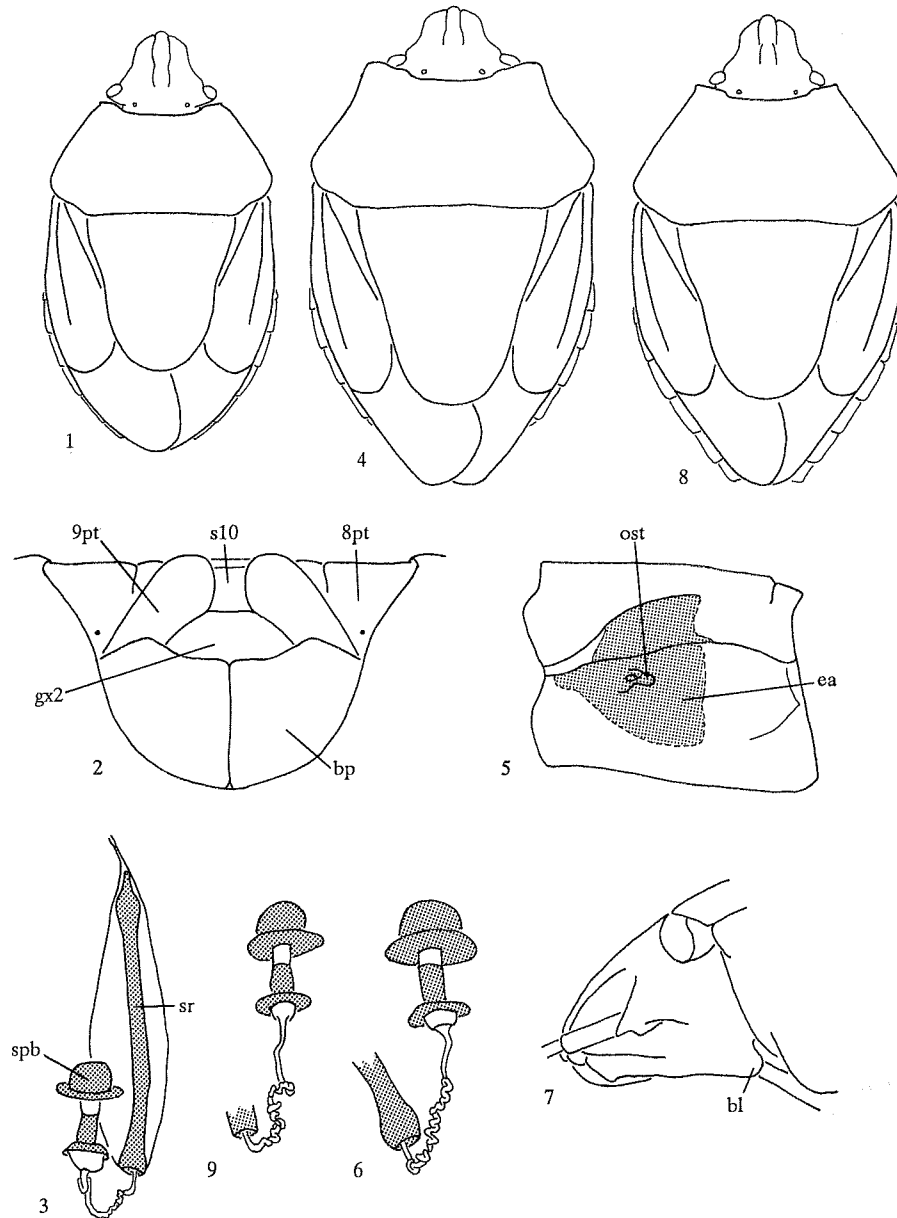
When type label data are cited in the text, each letter in parentheses represents a separate label, with (a) being closest to the specimen on the pin. Type label data are cited as written and placed within quotation marks. All measurements are in millimeters; measurements in parentheses are of the holotype.

Coenus Dallas, 1851

Coenus Dallas, 1851:194, 230; Stål, 1867:526; Kirkaldy, 1909:72.
Caenus [sic]: Lethierry & Severin, 1893:132.

Type species: *Coenus tarsalis* Dallas, 1851 [= *Pentatoma delia* Say, 1831], by monotypy.

Diagnosis. Third (second visible) abdominal sternite unarmed. Each ostiolar ruga short, auriculate, reaching less than one-fourth distance to lateral metapleural margin; evaporatoria punctured, reaching to about middle of supporting metapleural plate (Fig. 5). Each buccula distinctly lobed posteriorly, reaching to posterior margin of head (Fig. 7). Rostrum reaching to metacoxae; first segment not reaching beyond posterior margins of bucculae. Juga and tylus subequal in length. Inferior surface of each femur often armed with row of widely spaced, small spines; superior surface unarmed distally. Lateral margins of pronotum sharp, but not reflexed; anterior margin not elevated. Width of scutellum at distal ends of frena more than two-thirds basal width; apex broadly rounded, reaching to or beyond apices of coria (Figs. 1, 4, 8). Tarsi 3-segmented; coxae nearly contiguous. Prosternum and mesosternum flat



Figs. 1-9. 1-3. *Coenus delius*. 1. Habitus. 2. Genital plates, caudoventral view. 3. Spermatheca. 4-7. *Coenus explanatus*. 4. Habitus. 5. Meso- and Metapleural plates. 6. Spermathecal pump. 7. Head, lateral view. 8, 9. *Coenus inermis*. 8. Habitus. 9. Spermathecal pump. Symbols: bl, buccal lobe; bp, basal plates; ea, evaporative area; gx2, second gonocoxae; ost, ostiolar ruga; spb, spermathecal bulb; sr, sclerotized rod; s10, tenth sternite; 8pt, eighth paratergites; 9pt, ninth paratergites.

posteriorly, each with slight mesial carina anteriorly; metasternum weakly sulcate. Wing venation reticulate.

Parameres F-shaped; proctiger heavily sclerotized; aedeagus with lateral conjunctival lobes; median penial plates large; penisfilum long, coiled; dorsoposterior margin of theca tri-lobed, lateral lobes obtuse, medial lobe narrower, nearly acute; with pair of dorsal thecal appendages just dorsad of median penial plates. Mesial margins of basal plates nearly straight; posterior margins sinuous; posteromesial angles not produced caudad. Spermathecal bulb globose, lacking diverticula; spermathecal duct coiled between spermathecal pump and dilation of spermatheca.

Comments. *Coenus* belongs to a group of genera which includes the well-known genus *Euschistus* Dallas. All genera within the group possess dorsal thecal appendages which appear to be unique to this group. *Coenus* is most closely related to *Hymenarcys* Amyot and Serville, from which it can be separated by the scutellum not extending beyond the apices of coria.

Key to species of *Coenus* Dallas

1. Anterolateral pronotal margins concave; anterior angles explanately produced anterolaterad (Fig. 4) (southeastern U.S.) *explanatus* new species
- Anterolateral pronotal margins straight to convex; neither explanate nor anteriorly (Figs. 1, 8) 2
- 2(1) Maculations on superior surface of each tibia small, brown, each encircling hair; posterior margin of pygophore with distinct medial tooth (Figs. 24, 25) (east of Rocky Mountains, excluding southeastern U.S.) . . . *delius* (Say)
- Maculations on superior surface of each tibia large, irregular, fuscous; posterior margin of pygophore entire, lacking medial tooth (Figs. 17, 18) (Louisiana, Arkansas, Texas, Oklahoma, Kansas) . . . *inermis* Harris and Johnson

Coenus explanatus, new species

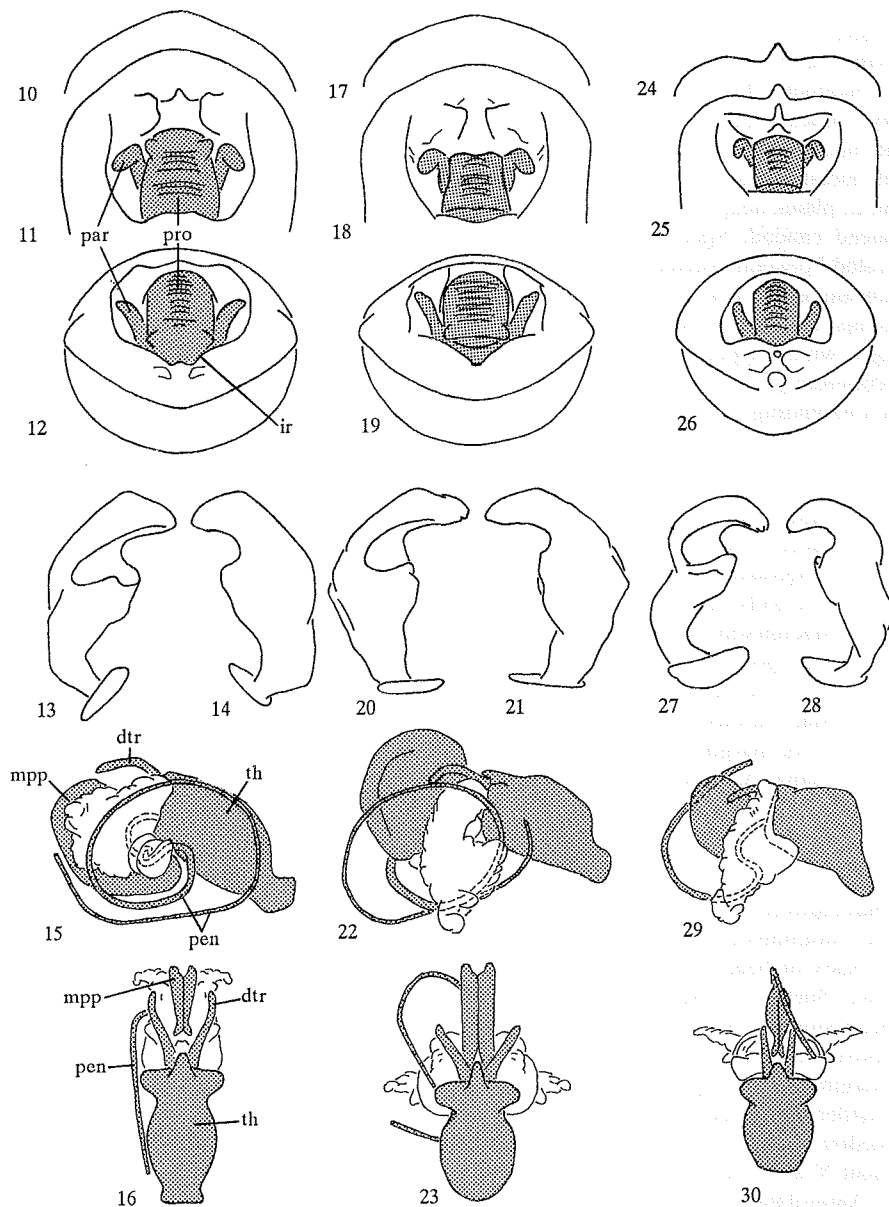
Figs. 4-7, 10-16, Map 1

Description. Oval, slightly convex dorsally, strongly convex ventrally. Dorsal surface stramineous to pale yellow-brown; punctures brown to fuscous.

Apex of head rounded; lateral jugal margins not reflexed, sinuous, not quite parallel. Surface of head relatively flat, vertex slightly convex; anterior one-third of head slightly declivant in lateral view; tylus transversely convex, slightly elevated above jugal surfaces. Punctures becoming darker and more crowded near lateral margins, relatively sparse between eye and adjacent ocellus; punctures on tylus smaller and paler than on juga, giving head appearance of having longitudinal, pale, medial band. Antennae rather uniformly red-brown to dark brown, sometimes segment V and distal one-half of segment IV slightly darker.

Anterolateral pronotal margins distinctly concave, anterior angles explanately produced anterolaterad (Fig. 4); punctures slightly more dense near humeral angles and mesially anterior to cicatrices. Pale median line on pronotum and scutellum usually obsolescent. Scutellum and coria uniformly punctured. Connexival punctures darker and more dense near segmental junctures, appearing alternated dark brown and pale yellow. Wing membranes hyaline, veins brown.

Ventral surface pale yellow, punctures brown to fuscous, becoming slightly more



Figs. 10-30. 10-16. *Coenus explanatus*. 10. Posterior margin of pygophore, ventral view. 11, 12. Pygophore. 11. Dorsal view. 12. Caudal view. 13, 14. Right paramere. 13. Lateral view. 14. Medial view. 15, 16. Theca and related structures. 15. Lateral view. 16. Dorsal view. 17-23. *Coenus inermis*. 17. Posterior margin of pygophore, ventral view. 18, 19. Pygophore. 18. Dorsal view. 19. Caudal view. 20, 21. Right paramere. 20. Lateral view. 21. Medial view. 22, 23. Theca and related structures. 22. Lateral view. 23. Dorsal view. 24-30. *Coenus delius*. 24.

dense and forming vague longitudinal, brown band on each side mesad of spiracles. Head with fuscous vitta just dorsad of each antenniferal tubercle. Rostrum pale brown, segment IV fuscous, reaching between metacoxae. Spiracles piceous. A few punctures slightly darker medially along posterior margin of each abdominal sternite, sometimes with small medial, longitudinal vitta on segment VII; anterolateral angles of each abdominal sternite with large fuscous spot. Females with elongate, transverse, pale, impunctate area on each side of median of abdominal segment III. Males with segment III as in females, but also with similar, narrower, areas on segments IV and V. Legs heavily and irregularly maculated with fuscous, including numerous spots on both sides of tibial sulcations; tibial sulcations distinct, often dark brown to black.

Posterior margin of pygophore arcuate, slightly more produced than in *C. inermis*, lacking medial tooth (Figs. 10, 11); inferior ridge broadly V-shaped, sinuous medially in caudal view (Fig. 12). Penisfilum making nearly two complete revolutions, with two to three coils or twists basally (Fig. 15). Dorsal thecal appendages abruptly curved ventrad near middle (Fig. 15). Parameres rather robust, broadest near middle (Figs. 13, 14).

Measurements. Total length excluding wing membranes 8.97–10.39 (8.97); total width 5.48–5.83 (5.48); medial length of pronotum 2.42–2.64 (2.42). Medial length of scutellum 3.81–4.21 (3.87); basal width 3.57–4.00 (3.62); width at distal end of frena 2.58–2.96 (2.58). Length of head from apex to imaginary line drawn through posterior margins of ocelli 1.97–2.04 (2.03); width 2.60–2.73 (2.66); intraocular width 1.81–1.86 (1.82); intraocellar width 1.02–1.13 (1.07); ocellar diameter 0.05–0.08 (0.07); distance from eye to adjacent ocellus 0.46–0.41 (0.45). Length of segments I–V of antennae 0.52–0.61 (0.53), 0.64–0.80 (0.64), 1.10–1.27 (1.22), 1.01–1.09 (1.01), and 1.31–1.44 (1.42), respectively. Length of segments II–IV of rostrum 1.58–1.75, 0.70–0.86, 0.69–0.82 (unable to measure holotype), respectively.

Holotype. ♂, labeled (a) "Adel, Ga 8-11-39 J. D. Beamer" (b) "K. U." deposited in the National Museum of Natural History (Washington, D.C.).

Paratypes. 2♂♂, 3♀♀. 1♀ labeled as holotype (USNM); 2♂♂ labeled "Ga." (DAR, USNM); 1♀ labeled (a) "Floral, Ala. 1938 L. Henderson" (b) "K. U." (DAR); and 1♀ labeled (a) "TIFTON GA 6-30-1936" (b) "Collected on cotton" (c) "P. A. Glick Coll." (d) "Coenus n. sp. det HGBerber" (USNM).

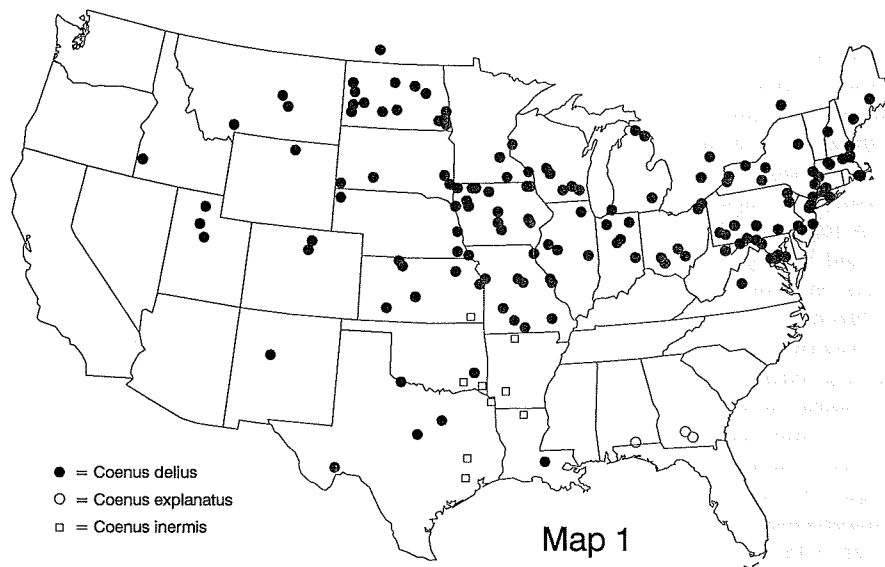
Distribution. Southeastern U.S. (Map 1).

Comments. This species is closely related to *C. inermis*, but can be separated from it and *C. delius* by the form of the anterolateral pronotal margins.

All members of the type series were collected in the 1930's; I have not seen any specimens collected more recently. It appears that this species may either be extinct or at least very rare.

←

Posterior margin of pygophore, ventral view. 25, 26. Pygophore. 25. Dorsal view. 26. Caudal view. 27, 28. Right paramere. 27. Lateral view. 28. Medial view. 29, 30. Theca and related structures. 29. Lateral view. 30. Dorsal view. Symbols: dtr, dorsal thecal appendages; ir, inferior ridge; mpp, median penial plates; par, parameres; pen, penisfilum; pro, proctiger; th, theca.



Map 1. United States distribution of *Coenus delius* [●], *C. explanatus* [○], and *C. inermis* [□].

Etymology. This species is named for the distinctive condition of the anterolateral margins of the pronotum.

Coenus delius (Say)

Figs. 1–3, 24–30, Map 1

Pentatoma delia Say, 1831:8; Say, 1859:320.

Hymenarcys aeruginosa Amyot & Serville, 1843:125. (syn. by Stål, 1872).

Coenus tarsalis Dallas, 1851:230, pl. 8, fig. 6. (syn. by Stål, 1867).

Coenus punctatissimus Vollenhoven, 1868:183. (syn. by Stål, 1872).

Coenus delius: Kirkaldy, 1909:72; McPherson, 1982:68–69; Froeschner, 1988:573–574.

Diagnosis. Antennae red brown to dark brown, usually segment V and distal one-half of segment IV distinctly darker. Anterolateral pronotal margins straight to slightly convex; anterior angles not produced or explanate (Fig. 1). Pale median line usually relatively distinct on pronotum and scutellum; pronotal punctures usually relatively dense along anterolateral margins, especially anteriorly. Abdominal segments III–V lacking pale, impunctate areas in both males and females. Maculations on legs rather uniform, relatively sparse; those on superior surface of each tibia limited to very small spot at base of each hair.

Posterior margin of pygophore in dorsal and ventral views truncate with distinct medial tooth (Figs. 24, 25); inferior ridge sinuous in caudal view (Fig. 26). Penis-filum making one complete revolution, not coiled at base (Fig. 29). Dorsal thecal

appendages rather uniformly curved ventrad (Fig. 29). Parameres relatively narrow, shaft of each somewhat sinuous (Figs. 27, 28).

Types. Most of Say's types have been destroyed. The identity of this species is now well established.

Distribution. This species occurs from the Rocky Mountains eastward, but is apparently absent from the southeastern U.S. (Map 1).

Specimens examined. CANADA: Ontario: Brantford; Mer Bleu; Toronto. **Quebec:** Montreal; jct. rtes. 52 & 13. **Saskatchewan:** Oxbow.

UNITED STATES: Colorado: *Boulder:* Boulder. *Larimer:* Ft. Collins. **Connecticut:** *Fairfield:* Norwalk; Stamford; Westport. *Litchfield:* Lakeville. **District of Columbia:** Flats; Rock Crk. **Idaho:** *Canyon:* Caldwell. **Illinois:** *Champaign:* Champaign. *Du Page.* *Mason:* Havana. *Warren:* Swan twp. **Indiana:** *Cass:* 0.5 m. S. Galveston. *Fayette:* Connerville. *Howard:* NW Howard Co. *Noble:* Sylvan Lake. *Starke:* Knox. **Iowa:** *Nichole.* *Allamakee:* Harpers Ferry; Waukon. *Buena Vista:* Sioux Rapids. *Dickinson:* Lake Okoboji. *Emmet:* Estherville. *Johnson:* Hills; Iowa City; Solon. *Kossuth:* Algona. *Lyon:* Little Rock. *Muscatine:* Muscatine. *Polk:* Des Moines. *Sac:* Sac City. *Story:* Ames. *Warren:* Indianola. *Woodbury:* Sioux City. **Kansas:** *Ford:* Bloom. *Johnson.* *Phillips.* *Riley:* Clearwaters. *Rooks.* *Stafford:* Salt Flats. **Louisiana:** *E. Baton Rouge:* Pride. **Maine:** *Pretty Marsh.* **Kennebec:** Augusta. **Penobscot:** Orono. **Maryland:** *Crampton Gap;* Meyersville; Plummer's Isl. **Allegany:** Cumberland. *Anne Arundel:* Odenton; 5 km SW Odenton, Ft. Meade. *Frederick:* Wolfsville. *Prince Georges:* Beltsville; Silver Hill. **Washington:** Hagerstown. **Massachusetts:** *Barnstable:* Monument Beach; Woods Hole. *Essex:* Andover; Lynn; Swampscott. *Hampshire:* Amherst; Cummington; Hadley; Northampton. *Middlesex:* Sherborn; Tyngsboro. **Michigan:** *Berrien:* Warren Dunes. *Cheybogan:* Douglas Lake. *Presque Isle:* Oqueoc Lake. *Washtenaw:* Ypsilanti. **Minnesota:** *Freeborn:* Albert Lea. *Hennepin.* *Winona:* Homer. **Missouri:** *Dameron.* *Boone:* Ashland Wildlife Area; Columbia. *Callaway:* Tucker Prairie. *Howell:* West Plains. *Jackson:* Kansas City. *Lewis:* Canton. *Polk:* 3.5 m. SE Flemington. *St. Charles:* St. Charles. *St. Louis:* Clayton; Manchester; St. Louis. *Wayne.* *Wright:* Mountain Grove. **Montana:** *Gallatin.* *Musselshell:* Montana Expt. Stn., Musselshell. *Petroleum:* 1.5 m. S, 5 mi W Winnett. **Nebraska:** *Douglas:* Omaha. *Johnson:* Sterling. *Richardson:* Falls City. *Sioux:* Glen. **New Hampshire:** *Grafton:* Pike. *Rockingham:* Hampton. **New Jersey:** *Beatyestown;* Brookside. *Camden:* Delair. *Morris:* Madison. *Ocean:* Lakehurst. *Passaic:* Great Notch. *Union:* Roselle Park. **New Mexico:** *Bernalillo:* Cibola Natl. Forest. **New York:** *Adirondack Mts.,* Bronx Park; Cascade Lake; Allegany St. Pk.; Flushing; Fort Montgomery; Sangerties; Wading River, Long Island. **Columbia:** nr. Claverack; Hudson. *Dutchess:* Fishkill. *Erie:* Buffalo; Hamburg. *Genesee:* Oakfield. *Hamilton:* Indian Lake. *Monroe:* Rochester. *Onondaga.* *Orange:* Pine Island; West Point. *Suffolk:* Cold Spring Harbor, Long Island. *Tompkins:* Ithaca; McLean Bogs. **North Dakota:** *Tekio.* *Benson.* *Billings:* Easy Hill; Theodore Roosevelt National Park. *Burleigh:* Bismark. *Cass:* Fargo. *McHenry.* *Mckenzie:* Theodore Roosevelt National Park. *Morton.* *Nelson.* *Richland:* Hwy 27, 5 mi W Hwy 18. *Ransom:* Lisbon; McLeod; 4 mi N McLeod. *Slope:* Burning Coal Vein; Chalky Buttes. *Williams:* Williston. **Ohio:** *Ashtabula:* Jefferson. *Clinton.* *Geauga:* Bainbridge. *Highland.* *Hocking.* *Licking:* Buckeye Lake. **Oklahoma:** *Latimer.* **Pennsylvania:** Philadelphia; Springbrook. *Allegheny:* Pittsburgh. *Cambria:* Patton. *Fulton:* Warfordsburg. *Mon-*

roe: Pocono Lake. *Perry*: 1.3 mi NW New Bloomfield. *Wayne*: Honesdale. *Westmorland*: Greensburg; Jeannette; nr. Rector. *York*: 2 mi W Airville. **South Dakota**: *Fall River*: Ardmore. *Jackson*: Weta. *Lake*: Madison. *Minnehaha*: Sioux Falls. **Texas**: *Brewster*: Hwy 90, 1.1 mi W Pecos Co. *Brown*: Bangs. *Tarrant*: Ft. Worth Nature Center. *Wilbarger*: Vernon. **Utah**: *Salt Lake*. *Utah*: Spanish Fork. *Weber*: Ogden. **Virginia**: Middle Mt.; Thornton's Gap. *Fairfax*: Vienna. *Nelson*. **West Virginia**: *Preston*: Cathedral St. Park. **Wisconsin**: *Dane*: Madison. *Jackson*: Black River Falls. *Jefferson*: Watertown. *Monroe*: Warrens. *Polk*: Osceola. *Waukesha*: Pewaukee. **Wyoming**: *Sheridan*: Big Horn.

Comments. This species averages slightly smaller than either *C. explanatus* or *C. inermis*. It lacks the impunctate areas on the base of the abdomen, the maculations on the tibiae are smaller and more sparse, and the medial tooth on the posterior margin of the pygophore is diagnostic.

Coenus inermis Harris and Johnson

Figs. 8, 9, 17-23, Map 1

Coenus inermis Harris & Johnson, 1936:378; McPherson, 1982:68; Froeschner, 1988:574.

Diagnosis. Antennal segments rather uniformly red-brown to dark brown, sometimes segment V slightly darker. Anterolateral margins straight, anterior angles not produced or explanate (Fig. 8). Pale median line on pronotum and scutellum usually obsolescent. Females with elongate, transverse, pale, impunctate area on each side of median of abdominal segment III. Males with segment III as in females, but also with similar, narrower areas on segments IV and V. Maculations on legs relatively large and irregular, including many large maculations on each side of tibial sulcations; tibial sulcations relatively shallow.

Posterior margin of pygophore smoothly arcuate in both dorsal and ventral views, lacking medial tooth (Figs. 17, 18); inferior ridge well-developed, V-shaped in caudal view (Fig. 19). Dorsal thecal appendages rather abruptly curved ventrad near distal one-third (Fig. 22); penisfilum making nearly two complete revolutions in opposite direction than *C. delius* or *C. explanatus*; not coiled or twisted basally (Fig. 22). Parameres rather robust, broadest near middle (Figs. 20, 21).

Types. This species was described from 1♂ and 3♀♀ specimens from Arkansas and Oklahoma. The holotype was examined, and is conserved in the U.S. National Museum of Natural History, Washington, D.C.

Distribution. Arkansas, Louisiana, Kansas, Missouri, Oklahoma, Texas (Map 1).

Specimens examined. **Arkansas**: *Hempstead*: Hope. *Marion*. **Kansas**: *Montgomery*: Elk City. **Louisiana**: *Union*. **Oklahoma**: *Atoka*: 7 mi. S Atoka. *McCurtain*. **Texas**: *Bowie*: Maud. *Brazos*: College Station. *Colorado*: Alleyton.

Comments. This species is also relatively rare. It is closely related to *C. explanatus* from which it is easily distinguished by the shape of the anterolateral pronotal margins.

ACKNOWLEDGMENTS

I would like to thank all those individuals at various institutions who generously lent specimens pertinent to this study. Special thanks go to T. J. Henry, U.S. National Museum of Natural

History, Washington, D.C., who arranged for me to work at the USNM at the time the specimens of *C. explanatus* were discovered, and the holotype of *C. inermis* was examined. I would also like to thank G. Fauske, and H. J. Meyer, North Dakota State University, J. A. Moore, Fargo, ND, and L. H. Rolston, Louisiana State University, for their comments on an early draft of the manuscript.

LITERATURE CITED

- Amyot, C. J. B. and J. G. A. Serville. 1843. Histoire Naturelle des Insectes. Hémiptères. Librairie Encyclopédique de Roret ed., Paris. lxxvi and 681 pp., 12 pls.
- Dallas, W. S. 1851. List of the specimens of hemipterous insects in the collection of the British Museum. Brit. Mus. London, 2 pts., 592 pp., 15 pls.
- Froeschner, R. C. 1988. Family Pentatomidae Leach, 1815. The stink bugs. Pages 544–607, ill. in: T. J. Henry and R. C. Froeschner (eds.), Catalog of the Heteroptera, or true bugs, of Canada and the continental United States. E. J. Brill, Leiden, New York, xix + 958 pp.
- Harris, H. M. and H. G. Johnston. 1936. A new genus and species of Podopidae and a new *Coenus* (Hemiptera: Scutelleroideae [sic]). Iowa St. Coll. J. Sci. 10(4):377–380.
- Kirkaldy, G. W. 1909. Catalogue of the Hemiptera (Heteroptera) with biological and anatomical references, lists of foodplants and parasites, etc. Vol. I. Cimicidae. Berlin, xi and 392 pp.
- Lethierry, L. and G. Severin. 1893. Catalogue général des Hémiptères. Vol. 1. Hétéroptères. Pentatomidae. R. Friedlander and Fils, Bruxelles, x + 286 pp.
- McPherson, J. E. 1982. The Pentatomoidea (Hemiptera) of northeastern North America with emphasis on the fauna of Illinois. S. Ill. Univ. Pr., Carbondale and Edwardsville, 240 pp., ill.
- Rolston, L. H. and F. J. D. McDonald. 1984. A conspectus of Pentatomini of the Western Hemisphere. Part 3 (Hemiptera: Pentatomidae). J. N.Y. Ent. Soc. 92(1):69–86, 54 figs.
- Rolston, L. H., F. J. D. McDonald and D. B. Thomas, Jr. 1980. A conspectus of Pentatomini genera of the Western Hemisphere. Part I (Hemiptera: Pentatomidae). J. N.Y. Ent. Soc. 88(2):120–132, 24 figs.
- Say, T. 1831. Descriptions of new species of heteropterous Hemiptera of North America. New Harmony, Indiana, 39 pp.
- Say, T. 1859. The complete writings of Thomas Say on the entomology of North America, with a memoir of the author, by George Ord. Ed. by J. L. LeConte. New York, 2 vols. Vol. I: XXIV & 412 pp. & 54 pls., Vol. II: IV & 814 pp. (Reprinted in Philadelphia in 1891.)
- Stål, C. 1867. Bidrag till Hemipterernas systematik. Conspectus generum Pentatomidum Americae. Öfv. Vet. Ak. Förh. 24(7):522–532.
- Stål, C. 1872. Enumeratio Hemipterorum. Bidrag till en förteckning öfver alla hittills kända Hemiptera, Jemte Systematiska meddelanden. 2. Sv. Vet. Ak. Handl. 10(4):1–159.
- Vollenhoven, S. C. S. van. 1868. Diagnosen van eenige nieuwe soorten van Hemiptera Heteroptera. Versl. Meded. k. Akad. Wetens Naturk. Amst. (2)2:172–188.

Received 31 March 1994; accepted 10 April 1995.