

"Lovebugs," a Review of the Nearctic Species of Plecia
Wiedemann (Diptera: Bibionidae)

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Since the mid-1960's "lovebugs" have become a great nuisance in some of the Southeastern States, particularly Florida. The adults emerge in late spring and early fall in such large numbers that they literally foul up everything. The common name, "lovebug," is derived from their habit of flying in copula. The larvae are found in and on the soil under decaying vegetation on which they feed. Thus, the larvae perform a beneficial function by converting dead vegetation into humus (Hetrick, 1970a, 1970b). Hetrick in his study on the biology of the "lovebug" in Florida noted no natural checks on the immature stages and that most predators avoided the adult flies. Many interesting and essential questions remain unanswered about the "lovebug." However, the first step is to establish the correct identity of the species involved. As a contribution to this first step, the results of a study to verify the previous determinations of the Florida "lovebug" are presented so as to enable others to identify their "lovebugs."

The "lovebug" belongs to the genus Plecia Wiedemann of the dipterous family Bibionidae. Plecia is a large genus of more than 200 species of mainly pantropical distribution, but a few species do occur in both the northern and southern temperate regions. Only two species of Plecia are known to occur in the United States, and they are americana Hardy (1940:15) and nearctica Hardy (1940:20).

The ranges of both species appear to be mainly restricted to the areas bordering the Gulf of Mexico, with americana extending northeastward to North Carolina and nearctica southward to Guatemala. When Hardy (1940) described these species, americana was apparently common only in Florida, and nearctica was unknown east of Mississippi. P. nearctica is now abundant in Florida, and the present status of americana is unknown.

The familial characteristics of the "lovebug" are: (a) antenna with 7 to 12 segments; (b) head with ocelli present; (c) wing without discal cell (1st M2); (d) wing with the costa ending at or before the wing tip; (e) wing with a large anal area; and (f) wing with a second basal cell (M). These characteristics have been listed in order of importance in terms of distinguishing bibionid flies from all other Diptera, but all these characteristics should be checked to insure accurate identification of the family.

The definitive generic characteristics of the "lovebug" are that (g) the radial sector (Rs) of the wing is branched, and the upper branch (R 2+3) is very short.

The two Nearctic species of Plecia can be separated by the color of the thorax and the shape of the face as outlined below. Both of these species are readily separated from all the other Plecia species by their distinctive genitalia. The genital characteristics

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mentioned below and figured can be seen in untreated specimens. However, dried material is frequently shriveled or otherwise distorted. In these cases the tip of the abdomen should be removed and macerated for about a minute in a freshly made 10-percent solution of sodium or potassium hydroxide.

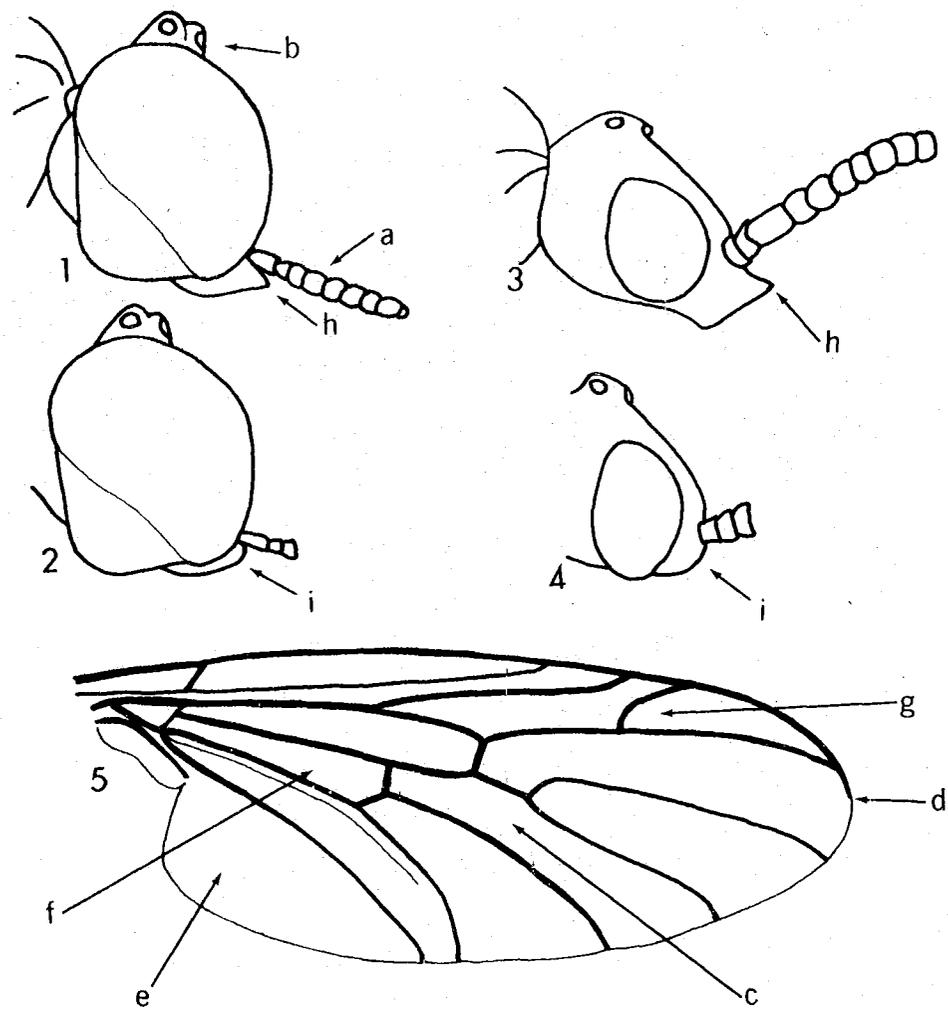
Key to the Nearctic species of Plecia Wiedemann

Thorax with dorsum rufous and pleura extensively black; head with oral margin distinctly produced forward (figs. 1, 3). Male genitalia with 9th tergum (fig. 9) not as broad as in americana, just slightly broader than long, with shallow medial excavation and ventromedial flap, not produced ventrolaterally; 9th sternum (fig. 11) with dorsolateral lobe extending under 9th tergum, produced ventromedially into a narrow forked process; telomeres (fig. 7) large, L-shaped in lateral view. Female genitalia with 9th tergum (figs. 12, 14) large, almost completely concealing cerci in lateral view, strongly excavated dorsomedially; cerci (fig. 14) small, narrow in dorsal view; 8th sternum (figs. 12, 16) small, with a shallow medial excavation; ovipositor lobes broad, blunt apically and strongly sclerotized dorsally nearctica Hardy

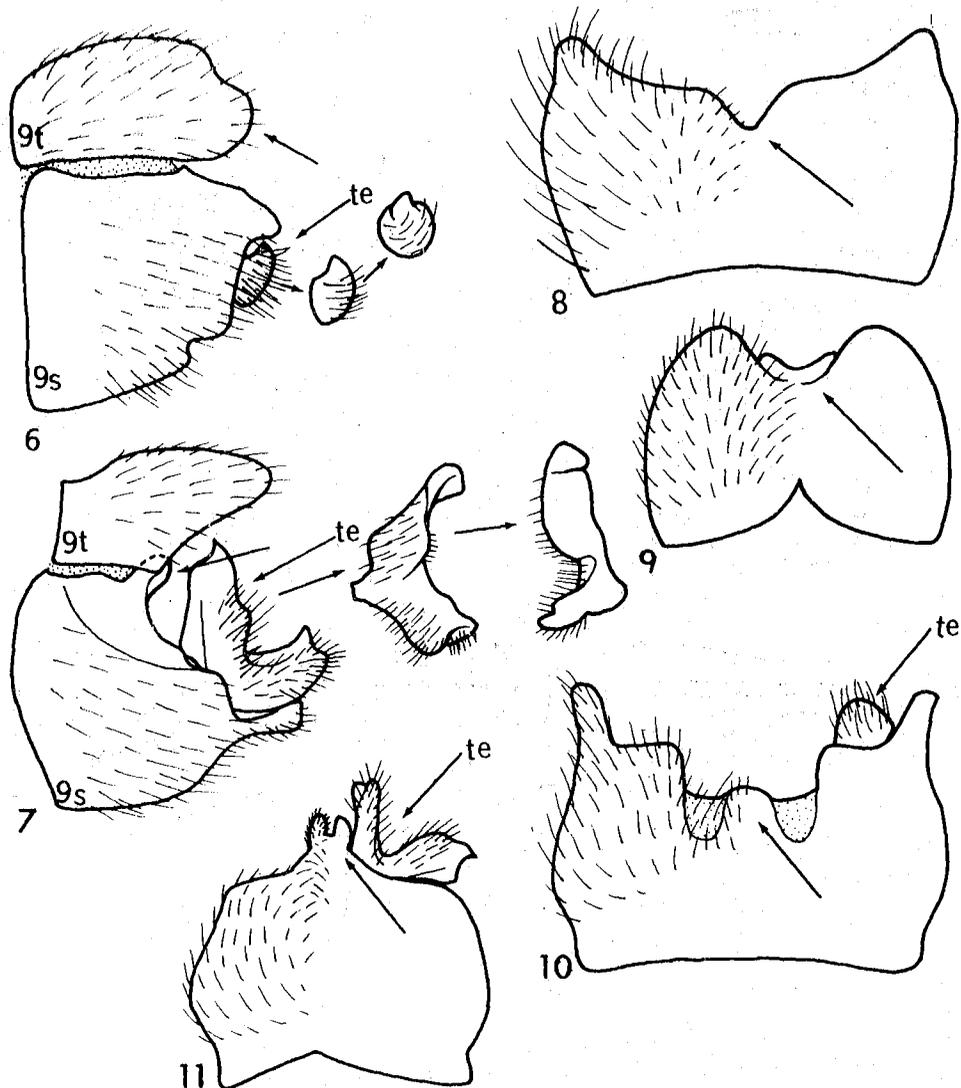
Thorax almost completely rufous, rarely slightly brownish black on metathoracic pleura; head with oral margin not produced forward, but evenly convex (figs. 2, 4). Male genitalia with 9th tergum (fig. 8) much broader than in nearctica, almost twice as broad as long, with a deep medial excavation and without a ventromedial flap, ventrolateral corners produced posteriorly; 9th sternum (fig. 10) with a dorsolateral lobe, not produced ventromedially and without a medial forked process, but with a broad ventromedial excavation; telomeres (fig. 6) small, almost completely round. Female genitalia with 9th tergum (figs. 13, 15) small, not concealing cerci in lateral view, not excavated medially; cerci (fig. 15) large, broad in dorsal view; 8th sternum large, with a deep and narrow medial excavation; ovipositor lobes narrow, acute apically, not strongly sclerotized dorsally americana Hardy

References

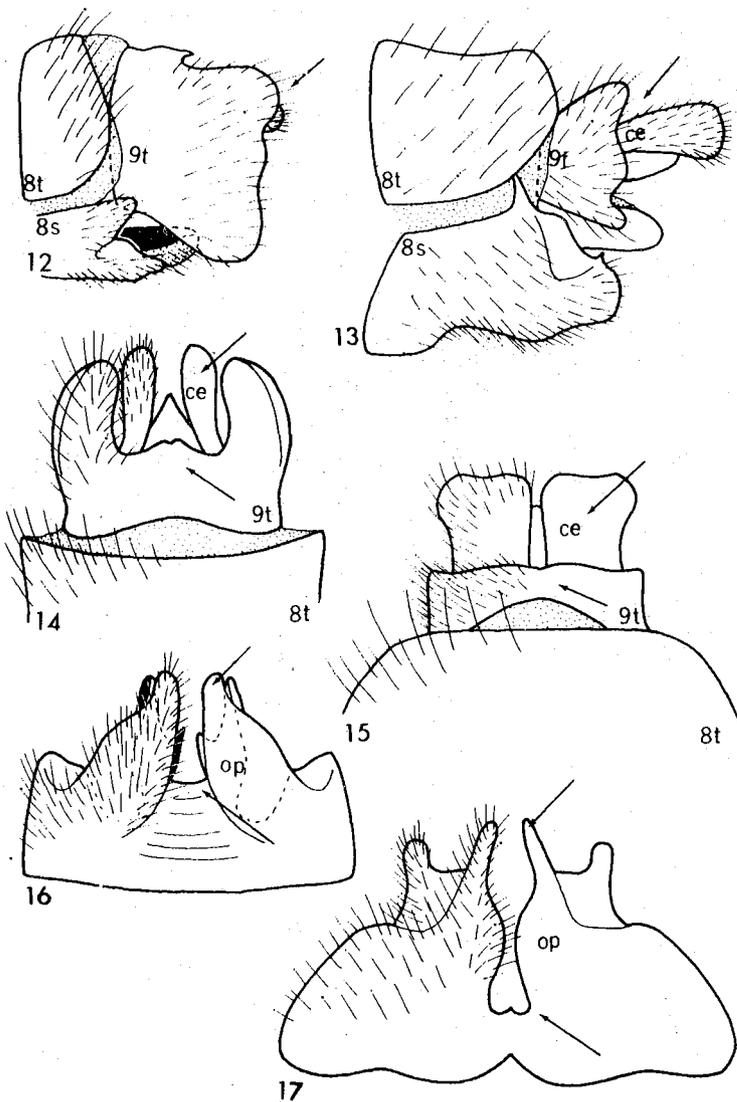
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1945. Revision of Nearctic Bibionidae including Neotropical Plecia and Penthetria (Diptera). Univ. Kansas Sci. Bull. 30(2):365-547, 219 figs.
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1970b. The "Love-Bug," Plecia nearctica Hardy (Diptera: Bibionidae). Florida Dept. Agric. Consumer Serv., Div. Plant Industry, Ent. Circ. 102, 2 pp., 5 figs.



Figs.1-5. Figs. 1-4. Heads of *Plecia*, lateral view; 1. *nearctica* Hardy, male; 2. *americana* Hardy, male; 3. *nearctica* Hardy, female; 4. *americana* Hardy, female. 5. wing of *Plecia nearctica* Hardy. The small letters refer to the characteristics discussed in the text.



Figs. 6-11. Male genitalia of *Plecia*. Figs. 6-7. 9th abdominal segment and associated structures, lateral view, with additional posterolateral and posteromedial views of the right telomere; 6. *americana* Hardy; 7. *nearctica* Hardy. 8-9. 9th tergum, dorsal view; 8. *americana* Hardy; 9. *nearctica* Hardy. 10-11. 9th sternum with left telomere attached, ventral view; 10. *americana* Hardy; 11. *nearctica* Hardy. 9t = 9th tergum, 9s = 9th sternum, te = telomere; The arrows point to the characteristics mentioned in the key.



Figs. 12-17. Female genitalia of *Plecia*. Figs. 12-13. 8th and 9th abdominal segments and associated structures, lateral view; 12. *nearctica* Hardy; 13. *americana* Hardy. 14-15. 8th and 9th terga and associated structures, dorsal view; 14. *nearctica* Hardy; 15. *americana* Hardy. 16-17. 8th sternum, ventral view; 16. *nearctica* Hardy; 17. *americana* Hardy. 8t = 8th tergum, 8s = 8th sternum, 9t = 9th tergum, ce = cercus, op = ovipositor lobe; the arrows point to the characteristics mentioned in the key.

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