

DISTRIBUTION RECORDS FOR TEXAS

Calopteryx dimidiata: — Hardin and San Jacinto counties.

Calopteryx maculata: — Anderson, Angelina, Bastrop, Bowie, Cherokee, Collin, Dallas, Denton, Grayson, Gregg, Grimes, Hemphill, Houston, Marion, Montgomery, Nacogdoches, Robertson, Rusk, Shelby, Walker, and Wood counties.

Hetaerina Hagen, 1853

Sequential development of wing patterns during teneral stages may lead to incorrect determinations. In *H. titia* the color patterns are pale brown in both wing pairs soon after emergence, and only hind wing spots in males of *H. americana* are initially brown. Both fore and hind wing spots become deep red with age in *H. americana*, and the fore wings of mature *H. titia* males have both red and brown areas. Hind wing spots in male *H. titia* remain brown but veins within the spots may be red. The wings of *H. titia* females are rarely clear, but are more typically diffuse brown. The wings of *H. americana* females have no wing pigment or possess diffuse brown to orange basal spots. The female condition is not an age effect, and the variation in *H. americana* is similar to that mentioned for *Calopteryx dimidiata*, possibly representing a sex-limited dimorphism.

KEY TO THE MALES

- 1 a) Red spot at base of fore wing bordered distally by no pigment or brownish-black area extending variable distance toward wing tip, hind wing brown and varying from basal spot to entire wing (Fig. 7); pigmentation paler in teneral specimens *titia* complex
- b) Red spot at base of fore and hind wings, may reach distally to nodus; apical wing areas nonpigmented; red color limited to fore wing in teneral specimens with hind wing spot brown *americana*

KEY TO THE FEMALES

- 1 a) Abdomen brown on ventrolateral surface, slightly lighter, if any, in color than dorsum; dorsum of head and abdomen dark brown; thorax brown with broad metallic green stripe on either side of median carina, or stripe isolated into two elongated spots (Fig. 6 E, F) *titia* complex
- b) Abdomen pale-colored on ventrolateral surface, and distinctly contrasting with metallic green dorsum; dorsum of head and abdomen metallic green, latter usually with a pale basal ring per segment; dorsum of thorax with broad metallic green stripe on either side of median carina *americana*

Hetaerina titia as recognized in the above key is a highly polymorphic species or includes two species, *H. titia* and *H. tricolor*. These two taxa now appear as synonyms; however, several observations are inconsistent with this interpretation (Johnson, 1963). The male abdominal appendages are highly variable in *H. americana* (Calvert, 1901-1908). Figure 6 A and B illustrates appendages of both *H. americana* and *H. titia*.