

SOME NEW SPECIES OF PANAMA *XESTOCEPHALUS* (HOMOPTERA : XESTOCEPHALINAE)

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Seven new species of *Xestocephalus* *X. parvus* n. sp., *X. costatus* n. sp., *X. panamanus* n. sp., *X. bicoloratus* n. sp., *X. fulvus* n. sp., *X. apollus* n. sp., and *X. pullus* n. sp. all from Panama are described at this time.

INTRODUCTION

Studies of seasonal and annual variation in abundance of tropical insects in Panama during the past 4 years (Wolda, 1978a & b, 1979) has revealed many species of previously unknown or very little known leafhoppers. A manuscript treating the 19 then known Panama Xestocephalinae (11 of which were described as new) was published in July 1980. An additional 7 new species from Panama are described in this paper, bringing to 26 the number of Panama species collected to date.

The genus *Xestocephalus* was described by Van Duzee (1894) and *X. pulicarius* V. Dz. was designated as the type. Linnavuori treated the Central and South American species (1959). New Central and South American species were described by DeLong & Linnavuori (1978). The previously known Panama species were treated by DeLong *et al.* (1980). All holotypes and some paratypes are in the DeLong collection, the Ohio State University. Some paratypes are in Wolda collection, Smithsonian Tropical Research Institute, Panama.

Xestocephalus parvus n. sp.

(Figs. 1, 2, 15, 19-21)

Length of male 3 mm, female unknown. Crown produced and rounded apically, a little more than half as long as wide at middle as wide at base between eyes.

Color, crown dark brown, a yellowish spot each side just above margin near ocelli. Pronotum dark brown with irregular yellowish spots on anterior portion of disc. Scutellum dark brown with yellowish markings each side of middle and at apex. Forewings yellowish brown with dark brown markings, mostly on corium and on apical and antepical cells.

Female 7th sternum with posterior margin sloping cephalad each side of a broad shallow V-shaped median notch.

Male style abruptly enlarged at more than 3/4 its length, forming a foot-like apical portion with a sharply pointed "heel" and a pointed "toe." The "toe" portion is only slightly narrowed before the pointed apex. Aedeagus U-shaped, the main portion of shaft bearing 2 processes which arise near middle of shaft and extend laterocaudally.

Holotype male, Panama, Bocas d.T. Mirimar 9° N: 80° 15' W, 21-VIII-1979, H. Wolda coll. Paratypes: 1 ♂ same as holotype except 6-VI-1979; 5 ♀s same except 1 each, 4-VIII-1979, 21-I-1980, 5-XII-1978, 24-II-1979 and 27-III-1979, and 2 ♀s same except 4-VII-1979.

X. parvus is related to *X. superbus* (Prov.) and can be separated by the narrower, short portion of the aedeagus and the longer narrower apical portion of the style.

Xestocephalus costatus n. sp.

(Figs. 3, 4, 16, 22-24)

Length of male 3 mm, female unknown. Crown produced and rounded apically, almost twice as wide at base between eyes as wide at middle. Color, crown yellowish brown with a large darker brown area just above margin next to each eye and extending half length of crown. Pronotum yellowish brown with darker brownish mottling. Scutellum pale brownish with darker brown basal angles. Forewing yellowish brown with 2 small dark brown spots on corium, 2 large brown spots on costa beyond its middle and entire apical portion of wing including entire median apical cell, dark brown.

Male style abruptly enlarged at 2/3 its length then tapered to a slender pointed apex. The apical foot-like portion of the style with a sharp angled heel. Aedeagus U-shaped, shaft with 2 processes arising near middle on ventral margin and extending ventrocaudally. Dorsal portion of U-shaped shaft, rather broad, blunt at apex and half as long as ventral portion.

Holotype male, Panama, Barro Colorado Id. at light SM, V, III, 13-XII-1979, H. Wolda coll. Paratypes: 1 ♂ same as holotype except 15-V-1980; 1 ♂ same except 16-V-1980; 5 ♀ same as holotype except, 1 each, 1-VIII-1975, 18-V-1980, 30-VIII-1980, 23-XII-1978, and 8-V-1980 all collected at light.

X. costatus is related to *X. badius* DeL., Wol. & Estro, and can be separated by the more narrowed aedeagus and by the 2 aedeagal processes.

Xestoecephalus panamanus n. sp.
(Figs 5, 6, 18, 25-27)

Length of male 3.5 mm, female unknown. Crown bluntly angled, more than half as long at middle as width at base between eyes. Color, crown yellowish. Pronotum yellowish, mottled with brown. Scutellum yellowish. Forewings yellowish with dark brown spots. Three spots on clavus next to commissure, one near base at middle of wing, a large dark brown spot on costa at middle of wing and a large dark brown spot at apex.

Female 7th sternum with posterior margin slightly angularly sloping cephalad each side of a slight median notch.

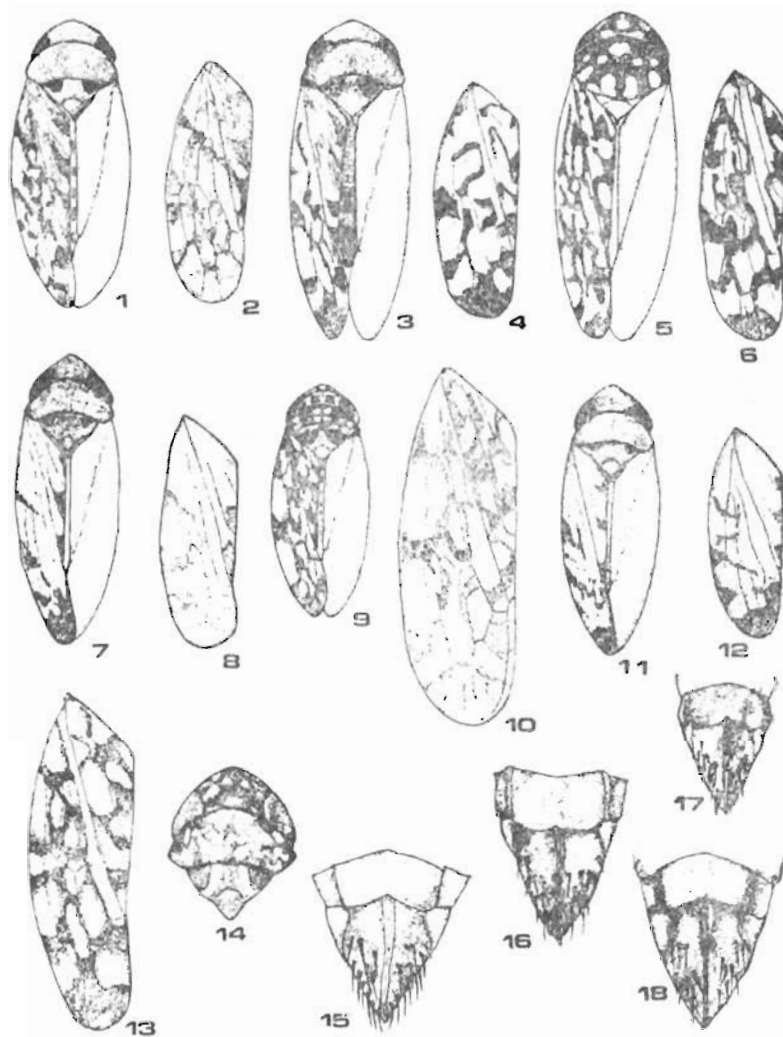
Male style abruptly broadened at more than 3/4 its length to form a "foot"-like portion, the heel of which is sharply angled ventrally, then gradually curved and tapered to form a sharp pointed "toe". Aedeagus U-shaped, main shaft curved, slender, pointed apically. Dorsal portion of shaft broader basally, gradually narrowed apically, apex sharp pointed, bent inwardly. Two short slender processes arise at base of dorsal portion and extend across U-shaped opening to ventral portion of shaft.

Holotype male, Panama, Bocas d.T. Corriente Grande 100 m. 9° 17' 30" N; 82° 32' 41"; 19-I-1980 H. Wolda coll. Paratypes: 2 ♀ same except 1 each 12-II-1980 and 19-IV-1980.

X. panamanus is related to *X. atratus* DeL., Wol. & Estro. and can be separated by the U-shaped aedeagus and the 2 basal processes.

Xestocephalus bicoloratus n. sp.
(Figs. 7, 8, 28-30)

Length of male 3 mm, female unknown. Crown bluntly angled, a little wider between eyes at base than long at middle. Color, crown pale brownish. Pronotum



Figs. 1-18. *Xestocephalus parvus* n. sp. 1. dorsal view, 2. left forewing, 15. female 7th sternum and pygofer. *X. costatus* n. sp. 3. dorsal view, 4. left forewing, 16. female 7th sternum and pygofer. *X. panamanus* n. sp. 5. dorsal view, 6. left forewing, 18. female 7th sternum and pygofer. *X. bicoloratus* n. sp. 7. dorsal view, 8. left forewing. *X. fulvus* n. sp. 9. dorsal view, 10. left forewing, 17. female 7th sternum and pygofer. *X. aquilus* n. sp. 11. dorsal view, 12. left forewing. *X. pullus* n. sp. 13. left forewing, 14. head pronotum and scutellum, dorsally.

dark brown with lighter brownish areas. Scutellum darker brown on basal half, apical half yellowish. Forewings uniform brownish on basal 2/3. A darker brown spot on apex of clavus, a round spot on costa at same distance from base of wing and 3 dark brown spots on apical portion.

Male style slightly enlarged at more than 3/4 its length to form a foot-like apical portion. "Foot" with a slightly angled heel, then tapered to a narrow sharp

pointed apical "toe". Aedeagal shaft U-shaped. Main portion of shaft curved inwardly at apex, which is narrow and sharp pointed. Ventral portion of U-shaped aedeagus 2/3 as long as main shaft, curved outwardly at apex and sharp pointed.

Holotype male, Panama, Bocas d.T. Corriente Grande, 100 m. 9° 17' 30"N; 82° 32' 41" 8-IV-1980 Henk Wolda coll. Paratypes: 1 ♀ same as holotype except 7, 13-V-1980; 1 ♀ same except 30-IV-1980.

X. bicoloratus is related to *X. ancorifer* Lv. and can be separated by the absence of aedeagal processes.

Xestocephalus fulvus n. sp.

(Figs. 9, 10, 17, 31-33)

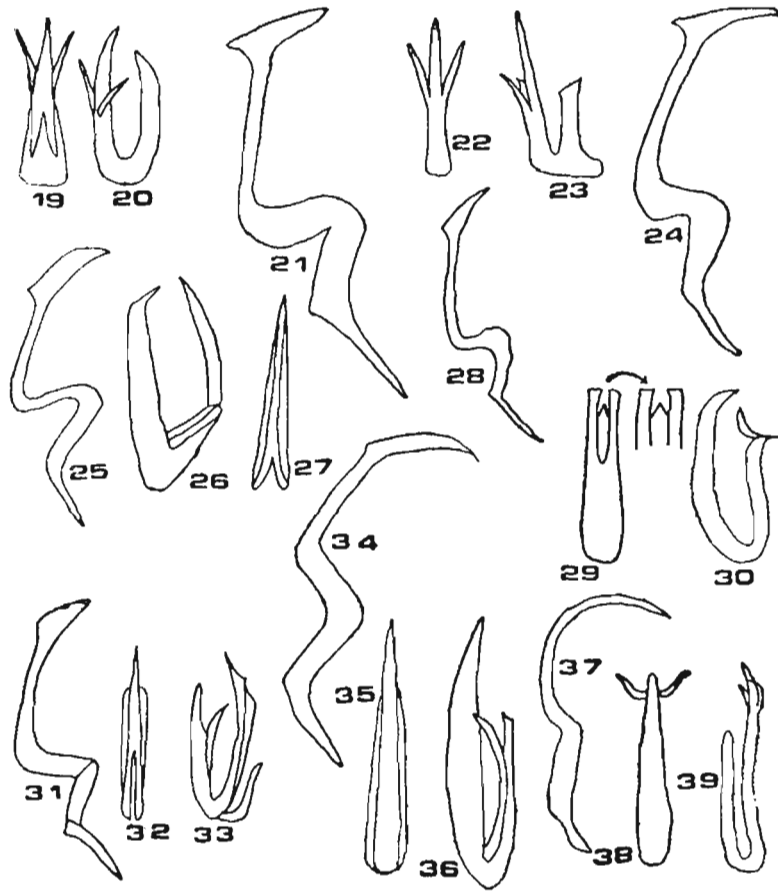
Length of male 2.5 mm, female unknown. Crown bluntly angled, 1/3 wider at base between eyes than long at middle. Color yellowish brown with a dark brown circular band around apex. This is connected to a dark brown line from ocelli which extends to a dark brown spot each side of basal portion of crown. Pronotum dark brown with circular yellowish spots. Scutellum dark brown with yellowish spots near apex. Forewings yellowish brown with dark brown mottling, apical portion smoky brown.

Female 7th sternum with posterior margin convexly rounded each side of median broad shallow V-shaped notch.

Male style with blade enlarged at more than 3/4 its length to form an apical "foot"-like portion with "heel" angled and "toe" only slightly narrowed until at pointed apex. Aedeagus U-shaped with main shaft curved slightly inwardly. Apical portion tapered and pointed. Ventral portion of shaft more than 2/3 as long as main shaft, apical third narrowed and bluntly pointed. A narrow process arises near base on inner margin of ventral portion of shaft, curves inwardly and extends 2/3 length of main shaft. A shorter process, 1/3 length of main shaft arises on its outer margin and extends apically along shaft.

Holotype male, Panama, Barro Colorado Id, at light 26-VI-1979, H. Wolda coll. Paratypes: 4 ♀ same as holotype except 1 each 2-V-78, 12-VIII-1978, 2-VII-1979, 24-VII-1979; and 2 same except 1-VII-1977; 1 ♀ Las Cumbres, Panama 16-X-1974, all collected at light.

X. fulvus is related to *X. cervinus* Del.. Wol. & Estro, and can be separated by the U-shaped aedeagus and the 2 aedeagal processes.



Figs. 19-39. *X. parvus* n. sp. 19. aedeagus ventrally, 20. aedeagus laterally, 21. style laterally. *X. costatus* n. sp. 22. aedeagus ventrally, 23. aedeagus laterally, 24. style laterally. *X. panamanus* n. sp. 25. style laterally, 26. aedeagus laterally, 27. aedeagus ventrally. *X. bicoloratus* n. sp. 28. style laterally, 29. aedeagus ventrally, 30. aedeagus laterally. *X. fulvus* n. sp. 31. style laterally, 32. aedeagus ventrally, 33. aedeagus laterally. *X. aquilus* n. sp. 34. style laterally, 35. aedeagus ventrally, 36. aedeagus laterally. *X. pullus* n. sp. 37. style laterally, 38. aedeagus ventrally, 39. aedeagus laterally.

Xestocephalus aquilus n. sp.

(Figs. 11, 12, 34-36)

Length of male 3 mm, female 3 mm. Crown produced, bluntly angled, only a little wider at base, between eyes, than long at middle. Color. crown, pronotum and scutellum dark brown. Forewings brown with darker brown spots. Prominent dark brown spots on middle and at apex of clavus, at middle and near apex of costa and on inner margin of wing just caudad to apex of claval suture.

Female 7th sternum a little longer than preceding segment, posterior margin almost truncate, narrowly notched at middle more than half way to base.

Male style only slightly enlarged to form an apical foot-like structure at 3/4 its length. "Heel" portion of apical "foot" only slightly wider than shaft, and slightly angled, then tapered to a narrow, pointed "toe". Aedeagal shaft narrowly U-shaped. Main portion of shaft long, pointed apically. Dorsal portion more narrowed, 2/3 as long as shaft proper and blunt apically. A narrow curved process arises on main shaft at base of "U" and extends apically between the 2 portions of aedeagus 2/3 length of main shaft.

Holotype male, Panama, Bocas d.T. Corriente Grande 100 m. 9° 17' 30" N; 82° 32' 77" 23-III-1980 H. Wolda coll. Paratypes: 1 ♀ Panama, San Blas near Punta Escoces 77° 42' W; 8° 48' N, 30-I-1978, Ash coll. 3 ♀ same as holotype except 4-III-1979 Caroline ash coll.

X. aquilus is related to *X. curtus* DeL. & Lv. and can be separated by the 2 basal processes of the aedeagus.

Xestocephalus pullus n. sp.
(Figs. 13, 14, 37-39)

Length of male 3.5 mm, female unknown. Crown bluntly angled, a little wider at base between eyes than long at middle. Color, crown yellowish brown with a dark brown spot each side between ocellus and eye, and a small round dark brown tubercle-like spot next to each eye on basal portion of crown. Pronotum pale brownish with darker brown mottling. Scutellum pale brownish with dark brown basal angles. Forewings pale brownish with dark brown markings, especially on apical half. Larger brown spots on middle and apex of clavus, on costa at more than half its length, on veins of apical and antepical cells and on inner margin, caudad portion of clavus.

Male style sickle-shaped, apical 2/3 semicircular, narrow, apical portion gradually tapered to slender pointed apex. Aedeagus narrowly U-shaped. Main portion of shaft elongate, narrow, bearing 2 short subapical processes which extend laterocaudally. Apex of shaft narrow, pointed. The ventral portion of aedeagal shaft 2/3 as long as main portion, narrow, bluntly angled.

Holotype male, Panama, Bocas d.T. Corriente Grande 100 m. 9° 17' 30" N; 82° 32' 41", 27-I-1980 H. Wolda coll.

H. pullus is related to *X. fuscarus* DeL., Wol. & Estro. and can be separated by the much longer curved blade of the style.

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