

Review of North American species of the genus *Lymeon* Foerster, 1869 (Hymenoptera: Ichneumonidae: Cryptini)

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A key to 33 North American species of *Lymeon* is given. Twenty eight species are recorded for Mexico; new data on their distribution are given. Nine new species from Mexico are described. New synonymies are established: *Lymeon imbecillis* (Cresson, 1868), ♂ = *L. leucosoma* (Cameron, 1886), ♀, syn. n.; *L. patruelis* (Cresson, 1873), ♀ = *L. rarus* Cresson, 1873, ♂, syn. n. Two species are transferred from *Lymeon*: *Rhinium absolutum* (Cresson, 1873), comb. n. and *Acerastes accolens* (Cresson, 1873), comb. n.

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Lymeon Foerster is a very large genus with predominantly Neotropical distribution, from Mexico to Argentina; three species (*L. cinctiventris* Cushman, *L. nasutus* Porter and *L. orbus* Say), are described from the USA.

The types of North American species have been examined by the senior author. The types of new species and all materials (except if stated otherwise) are deposited in the Insect Museum, UAT, Cd. Victoria, Tamaulipas, Mexico. Two species are transferred from *Lymeon*: *Rhinium absolutum* (Cresson, 1873), comb. n. and *Acerastes accolens* (Cresson, 1873), comb. n.

The following abbreviations have been used for collections containing types of Mexican and Neotropical species: AEI – American Entomological Institute, Gainesville, Florida, USA; BMNH – Natural History Museum, London, U.K.; ANSP – Philadelphia Academy of Natural Sciences, Philadelphia, USA; USNM – U.S. National Museum of Natural History, Washington D.C., USA. Other abbreviations: SMSC – “selva mediana subcaducifolia”, SMSP – “selva mediana subperennifolia”.

In the “Material”, Spanish words are cited like in labels.

Key to North American species of *Lymeon*

1. Females 2
- Males 32
2. Propodeum red (sometimes on apophyses white). – Hind coxa red 3

- Propodeum at least basally black (in *L. transilis* only transverse basal groove and front margin of propodeum black) 14
3. Abdomen black with white bands 4
- Abdomen entirely rufous 12
4. Mesoscutum rufous; thorax rufous, white on front margin 5
- Mesoscutum black with two white median stripes. – Hind and middle coxae with a white spot dorsally. Hind tibia uniformly rufous. – Fig. 2 26. *L. rufotibialis* sp. n.
5. Front wing hyaline with two fuscous bands: one at apex and another distad of nervulus and of basal vein. – Hind tibia with white basal spot (Figs 1, 3, 5) 6
- Front wing without distinct fuscous bands, or only with apical one, or entirely fuscous 9
6. Head rufous. – Mesopleurum with subvertical white spot anteriorly. Legs rufous; hind tibia white subbasally. Tergites 1-3 with apical white band, tergites 4-5 black, two apical tergites white 2. *L. adjicialis* Cresson
- Head black and white 7
7. Head black (Fig. 5), only frons with white orbits. Tergites 3-5 black (Fig. 5). – Hind coxa reddish; hind tarsus light brownish (Fig. 5) 25. *L. rufoniger* sp. n.
- Head at least on orbits entirely white (Fig. 3). Tergites 4-5 black (Figs 1, 3) 8
8. Petiolus reddish with dorsal black spot between spiracles (Fig. 3). Hind coxa entirely red; hind tarsus rufous (Fig. 3). Pronotum on dorsolateral margin and scutellum entirely reddish 23. *L. rufithorax* Cameron
- Petiolus black with extreme base reddish (Fig. 1). Hind coxa reddish with dorsal white spot and brownish pattern surrounding the spot (Fig. 1); hind tarsus predominantly white (Fig. 1). Pronotum on dorsola-

- teral margin and scutellum dorsally yellowish 22. **L. rufinotum** sp. n.
9. Head red; orbits white, interrupted on vertex. Antenna blackish, without white band; scape reddish. Mesopleurum with large white central spot. Front wing brownish. – Cuba and Florida 10
- Head black and white. Antenna in female and often in male with white band 11
10. Metapleurum entirely red. Abdomen beyond tergite 2 predominantly reddish with white dorsal spot at apex of tergite 7 5. **L. bicinctus** Cresson
- Upper division of metapleurum with white spot in its lower half. Abdominal tergites black, banded with white 28. **L. subflavescens** Cresson
11. Temples black with orbits white only close to vertex and in their lower 0.3, where white coloration expands on cheeks. Face white with vertical median black spot; clypeus white, margined with black. White band on tergites 4-6 slightly interrupted dorsally (in the type) (Fig. 6) 10. **L. ingenuus** Cresson
- Temples white (Fig. 4); on head, only median band, from upper margin of antennal sockets to occiput, and upper part of occiput are black (and partly reddish). White band on tergites 4-5 interrupted dorsally (Fig. 4) 21. **L. rufatus** sp. n.
12. Head black (except for mandibles). Thorax entirely red (except for white front margin of pronotum, small marks on subtergular ridge and on apophyses). Scape reddish brown; flagellum with about 4 segments white (in the type, antennae missing). Front wing broadly fuscous just distad of nervulus and basal vein. Legs uniformly reddish, only last tarsal segments brownish 9. **L. imbecillis** Cresson
- Head red, or red and white 13
13. Propodeum with two transverse carinae without tubercles. Clypeus not projecting downward. Front wing with cloud on basal vein, on areolet and at apex. Petiole yellow at base 15. **L. mexicanus** Cameron
- Propodeum with strong crests at apical transverse carina. Clypeus strongly projecting downward. Front wing with a median and subapical lightly infuscate band. – USA: New Mexico 17. **L. nasutus** Pratt
14. Mesoscutum entirely black 15
- Mesoscutum with one or two white (or yellow) median marks 16
15. Dorsolateral margin of pronotum medially with broad conical tooth (see dorsally) projecting laterad. Flagellum with 5 black basal segments before white band. Mesoscutum coarsely punctato-rugose **Rhinium admonitum** Cresson
- Dorsolateral margin of pronotum without conical tubercles. Flagellum with 4 black basal segments before white band. Mesoscutum without punctures on lateral lobes; its posterior half medially with strong longitudinal rugae. – Figs 13-15 4. **L. atrator** sp. n.
16. Mesoscutum with one central pale spot 17
- Mesoscutum with two (or more) median marks 19
17. Propodeum without tubercles or spines. Scape white beneath. Head (except black spot on vertex and occiput), thorax (except for mesoscutum, lateral regions of scutellum and basal band at propodeum) and legs (except tarsal tips) yellowish white 6. ?**Lymeon** [**Ischnus**] **centralis** Cresson
- Propodeum with a pair of distinct blunt tubercles (apophyses) sublaterally. Scape black. Median band on frons, hind half of vertex and occiput entirely black. Mesopleurum on prepectus, on its upper and hind margins black; mesosternum sometimes entirely black; propodeum black with two large white spots covering tubercles. Hind coxa white, black antero-basally and dorsoapically. Hind tibia uniformly yellowish. Petiole black 18
18. Mesoscutum at lateral lobes mostly smooth, without punctures. Speculum black; mesosternum entirely black (Fig. 16). Front wings weakly dusky at apex. Hind femur varied in coloration: usually black and red or black and yellow, but sometimes red with yellow lateral spot; hind trochanter 1 black with yellow apical margin (Fig. 17). Hind tarsus white, except for segment 5. Upper valve of ovipositor behind of nodus about 5 times as long as high at nodus (Fig. 35). Propleurum black or white 1. **L. acceptus** Cresson
- Mesoscutum evenly coarsely and closely punctured. Speculum yellow; mesosternum yellow or black with yellow spot just beneath sternaulus. Front wing hyaline. Hind femur uniformly reddish; hind trochanters entirely reddish (or partly darkened). Hind tarsus usually only with segments 2 and 3 white. Upper valve of ovipositor behind nodus thin, about 6-7 times as long as high at nodus. – Fig. 68 7. **L. cinctiventris** Cush.
19. Abdomen predominantly reddish; tergites without basal black bands (at most only tergite 3 partly brownish basally). Tergites 3-6 without white apical band. – Hind coxa predominantly red. Mesoscutum with two yellow median stripes 20
- Abdominal tergites black with apical white or light yellow band, or (in *L. sexlineatus*) sometimes almost entirely whitish with narrow basal blackish band only on tergites 2 and 3. In *L. patruelis*, abdomen sometimes almost entirely reddish brown, but tergites 3-6 with distinct apical white band 23
20. Front wing with two brownish bands. Scape, hind corner of pronotum, speculum, mesosternum, postscutellum, metapleurum (except posterior white spot) black. Tergite 7 white dorsally. Hind coxa entirely reddish, without white dorsal spot. – Figs 8, 37 31. **L. tinctipennis** sp. n.
- Front wing hyaline, without fuscous bands. Scape, hind corner of pronotum, speculum, mesosternum white; postscutellum white or brownish; metapleurum (except on margins) whitish yellow or reddish. Tergite 7 reddish (at most hind margin white). Hind coxa red, usually with dorsal white spot 21
21. Mesopleura medially with oblique black band (from mesopleural pit to subtergular ridge). White flagellar segments brownish ventrally; scape reddish beneath. Postscutellum white. Propodeum black between apophyses; metapleurum whitish yellow. Hind tarsus with basitarsus completely reddish. Flagellar segments 1 and 2 combined about 1.3 times as long as maximum diameter of eye. – Ovipositor beyond nodus strongly compressed (Fig. 38), 1.05 times as long as segment 2 of hind tarsus 11. **L. junctus** Cresson
- Mesopleura medially without oblique black band. White flagellar segments not darkened ventrally; scape white beneath. Postscutellum brownish. Propodeum reddish between apophyses; metapleurum reddish. Hind tarsus with basitarsus in apical part white. Flagellar segments 1 and 2 combined about 1.6-1.7 times as long as maximum diameter of eye. Groove between metanotum and propodeum shallow and broad, below postscutellum with vertical wrinkles 22
22. Pronotum on hind (vertical) margin black, except before tegula. Mesoscutum black, with two median yellow stripes. Propodeum with two sublateral white spots covering apophyses and extending to apex 29. **L. sulsus** Cresson

- Pronotum on hind (vertical) margin widely white. Mesoscutum reddish, with black margins and two median yellow stripes. Propodeum only on apophyses white 32. **L. transilis** Cresson
- 23. Hind coxa tricoloured: ventrally red, dorsally white with apical black spot (Fig. 33). Mesopleurum whitish yellow (front corner entirely whitish); prepectus partly black; speculum entirely or partly black (but black coloration from speculum not extends below mesopleural pit, except for mesopleural suture); mesepimeron whitish. Petiolus black, except for extreme base. Ovipositor short, ovipositor sheath 0.4 times as long as hind tibia. [In the type of *L. flavovariiegatus*, ovipositor sheath about half as long as hind tibia. Areolet large (Figs 7, 9)] 24
- Hind coxa not as above: black and white, or red, or red with white, etc. 26
- 24. Apophyses absent (weak crests). Lower part of metapleurum black 8. **L. flavovariiegatus** Cameron
- Apophyses present (but not strong). Lower part of metapleurum not darkened 25
- 25. Mesoscutum yellow with black longitudinal bands (Fig. 21) 27. **L. sexlineatus** Cameron
- Mesoscutum black with two median yellow stripes 33. **L. tricoloripes** sp. n.
- 26. Hind coxa white with black spots (Fig. 34) 27
- Hind coxa light reddish (sometimes with white dorsal spot) (Figs 31, 32) 28
- 27. Lateral lobes of mesoscutum almost smooth, without punctures. Coloration of thorax similar to that in *L. orbis* (Fig. 70) 16. **L. moratus** Cresson
- Lateral lobes of mesoscutum of male (female unknown) distinctly and rather coarsely punctate 12. **L. lassatus** Cresson
- 28. Mesoscutum with yellow stripes widened anteriorly and hooked back along lateral margin (Fig. 18). Mesopleurum entirely white, only mesopleural suture blackish (Fig. 18). Propodeum usually partly yellowish at base (Figs 24, 25). Second abdominal tergite pale in basal 0.15. Hind coxa entirely red 3. **L. adultus** Cresson
- Mesoscutum with yellow median stripes not hooked anteriorly and without sublateral yellow stripes 29
- 29. Dark basal band on tergites 2-6 usually brownish and in its hind part lighter (reddish brown); tergites 5-6 sometimes entirely reddish brown dorsally. Prepectus black. Mesopleurum with a broad black spot under subtegular ridge, which expands on front half of speculum; mesepimeron yellowish (Fig. 20). Front part of metapleurum black. Hind coxa with weak white dorsal spot on posterior margin; hind trochanter I fuscous; hind tarsus with apical half of 1st segment and segments 2 and 3 entirely white. Hind tibia with subbasal white spot. Scape brownish, sometimes (in type) narrowly white beneath; pedicel with white dorsal spot at base 20. **L. patruelis** Cresson
- Dark basal band on tergites 2-6 black. Other characters not entirely as above 30
- 30. Propodeum predominantly pale basally and white at lateral black stripes; its median black mark narrows apically and expands to basal transverse carina (Fig. 28). Mesopleurum entirely pale yellowish (except small black spots above and beyond subtegular ridge). Hind coxa pale rufous 18. **L. novatus** Cresson
- Propodeum before basal transverse carina, a lateral stripe on pleural carina, prepectus and speculum on mesopleurum black 31
- 31. Mesopleurum broadly and completely black on hind margin (to middle coxa) (Fig. 22). Hind coxa and petiole of 1st abdominal segment entirely rufous. White sublateral spots of propodeum extend from basal transverse carina to apex. Ovipositor stout 30. **L. tantillus** Cresson
- Black band on hind margin of mesopleurum not expands below mesopleural pit, except for thin line on mesopleural suture (Fig. 19). Hind coxa rufous with white dorsal spot (Fig. 19); petiolus white. White sublateral spots of propodeum anteriorly not extend to basal transverse carina (Fig. 26) 14. **L. mandibularis** sp. n.
- 32. Propodeum red (usually on apophyses white and sometimes with light brownish spots at base) 33
- Propodeum predominantly black or at least with two basal blackish or dark brown spots 39
- 33. Abdomen entirely reddish. – Mesoscutum entirely black. Antenna black with scapus yellowish red. Head black with clypeus and mandibles partly white. Pronotum black with broad white band on front margin. Prepectus and anterior half of mesopleurum black; posterior part of mesopleurum and metapleurum completely reddish. Scutellum white dorsally to apex. Legs uniformly reddish; fore coxae and trochanters white 9. **L. imbecillis** Cresson
- Abdomen with black and white marks, sometimes partly reddish 34
- 34. Mesoscutum entirely black. – Antenna black; scape and pedicel white ventrally. Head black with face, clypeus, mandibles and orbits white. Pronotum black with broad white band on anterior margin. Mesopleurum reddish with upper front corner black (Fig. 45); metanotum reddish brown. Petiole light reddish with a blackish dorsal spot between spiracles; abdominal tergites 2-6 black with broad apical white band on tergites 2 and 3, with whitish or reddish lateral sides on tergite 4, and with tergite 7 entirely white; parameres brownish. Hind coxa and femur red, trochanters brownish, tibia fuscous with subbasal white ring; tarsal segments 2-3(4) white 23. **L. rufithorax** Cameron
- Mesoscutum entirely red (sometimes with weak brownish marks) 35
- 35. Second tergite entirely black, tergite 4 white basally (Fig. 46). Hind coxa as in Fig. 63. Thorax entirely red with white propleura and front margin of pronotum 24. **L. rufoalbus** sp. n.
- Second tergite black with white apical band. Hind coxa differently coloured 36
- 36. Mesopleurum with large anteromedian white spot. Scutellum and postscutellum white. – Front margin of pronotum, small spot on its dorsolateral margin, subtegular ridge, spot on apophyses whitish. Head white and red 37
- Mesopleurum without large anteromedian white spot. Scutellum or postscutellum (or both) reddish. – Tergites 1-3 black with white apical band; tergites 4-6 entirely black, apex of abdomen white. Flagellum blackish. Hind tibia blackish with basal 0.2 white; hind basitarsus in apical half and tarsal segments 2-4 white 38
- 37. Discoidella completely absent. White spots on upper division of metapleurum and in hind corner of its lower division. – Tergite 3 in apical half and tergite 4 entirely reddish. Hind tarsus fuscoferruginous. – Southern Florida and Cuba 5. **L. bicinctus** Cresson
- Discoidella present. Metapleurum entirely reddish. – Other characters not as above. – Mexico 2. **L. adjicialis** Cresson
- 38. Hind coxa red with dorsoapical dark brown spot (Fig. 61). Propleurum white; pronotum reddish beyond the

- epomia. Propodeum with the carinae reduced (except for basal transverse carina) 21. **L. rufatus** sp. n.
- Hind coxa tricoloured (Fig. 62). Propleura and pronotum predominantly black. Propodeum with more or less distinct areola and with both transverse carinae distinct 22. **L. rufinotum** sp. n.
- 39(32). Mesoscutum and mesosternum black. Orbits white, widely interrupted with black on temple. Antenna black (including scape). Propleura, scutellum (except apically), fore and middle coxae and trochanters whitish yellow. Metapleurum yellow with its front and lower part black 40
- Mesoscutum with one or more yellow marks centrally; mesosternum rarely black 41
40. Hind coxa dorsally yellow and black, sometimes predominantly black (Fig. 52); hind femur blackish; hind tibia yellowish with blackish base and apex (Fig. 48). Tergites 4-7 reddish in basal half and black in apical half (Fig. 47). Pronotum on dorsolateral margin white. Lateral lobe of mesoscutum in hind half polished, shiny 4. **L. atrator** sp. n.
- Hind coxa and femur predominantly reddish with dorsoapical brown spot (Fig. 50); hind tibia blackish with white subbasal ring. Tergite 3 in apical 0.2 and tergite 4 entirely reddish; tergites 5-6 entirely black. Pronotum on dorsolateral margin black. Mesoscutum mat, with fine indistinct punctures 13. **L. maculipes** Cameron
41. Mesoscutum black with a central whitish yellow spot 42
- Mesoscutum black with a pair of median yellow stripes 44
42. Hind coxa entirely reddish or sometimes with dorso-basal brownish spot (Fig. 66). Mesoscutum with central spot subquadrate and bifurcate anteriorly. Mesopleurum usually whitish, bordered with black except ventrally (Fig. 22) 30. **L. tantillus** Cresson
- Hind coxa dorsally black and white (Figs 51, 53). Mesoscutum with round central spot 43
43. Mesoscutum densely uniformly punctate. Hind coxa white and black (Fig. 53, 69) 7. **L. cinctiventris** Cushman
- Mesoscutum on lateral lobes almost impunctate. Hind coxa tricoloured (Fig. 51): black and white dorsally and reddish yellow ventrally 1. **L. acceptus** Cresson
44. Hind coxa entirely red or yellowish (Fig. 64) 45
- Hind coxa with black marks or reddish yellow with white dorsal spot (Figs 54-60, 65) 47
45. Orbits white, broadly interrupted with black on temple; mesosternum black; mesopleurum black with large submedian white spot (Fig. 43). Tergite 4 entirely reddish; hind tibia fuscous with subbasal white spot (Fig. 43) 25. **L. rufoniger** sp. n.
- Orbits white, without an interruption on upper part of temple; mesosternum and mesopleurum almost entirely light yellow. Tergite 4 black with apical white band. Hind tibia yellowish, weakly darkened at base and distinctly so at apex 46
46. Antenna without white median band. Hind corner of pronotum before tegula yellow; no black spot under subtegular ridge. Black spot between apical transverse carina and apex of propodeum broadened to apex. Mesoscutum with fine superficial punctures. Brachiella reduced 3. **L. adultus** Cresson
- Antenna with white median band interrupted ventrally. Hind corner of pronotum before tegula black; black spot under subtegular ridge. Black spot between apical transverse carina and apex of propodeum wider to transverse carina (Fig. 28). Mesoscutum with dense distinct punctures. Brachiella long 18. **L. novatus** Cresson
47. Tergites 3-7 reddish with black basal third (black basal half in tergite 3). Antenna with flagellar segments 8-12(13) white (fuscous ventrally). Hind coxa dorsally tricoloured: red and white dorsolaterally and with dorso-basal black spot (Fig. 56). Hind tibia uniformly reddish brown. Brachiella absent 11. **L. junctus** Cresson
- Tergites differently coloured; other characters not as above 48
48. Hind coxa almost entirely black or brown dorsally (except for extreme apex), whitish laterally and ventrally (Fig. 57). Hind tibia with white subbasal band. Propodeum black, except for two apical lateral yellow spots (these sometimes confluent). Mesopleurum usually black in upper third (except for subtegular ridge and usually for posterior part of speculum), but sometimes coloration of mesopleurum lighter. Metapleurum usually black on front upper corner. Petiole black except ventrally; tergite 4 usually reddish; tergite 7 white dorsally 20. **L. patruelis** Cresson
- Hind coxa not so strongly darkened dorsally, usually anteriorly or (and) posteriorly with basal dark spot. Hind tibia without white subbasal band. – Other characters not entirely as above 49
49. Antenna with about flagellar segments 7-15 white. Mandibles swollen basally (Fig. 23). Mesoscutum uniformly densely and distinctly punctate. Apophyses distinct. Hind coxa tricoloured (Figs 58-60) 14. **L. mandibularis** sp. n.
- Antenna with flagellum blackish, without white band. Mandibles basally rather flat. Mesoscutum usually without distinct and dense punctures (except for *L. lassatus*). Apophyses absent 50
50. Mesoscutum rather coarsely and densely uniformly punctate. Propodeum with distinctly bordered areola (as in *L. rufinotum* – Fig. 67). Scape white ventrally. Mesepimeron predominantly or entirely black. Petiole white dorsally (black laterally). Hind coxa with dorsoapical dark spot, white at base (Fig. 54) 12. **L. lassatus** Cresson
- Mesoscutum in posterior 0.6 almost impunctate (smoother on lateral lobes). Propodeum without areola. Scape reddish or brown ventrally. Mesepimeron whitish yellow. Petiole black. Hind coxa differently coloured 51
51. Areolet large, about as long as portion of second recurrent vein above the bulla. Orbits interrupted with black in upper part of temple. Mesoscutum on lateral lobes mat, distinctly granulate. Speculum black; mesopleurum whitish with small black spot under ridge. Submetapleural carina usually black. Hind coxa anteriorly reddish, dorsally whitish at base, blackish at apex (Fig. 65) 33. **L. tricoloripes** sp. n.
- Areolet smaller, about 0.5-0.7 times as long as portion of second recurrent vein above the bulla. Orbits not interrupted on temple. Mesoscutum on lateral lobes and in hind half polished, without granulate sculpture. Speculum white; mesopleurum whitish with oblique black band from mesopleural pit to upper front corner (Figs 70, 71). Submetapleural carina white. Hind coxa with black dorsal band from base to apex (Fig. 55). Tergite 4 usually reddish, darkened at apex 52
52. Hind coxa black and white, usually with an anterior and a posterior black basal spots (Fig. 55). – Mexico 16. **L. moratus** Cresson
- Hind coxa usually tricoloured, anteriorly reddish, with weak black mark (Fig. 71). – USA 19. **L. orbis** Say

1. *Lymeon acceptus* (Cresson, 1873) (Figs 16, 17, 35, 49, 51)

Cresson, 1873: 154, ♀ [*Mesostenus* (*Mesostenus*); lectotypus: ♀, Mexico, Orizaba]; 1916: 13 (lectotype); Townes, 1946: 31 (*Christolia*); Townes & Townes, 1966: 88 (*Lymeon*).

Material. **Mexico.** *Nuevo Leon*: 1 ♀, La Estancuela al S Monterrey, 22.VIII.1986 (E. Ruiz); *Tamaulipas*: 1 ♀, Cd Victoria, canyon Novillo, 840-920 m, bosque pino-encino, 13.III.1988 (J. de Leyn); 1 ♀, Gomez Farias, 10.III.1999 (K. Flores); 2 ♂, Gomez Farias, Los Cedros, 300 m, tr. Malaise, 13.III-3.IV.1999 (S. Hernández A.); 1 ♀, same data, but 31.VII-7.VIII.1999; 4 ♂, Gomez Farias, Alta Cima, 940 m, 27.III-5.VI.1999 (S. Hernández A.); *Veracruz*: 1 ♀ (lectotype) (ANSP); 1 ♀, Tuxpan, Juana Moza, citricos, 13.X.1995 (R. Herrera); *Yucatán*: 1 ♀, 9 km N Teya Pueblo, Selva Baja Caducifolia, 28.X.1999 (D. Burgos).

Male (nov.). Fore wing 4-7 mm long; flagellum 24-27-segmented, segments (11)12-17(18) with a linear tyloid on each. Antennae entirely black, except for small yellow mark on scape beneath. Coloration of body similar to that in female, but clypeus not bordered with black and mandibles (except for teeth) white, whitish spots on apophyses confluent and extend to hind margin of propodeum. Fore and middle coxae and their trochanters I white; legs beyond the trochanters pale rufous; tarsi with segment 5 blackish; middle tarsus with segments 1-4 light brownish, pale at extreme base and apex; segments 3 and 4 sometimes whitish. Hind coxa tricoloured (Figs 49, 51): reddish ventrally and posteriorly, black and white dorsally; hind femur red with blackish base and apex; hind tibia black with pale subbasal spot (sometimes very weak); hind tarsus white with base of segment 1 and apex of segment 5 black.

The male can easily be distinguished from other males of *Lymeon* by the central white spot of mesoscutum and by coloration of mesopleurum (Fig. 16) and hind leg (Fig. 49). The male of *L. acceptus* differs from that of *L. cinctiventris* in the almost impunctate lateral lobes of mesoscutum, black speculum and mesosternum, and tricoloured hind coxae. It differs from that of *L. atrator* in the completely white orbits (in *L. atrator*, orbits at vertex interrupted with black), predominantly red hind femur, black tibia, and abdominal tergites 1-7 black with whitish yellow apical part (in males of *L. atrator*, segments 4-7 reddish in basal half and black apically – Fig. 47).

Diagnosis. *L. acceptus* can easily be separated from other Mexican species of *Lymeon* with a central white spot on mesoscutum by the black speculum and mesosternum (Fig. 16) and smooth and almost impunctate lateral lobes of mesoscutum; tip of upper valve of ovipositor distad of nodus shorter than in related species (Fig. 35). Hind femur varies in coloration but usually red and black or black and yellow (Fig. 17); hind tarsus almost completely white.

2. *Lymeon adjicialis* (Cresson, 1873)

Cresson, 1873: 172, ♀ (*Hemiteles*; type: ♀, Mexico, Orizaba); Cameron, 1886: 253; Townes, 1946: 31 (*Lymeon*); Townes & Townes, 1966: 88.

Material. **Mexico.** *Veracruz*: ♂ and ♀ (type) (ANSP).

Male (nov.). Coloration rather similar to that of female, but anteromedian white spot on mesopleurum larger and scutellum and postscutellum with white marks (in female, only postscutellum with white mark).

Diagnosis. *L. adjicialis* can easily be distinguished from other species of *Lymeon* with red thorax, dark marks on fore wing, and white spot at base of hind tibia, by the red head (with entirely white orbits) and large subvertical white spot on mesopleurum; tergites 4-6 black, 7-8 white.

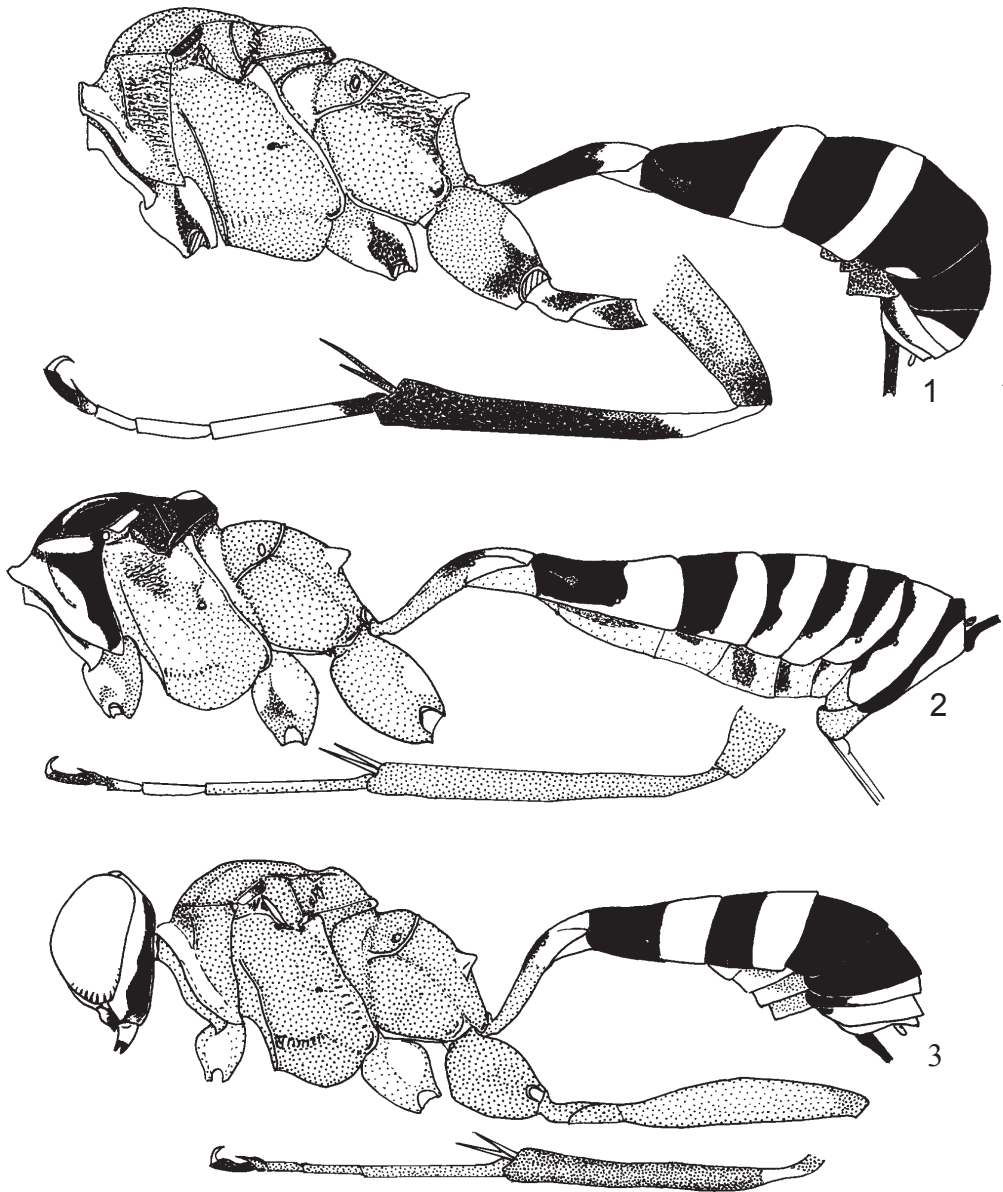
3. *Lymeon adultus* (Cresson, 1873) (Figs 18, 24, 25, 31)

Cresson, 1873: 173, ♀ (*Hemiteles*; type: ♀, Mexico, Orizaba); Cameron, 1886: 254; Townes, 1946: 32 (*Lymeon*); Townes & Townes, 1966: 88.

Material. **Mexico.** *Veracruz*: type (ANSP); *Tamaulipas*: 1 ♀, Hera, 44 km S Cd Victoria, matorral, Trampa Malaise, 18-25.XI.2000 (Kasparyan); 3 ♀, Gomez Farias, Altas Cimas, 900 m, 1.XI.1990 (H. Ruiz C.); 1 ♀, Gomez Farias, Los Cedros, 300 m, Tr. amarilla, 26.II.1995 (S. Nico, J. Coronado, S. Hernández).

Diagnosis. *L. adultus* is easily recognizable by the yellow spot on mesoscutum hooked anteriorly, strong reduction of black pattern on mesopleurum (Fig. 18), and yellow spots at base of propodeum (Fig. 24, 25). Hind coxa reddish; hind tibia and tarsal segments 1-2 (and base of segment 3) uniformly yellowish; segments 3-5 dark brown. First abdominal segment white with fuscous spot between spiracles; second tergite whitish basally (before wide subbasal black band). Scape blackish or reddish ventrally. Pterostigma pale. In the type, flagellar segments 1 and 2 combined 1.45 times as long as maximum diameter of eye; proportion of segments 2, 3, 5 of hind tarsus 3.3 : 2 : 2.6; ovipositor tip beyond the nodus 0.8 times as long as segment 2 of hind tarsus. Lateral lobes of mesoscutum mat, with very fine dense superficial punctures.

Note. In the type of *L. adultus* and some other specimens in the material examined, there are two anterolateral yellow spots on central lobes of mesoscutum. This character and basal pale band of tergite 2, pale coloration of mesopleurum, yellow spots on propodeum before spiracles resemble characters of *L. sexlineatus*, but in *L. adultus* the hind coxa is reddish (tricoloured in *L. sexlineatus*) and yellow spots at base of propodeum are wider.



Figs 1-3. *Lymeon*, female, colour pattern of body and hind leg. **1,** *L. rufinotum* sp. n., **2,** *L. rufotibialis* sp. n., **3,** *L. rufithorax* Cameron.

4. *Lymeon atrator* sp. n.
(Figs 13-15, 36, 47, 48, 52)

Holotype. ♀, **Mexico, Tamaulipas,** Gomez Farias, Alta Cimas, 900 m, tr. Malaise, 12-19.VIII.2000 (Kasparyan).

Paratypes. **Mexico. Tamaulipas:** 1 ♂, Gomez Farias, Alta Cimas, 900 m, tr. Malaise, 29.V-5.VI.1999 (S. Hernández); 3 ♂, same locality, 1-8.V and 4-26.VIII.2000 (Kasparyan); 3 ♂, Gomez Farias, Los Cedros, 300 m, tr. Malaise, 13-20.II and 17.IV-1.V.1999 (S. Hernández).

Description. *Female* (holotype). Fore wing about 8.7 mm long. Antenna with 26 flagellar segments; flagellar segments 1 and 2 subequal and combined 1.5 times as long as maximum diameter of eye; segments 5-9 weakly compressed; segment 7 about 1.1 times as long as wide and 1.5 times as wide as segment 1 in its middle. Malar space 0.7 times as long as basal width of mandible. Central part of face transversely punctato-

rugose; clypeus with large punctures separated by 1-2 their diameters. Temples strongly narrowed beyond eyes and strongly broadened to mandibles (Fig. 13); in profile, their maximum length about 2.5 times the minimum length (at level of upper 0.25 of eye). Occipital carina straight and sharp before connection with hypostomal carina; oral carina just beyond mandible weakly raised as low lobe. Epomia vertical, weak, obscured by parallel vertical wrinkles. Notauli not deep, with coarse transverse rugae. Front part of mesoscutum mat, with distinct punctures between notauli; lateral lobes of mesoscutum mat, smooth, impunctate (except anteriorly); hind half of mesoscutum shiny, strongly longitudinally striate. Mesopleurum coarsely and densely longitudinally striate; speculum polished, large. Scutellum and postscutellum smooth and almost polished. Metapleurum coarsely punctato-rugose. Propodeum before basal transverse carina with superficial rugosity, partly smooth, polished on anterior margin, coarsely rugose beyond transverse carina, smooth around apophyses. Apophyses rather strong, subconical (Fig. 14). Areolet rather small, half as long (high) as second recurrent vein above the bulla; nervulus strongly antefurcal; postnervulus intercepted at upper 0.38; nervellus in hind wing intercepted at lower 0.27; brachiella distinct and long. Hind femur 5.1 times as long as wide; proportion of segments 1-5 of hind tarsus 8 : 3 : 1.7 : 0.5 : 2.4. Second tergite 1.2 times as long as wide, mat, evenly granulate, with very short, inconspicuous, scarce hairs. Tip of upper valve of ovipositor beyond the nodus about 0.8 times as long as segment 2 of hind tarsus and 4.5 times as long as height on nodus (Fig. 36). Ovipositor sheath 0.78 times as long as hind tibia.

Body black with whitish yellow spots and bands. Antennae black; flagellar segments 5-10 completely and segment 11 dorsally white. Head predominantly whitish yellow with wide median stripe on frons, margins of clypeus and mouth, malar space, mandibles (except yellow basal spot), vertex almost entirely (except partly yellow on orbits anteriorly), hind margin of temple, and occiput entirely black. Head, thorax, hind leg and base of abdomen marked with black and white (or whitish yellow) as in Figs 13-15; mesoscutum entirely black centrally, with minute yellow sublateral spot just before the tegula; hind tegulae black with yellow margin. Fore wing hyaline, weakly infuscate on distal margin. Pterostigma blackish brown. Fore and middle coxae white with minute dorsoapical brownish spot, their trochanters whitish with blackish spots; fore and middle legs beyond the trochanters reddish yellow, femora black posteriorly, tarsi brownish dorsally, their segment 5 entirely brown. Hind

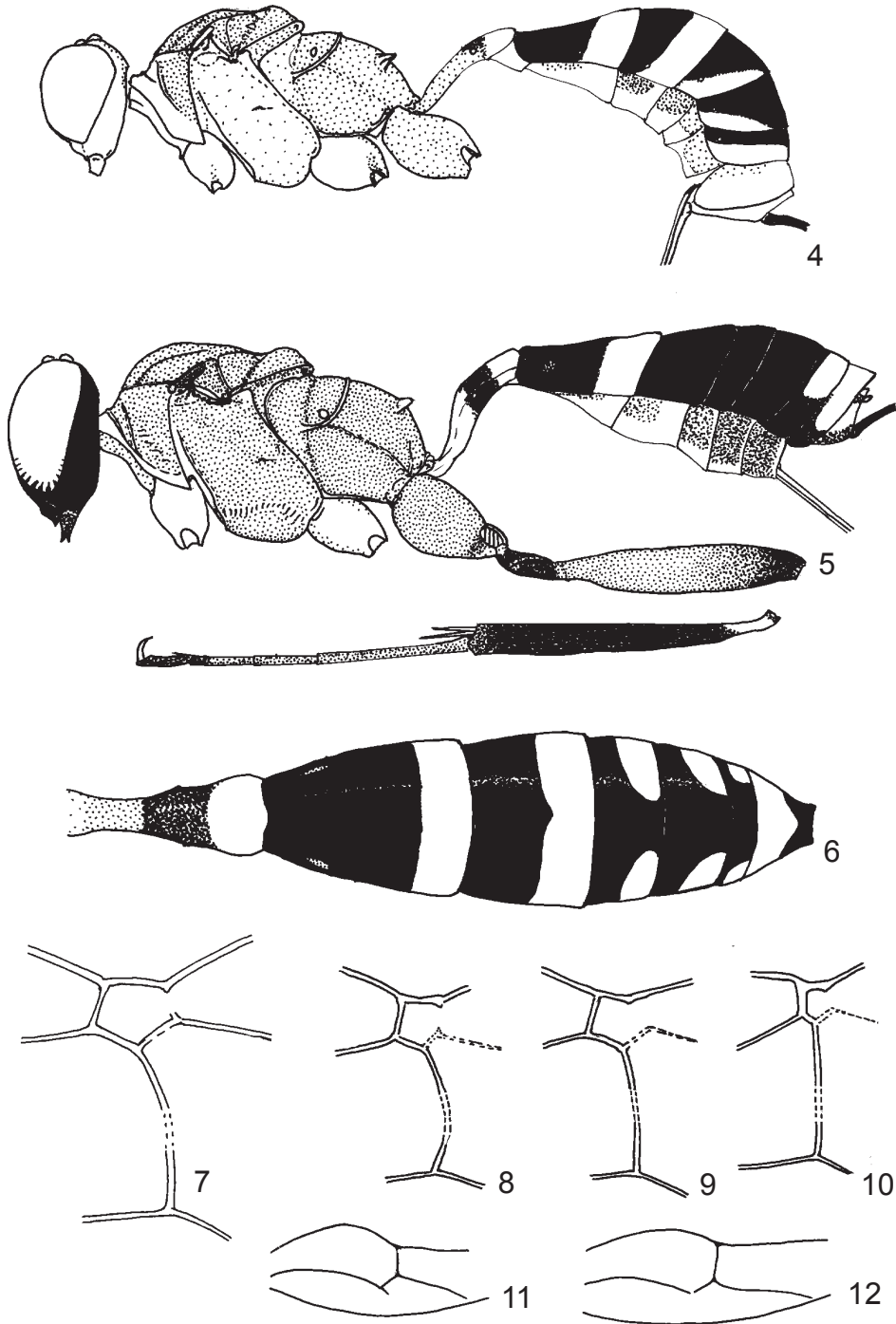
coxa black and white (Fig. 14); hind trochanters and femur predominantly black (Fig. 15); posterior yellow spot of femur smaller than anterior one. Hind tibia yellowish, slightly black basally (Fig. 15); hind spurs yellowish; tarsal segments 1-4 almost completely yellowish white, segment 5 reddish brown in basal half and brown in apical half. Tergite 2 black with apical third yellow; tergites 3-7 dorsally black about in basal half and yellow in apical half; epipleura of tergites 3-8 entirely yellow; tergite 8 yellow, black dorsally to hind margin and reddish yellow basolaterally. Sternites yellow; sternites 2-5 with black basolateral spots.

Male. Fore wing about 8 mm long. Antenna with about 28 flagellar segments; flagellar segments (13)14 to 17 with a linear tyloid. Habitus much slenderer than in female; hind femur 6.8-7.5 times as long as wide; proportion of segments 1-5 of hind tarsus 8 : 3.5 : 2.1 : 1.1 : 1.5, 2nd segment 2.9 times as long as wide. The main diagnostic characters of coloration (orbits interrupted with black on vertex, mesoscutum entirely black) same as in female. Other characters of coloration of head and thorax also similar to those in female (Figs 13, 14), but flagellum black, without white band; face, clypeus (except for brownish lower margin), cheeks mandibles, and propleurae light yellow. Propodeal apophyses shorter, and yellow spots surrounding apophyses smaller. Tergites 1-3 black with apical 0.2 yellowish; tergites 4-7 reddish in basal half and black in apical half (Fig. 47). Fore and middle coxae and trochanters entirely white; anterior basal black spot on hind coxa confluent with dorsoapical one; hind trochanters black with ventrobasal yellow spot on trochanter II. Hind femur black, at extreme base reddish yellow; hind tibia yellowish with blackish basal 0.15 and apical 0.35 (Fig. 48); hind tarsus white with apex of segment 5 black.

Diagnosis. *L. atrator* is the only species known from Mexico with mesoscutum entirely black (sometimes small sublateral marks or in male a pair of small central obliterated yellow stripes can be distinguished). *L. atratus* most closely resembles in coloration (except for mesoscutum) *L. acceptus*, from which it differs in the white orbits on vertex interrupted with black (Fig. 13); it also tends to have a slightly longer tip of ovipositor (Fig. 36).

5. *Lymeon bicinctus* (Cresson, 1865)

Cresson, 1865: 24, ♀ [*Hemiteles*; type: ♀, Cuba (Museum Havana)]; Townes & Townes, 1966: 89 (*Lymeon*; = *leiponeuron*; bibl.). – *leiponeuron* Townes, 1962: 397, ♀, ♂ (descr.; figs 333 f, g) [type: ♂, USA, Florida (?AEI, ?USNM)].



Figs 4-12. *Lymeon*, female. 4, *L. rufatus* sp. n., colour pattern of body; 5, *L. rufoniger* sp. n., colour pattern of body and hind leg; 6, *L. ingenuus* Cresson, colour pattern of abdomen, dorsal view; 7-10, areolet and second recurrent vein: 7, *L. sexlineatus* Cameron; 8, *L. tinctipennis* sp. n.; 9, *L. tricoloripes* sp. n.; 10, *L. mandibularis* sp. n.; 11, 12, posterior part of hind wing with nervellus: 11, *L. rufoniger* sp. n. (brachiella reduced); 12, *L. rufotibialis* sp. n. (brachiella lacking).

Diagnosis. This species is closely related to *L. subflavescens*; both species differ from other North American species in having antennae of female without white ring, fore wing uniformly brownish, discoidella in hind wing absent, head and thorax predominantly red.

Remarks. This species is distributed in Cuba and Florida (USA). Head and thorax predominantly reddish with white marks, tergites 1 and 2 predominantly blackish with apical white band; (3)4-8th tergites of female reddish (weak white dorsal marks on tergite 7); coloration of male tergites similar to that in *L. rufoniger* (Fig. 43); hind tarsus of male brownish red (in male of *L. rufoniger*, predominantly white). Antennae of male and female without white band; lateral lobe of mesoscutum polished, with very sparse small punctures; discoidella in hind wing absent.

6. ? *Lymeon* [or ?*Ischnus*] **centralis** (Cresson, 1873)

Cresson, 1873: 174, ♀ [*Hemiteles*, type: ♀, Mexico, Orizaba]; Townes, 1946: 34 (*Lymeon*); Townes & Townes, 1966: 89 (bibl.).

Material. Mexico. Veracruz: type (ANSP); Tamaulipas: several localities (Mus. UAT).

Remarks. This species has unclear taxonomic position. It has a large areolet, propodeum without apophyses and some other characters of the subtribe Cryptina and maybe belongs to *Ischnus*.

7. *Lymeon* **cinctiventris** (Cushman, 1929) (Figs 53, 68, 69)

Cushman, 1929: 32 (*Diapetimorpha*; nom. nov. pro *Mesostenus laticinctus* Cresson); Townes & Townes, 1962: 39 (*Lymeon*; key, description; south-east of USA and Texas; bibl.); Porter, 1977: 83. – *laticinctus* Cresson, 1878: 208, ♀ (*Mesostenus*; type: ♀, USA, Louisiana), nom. praeocc., non Walker, 1874.

Material. USA: ♀ (type of *laticinctus*) (ANSP). Mexico, Tamaulipas: 2 ♀, Cd Victoria, jardin, 3.VI.1984 and 10.VI.1985 (E. and H. Ruiz); 2 ♀, 14 ♂, same data, but 31.XI-2.XII.1986 and 20-25.IX.1987; 7 ♀, 1 ♂, Gomez Farias, Los Cedros, 300 m, tr. Malaise, 7.I-7.VIII.1999 (S. Hernández); 7 ♀, 9 ♂, Gomez Farias, Alta Cima, 940 m, tr. Malaise, 24.VI-21.III.1999 (S. Hernández).

Diagnosis. *L. cinctiventris* can easily be distinguished by the presence of a central white spot on mesoscutum and by distinct and dense punctation of mesoscutum; the body and hind coxae are black with white marks.

8. *Lymeon* **flavovariegatus** (Cameron, 1886) (Fig. 33)

Cameron, 1886: 254, ♀ (*Hemiteles*; type: ♀, Guatemala, San Jeronimo); Townes & Townes, 1966: 90 (*Lymeon*).

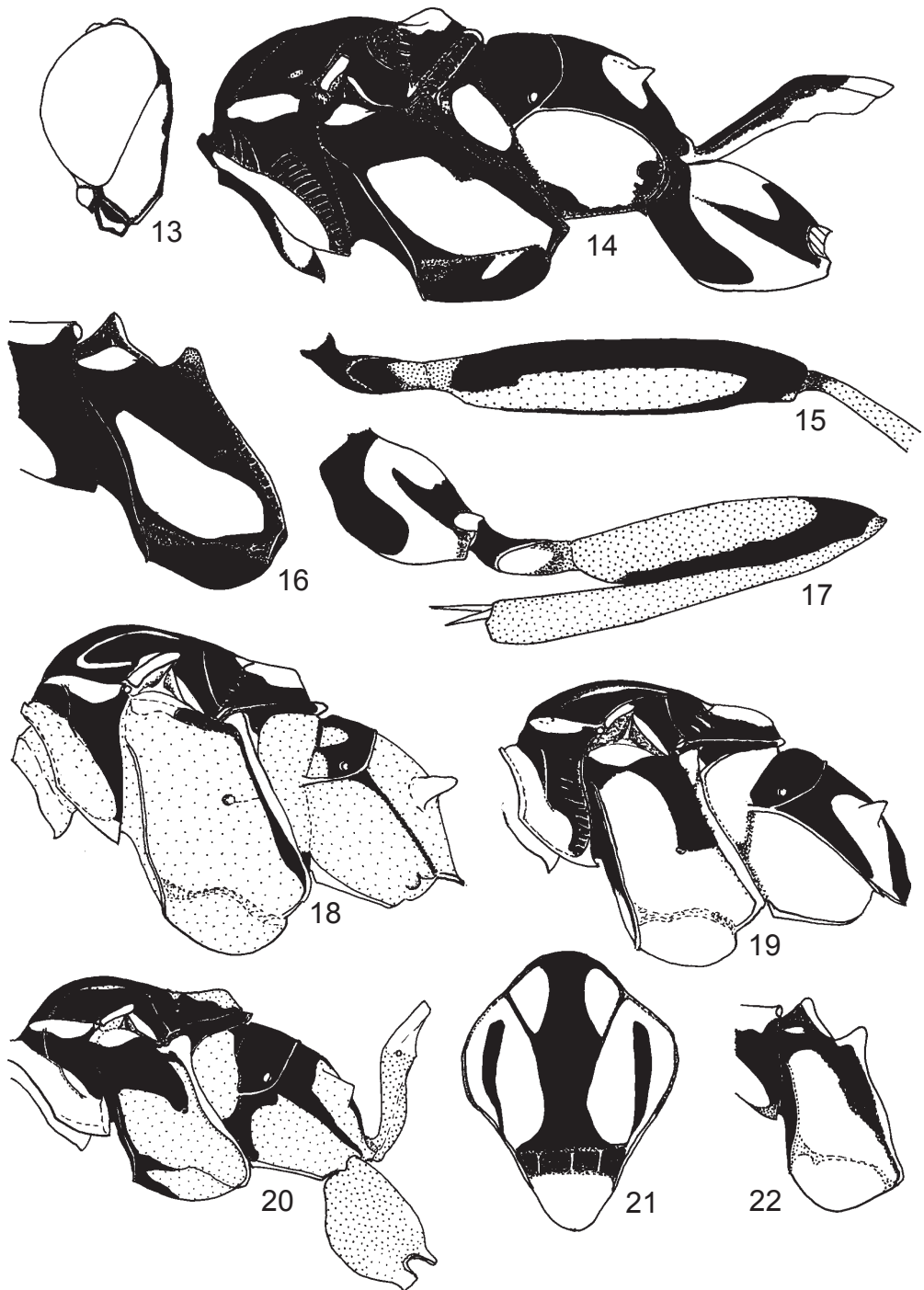
Material. Guatemala: type (BMNH).

Description. Female (type). Fore wing 6.6 mm long. Antenna with 26 flagellar segments; segments 1 and 2 combined 1.52 times as long as maximum diameter of eye. Malar space about 0.75 times as long as basal width of mandible. Lower margin of clypeus impressed and sharp. Mesoscutum granulate, without punctures on lateral lobes. Mesopleurum mat, granulate, rather densely punctured, without rugae. Speculum large and shiny. Scutellum mat, very finely granulate. Propodeum without apophyses. Areolet large, 1.3 times as high as 2nd recurrent vein above the bulla. Ovipositor rather thin. Ovipositor sheath 0.51 times as long as hind tibia.

Antenna fuscous with flagellar segments 5-11(12) white. Head whitish yellow; clypeal fovea, spot between antennal sockets, broad longitudinal band on frons, hind 0.4 of vertex and of upper half of temple, upper half of occiput black. Prothorax yellow with black on prosternum, at base of propleura, and above transverse groove of pronotum. Mesoscutum black (except for yellow 1! submedian stripe laterad of notaulus and very weak marks on prescutellar carina); surface around yellow scutellum black. Mesopleurum yellow (including entirely yellow front corner); prepectus completely, speculum, sutures above it and below (along pale epimeron), sternaulus and small spot in hind lower corner of mesopleurum black. Mesosternum yellow with black median posterior spot; hind margin of postpectus black. Metapleurum entirely yellow on upper division; its lower division yellow with black on front suture and on lower part (widely posteriorly). Propodeum black with two broad yellow spots extending from basal transverse carina to hind margin of propodeum. First sternite black, but yellow at extreme base and beyond spiracles. Tergites 2-5 black in basal half and pale yellow in apical half; second tergite with basal narrow yellow band, which is connected by a yellow line with thyridia; tergites 6-7 yellow in visible part; tergite 8 dorsally brownish with yellow hind margin and entirely yellow laterally. Sternites yellow. Fore and middle coxae whitish; hind coxa tricoloured (reddish with dorsobasal white spot and dorsoapical black spot – Fig. 33). Trochanters partly brownish, hind trochanters red. Legs beyond trochanters pale rufous; hind tarsus pale yellow with basal half of segment 1 pale rufous; apical segments absent; last tarsal segment of other tarsi brown.

Male: unknown.

Diagnosis. *L. flavovariegatus* most closely resembles *L. sexlineatus* and *L. tricoloripes*, from which it differs in the propodeum without apophyses and darker coloration (clypeal foveae and lower part of metapleurum blackish in *L. flavovariegatus*).



Figs 13-22. *Lymeon*, female, colour pattern of different body parts, lateral view (except for Fig. 21). **13-15,** *L. atrator* sp. n. (13, head; 14, thorax and base of abdomen; 15, part of hind leg); **16, 17,** *L. acceptus* Cresson (16, hind part of pronotum and mesopleurum; 17, hind leg); **18,** *L. adultus* Cresson, thorax; **19,** *L. mandibularis* sp. n., thorax; **20,** *L. patruelis* Cresson, thorax; **21,** *L. sexlineatus* Cameron (holotype), mesonotum, dorsal view; **22,** *L. tantillus* Cresson, hind part of pronotum and mesopleurum.

9. *Lymeon imbecillis* (Cresson, 1868)

Cresson, 1868: 34, ♂ (*Mesoleptus*: type: ♂, Mexico, Hacienda del Potrero near Cordoba); Townes, 1946: 37 (*Lymeon*); Townes & Townes, 1966: 90 (bibl.). – *leucosoma* Cameron, 1886: 259, ♀ (*Hemiteles*: type: ♀, Guatemala, San Jeronimo), **syn. n.**; Townes & Townes, 1966: 91 (*Lymeon*); Porter, 1977: 70, 83 (description of female; distr.: USA – Texas, Mexico – Jalisco, Guadalupe).

Material. **Guatemala:** ♀ (type of *L. leucosoma*) (BMNH). **Mexico.** *Veracruz:* ♂ (type of *L. imbecillis*) (ANSP); 1 ♀, 1 ♂, Tuxpan, Higueral, 31.X.1995 (R. Herrera); 1 ♀, Chacoaco, citricos, 9.XI.1995 (M. Molina); *Tlaxasco:* 1 ♀, Jalpa, herbacea, 25.III.1997 (A. Martinez et al.); *Tamaulipas:* 3 ♀, Abasylo, 24.I and 16.II.1989 (R. Thompson F.); 1 ♀, same locality, 1.III.1991 (A. Martinez); 1 ♀, Hidalgo, Sta. Engracia, 19.XI.1994 (C. Covarrubias, S. Hernández); 1 ♀, Antigua Morelos, Ej. Guadalupe de Mainero, 24.VI.1995, selva baja (C. Covarrubias, S. Hernández); 1 ♀, Jaumave, 22.IX.1989 (Calderyn); 1 ♀, Gomez Farias, Los Cedros, 300 m, 24.I.1999 (Kasparyan) (Mus. St.Petersburg); 4 ♀, 6 ♂, same locality, tr. Malaise, 16.I–27.III.1999 (S. Hernández, C. Covarrubias).

Male (type). Fore wing 4 mm long. Antennae lost. Mesopleurum more or less smooth, with punctures. Mesoscutum mat, with weak short notaulus. Propodeum with very small apophyses. Areolet rather large, as high as second recurrent vein above the bulla. Head entirely black (except for white clypeus and mandible). Thorax black with mesepimeron, metapleurum and propodeum entirely rufous. White: front margin of pronotum, very small median spot on its dorso-lateral margin, tegulae, subtegular ridge, scutellum, postscutellum, and small tubercles (apophyses) on propodeum. Legs rufous, except for white fore coxae and trochanters. Abdomen entirely rufous, parameres brownish. Wings hyaline.

Diagnosis. This species can easily be recognized by the combination of the black head (mandible and palpi white) and entirely reddish metapleurum, propodeum (apophyses white), abdomen and legs. In female, thorax entirely red, fore wing with two transverse brown bands. There are considerable differences between male and female in the sculpture and coloration of thorax.

10. *Lymeon ingenuus* (Cresson, 1873) (Fig. 6)

Cresson, 1873: 172, ♀ (*Hemiteles*: type: ♀, Mexico, Orizaba); Townes, 1946: 38 (*Lymeon*); Townes & Townes, 1966: 91.

Material. **Mexico.** *Veracruz:* type (ANSP); *San Luis Potosi:* 1 ♂, Xilitla, 14.IV.2002 (Kasparyan).

Description. **Female** (type). Fore wing 6.4 mm long. Flagellar segments 1 and 2 together 1.52 times as long as maximum diameter of eye; segments 4–9 compressed, about twice as wide as segment 1 in the middle. Proportion of segments

2, 3, 5 of hind tarsus 3.4 : 2 : 2.3; tip of upper valve beyond the nodus 0.77 times as long as segment 2 of hind tarsus and 1.3 times as long as segment 3. Second abdominal tergite 1.25 times as long as wide (Fig. 6).

Head black; antenna with flagellar segments 4–9 white (blackish ventrally); anterior orbits white, broad; clypeus white, bordered with black; mandible white at base; cheeks white to level of lower 0.3 of eye (black just beyond mandible and along occipital carina); white coloration of frontal orbits extends to top of eye and further to upper 0.2 of temple. Thorax reddish; spots on propleura, front margin of pronotum (only), anterior 0.4 of tegula, subtegular ridge, spot in hind lower corner of mesopleurum, small spot at upper division of metapleurum (just above front end of pleural carina), and apophyses whitish (or pale yellowish). Legs rufous; fore coxa, base of hind tibia and most of hind tarsi white; base of trochanters, apex of hind femur and hind tibia (except for base) black. Wings hyaline. Abdominal tergites black with white apical band, which is interrupted dorsally with black on tergites 4–6 (Fig. 6).

Male (**nov.**) in main characters of coloration similar to female.

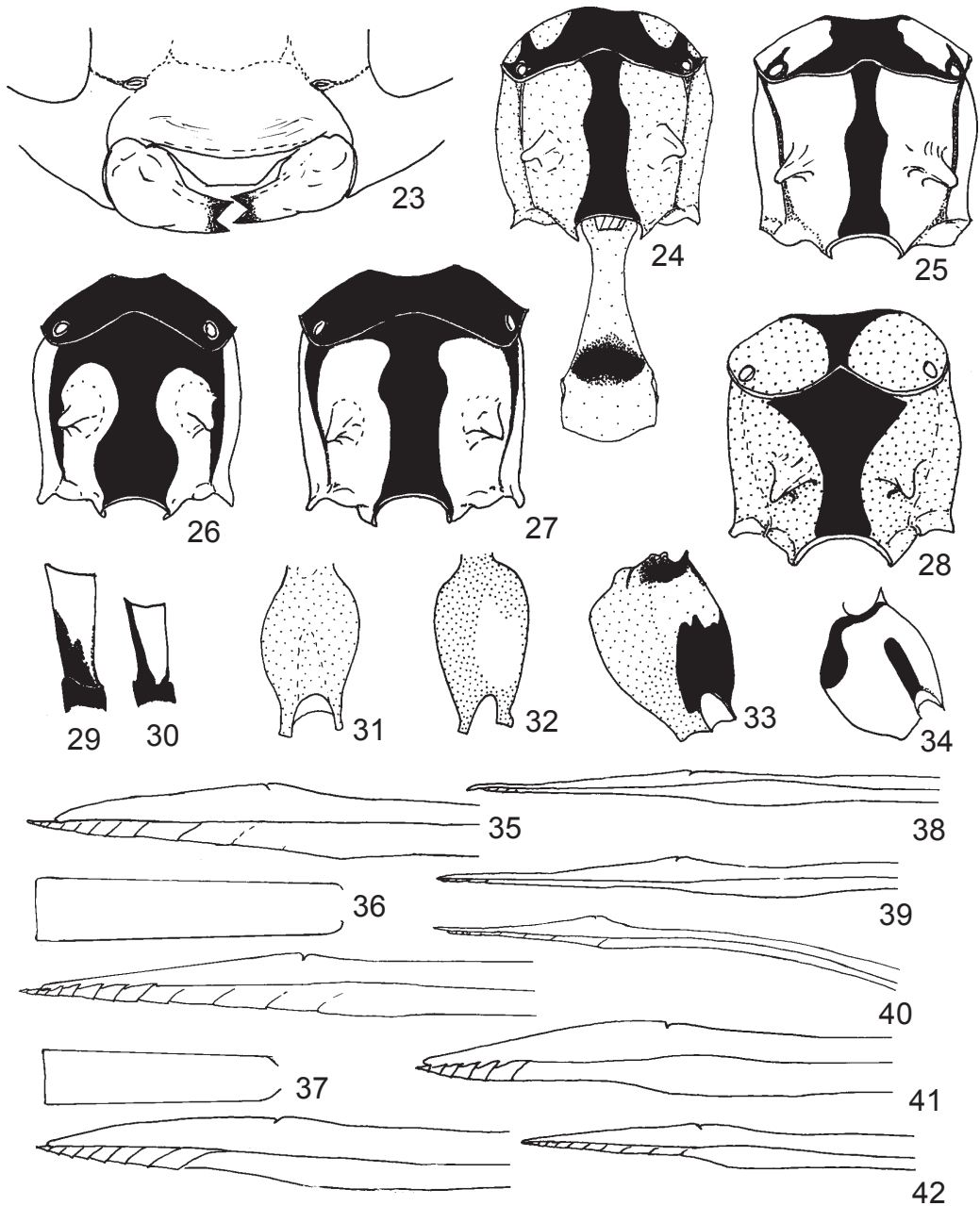
Diagnosis. *L. ingenuus* belongs to a group of species with thorax reddish and abdomen black with white bands. *L. ingenuus* is closer to *L. rufatus*, especially in the coloration of abdomen (Fig. 6) and hyaline wings, but differs from *L. rufatus* and most of other species of this group in the predominantly black temples with a pale orbital spot in the lower 0.3 of temple (this spot is broadened on cheek but does not extend to mandible and occipital carina).

11. *Lymeon junctus* (Cresson, 1873) (Figs 30, 38, 56)

Cresson, 1873: 174, ♀ (*Hemiteles*: type: ♀, Mexico, Cordoba); Townes, 1946: 38 (*Lymeon*); Townes & Townes, 1966: 91.

Material. **Mexico.** *Veracruz:* type (ANSP); *Yucatón:* 6 ♀, Corral (SMSC), XII.1998, I, II, VI, XI.1999 (Hugo Delfin); 8 ♀, Sudzal Chico (SMSP), VI.1999 (Hugo Delfin); 1 ♀, Xcoblacal (SMSC), XII.1998 (Hugo Delfin); 2 ♀, 9 km N Teya Pueblo, selva baja caducifolia, 19.VIII, 28.X.1999 (David Burgos).

Notes on type (female). Body 6 mm, fore wing 5 mm long. Flagellum with 22 segments; segments 1 and 2 combined 1.33 times as long as maximum diameter of eye; white segments slightly compressed. Mesopleurum mat, with distinct punctures, partly rugose. Apophyses as rather strong obtuse tubercles. Proportion of hind tarsal segments 2, 3 and 5 is 2.4 : 1.5 : 1.5; tip of upper valve of ovipositor beyond the nodus 1.05



Figs 23-42. *Lymeon*, female. 23, *L. mandibularis*, lower part of head, anterior view; 24, *L. adultus* Cresson, propodeum and first tergite, dorsal view; 25-28, propodeum, dorsal view: 25, *L. adultus* (type); 26, *L. mandibularis* sp. n.; 27, *L. tantillus* Cresson; 28, *L. novatus* Cresson; 29, 30, fourth flagellar segment: 29, *L. sulsus* Cresson (type); 30, *L. junctus* Cresson (type); 31-34, hind coxa (31, 32, dorsal view; 33, 34, dorsolateral view): 31, *L. adultus*; 32, *L. mandibularis*; 33, *L. flavovariegatus* Cameron (type); 34, *L. moratus* Cresson; 35-42, apical part of ovipositor (and 2nd segment of hind tarsus in Figs 36, 37): 35, *L. acceptus* Cresson; 36, *L. atrator* sp. n.; 37, *L. tinctipennis* sp. n.; 38, *L. junctus*; 39, *L. mandibularis*; 40, *L. sulsus* (type); 41, *L. tantillus*; 42, *L. tricoloripes* sp. n.

times as long as 2nd segment of hind tarsus and at least 8 times as long as its height on nodus (Fig. 38). Fourth segment of hind tarsus bilobed beneath; distal lobe 1.6 times as long as proximal. Head white; median longitudinal band on frons, hind half of vertex and of upper half of temple black. Antenna black; scape reddish brown ventrally; pedicel with a white dorsal spot; flagellar segments 4-9 white (fuscous ventrally). Prothorax whitish; pronotum with black transverse band broadened on its hind vertical margin (except for dorsal corner). Mesoscutum black with two wide median whitish stripes slightly crossing notauli anteriorly. Scutellum dorsally and apically and postscutellum whitish. Mesopleurum pale rufous with frontal margin of prepectus completely black and with black upper margin (except for subtegular ridge); mesopleural pit widely black; sternaulus partly blackish anteriorly; mesepimeron very narrow, black except for both ends. Metapleurum pale rufous with black wedge-shaped spot on front suture. Propodeum black with two large sublateral spots, which extend from apical transverse carina through apophyses to apex. Abdomen rufous, whitish yellow in apical 0.18 of tergite 1 and in apical 0.35 of tergite 2; basal 0.3 of tergite 3 light brownish. Legs rufous; hind coxa with white dorsal median spot; hind tarsus with segment 1 rufous, segments 2 and 3 white, 4 and 5 brown. Wings hyaline.

Diagnosis. *L. junctus* belongs to a group of species with predominantly black propodeum, and mesoscutum black with two yellow median stripes. It differs from most of species of this group in the predominantly reddish abdomen with white apical band on tergites 1 and 2, and brownish basal part of tergite 3. Chromatically it closely resembles *L. sulsus*, but differs in having the flagellar segments stouter (Fig. 30), scape red-brown ventrally, pedicel with dorsal white spot, 1st segment of hind tarsus entirely rufous, and mesopleurum with shallow groove from mesopleural pit to subtegular ridge partly darkened.

Remarks. Females from Yucatón have an oblique impression from mesopleural pit to subtegular ridge black (in the type, this impression is weakly darkened).

12. *Lymeon lassatus* (Cresson, 1873) (Fig. 54)

Cresson, 1873: 157, ♂ [*Mesostenus (Mesostenus)*]; type: ♂, Mexico, Orizaba; Townes, 1946: 38 (*Lymeon*); Townes & Townes, 1966: 91.

Material. Mexico, Veracruz: type (ANSP); *Tamaulipas:* 1 ♂, Gomez Farias, Los Cedros, 340 m, Malaise tr., III.2002 (D. Kasparyan); 1 ♂, Gomez Farias, Altas Cimas, 940 m, Malaise tr., 1-8.V.1999 (S. Hernández A.).

Diagnosis. *L. lassatus* is most easily distinguished from other species of the Mexican fauna by the coarse and dense punctures on mesoscutum and coloration of the hind leg (Fig. 54). The sculpture of mesoscutum in *L. lassatus* is rather similar only to that of *L. cinctiventris*, but the last species has one central pale spot on mesoscutum (two median stripes in *L. lassatus*).

Female: unknown.

13. *Lymeon maculipes* (Cameron, 1904) (Figs 44, 50)

Cameron, 1904: 254, ♂ (*Cryptanura*; type: ♂, Mexico); Townes & Townes, 1966: 91 (*Lymeon*).

Material. Mexico: type (BMNH).

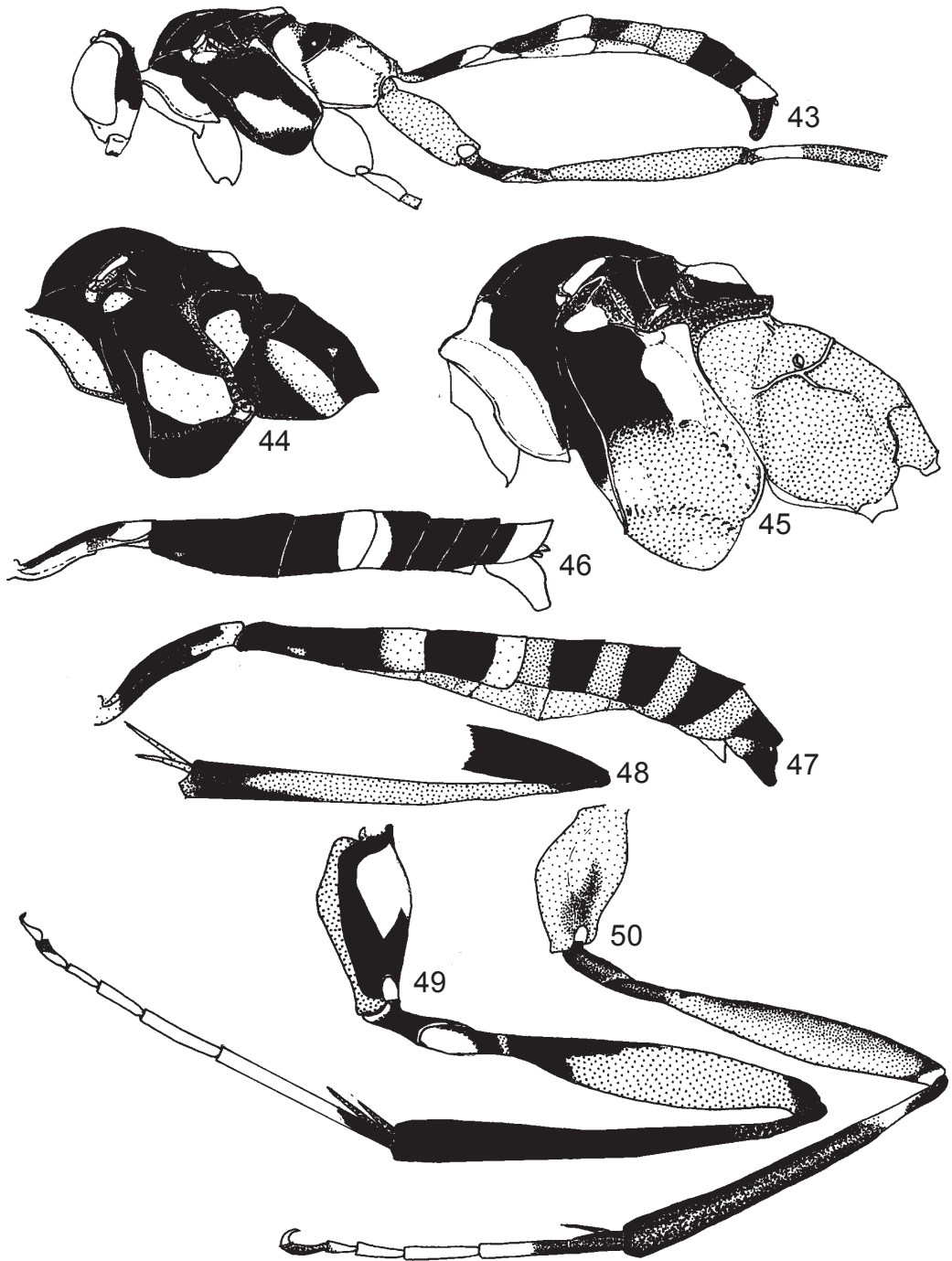
Diagnosis. *L. maculipes* resembles males of *L. rufoniger* in many characters of coloration: predominantly black temples, thorax black with white mark, abdomen with rufous band on segments 3 and 4, entirely black on segments 5-6, and white apically; hind tibia with whitish subbasal spot and hind tarsus predominantly white. It differs from males of *L. rufoniger* in having the mesoscutum (possibly) completely black [there is doubt, since the hind part of mesoscutum is partly damaged by a pin], metapleurum black in front part (Fig. 44) (entirely white in *L. rufoniger* – Fig. 43), only apophyses on propodeum white, tergite 4 in apical half black (entirely rufous in *L. rufoniger* – Fig. 43), hind coxa with blackish spot dorsoapically and hind femur brown dorsally (Fig. 50).

Other characters of the type: antenna (including scape and pedicel) black (only 15 flagellar segments are preserved). Face yellow-white with yellow anterior orbits, which extend slightly behind the top of eye. Temples black, except their lower 0.25 and cheek whitish yellow. Clypeus and mandibles whitish yellow; clypeal foveae and sutures brownish as well as a small spot between and lower of antennal sockets. Propleura yellow, brownish to lower margin. Thorax as figured (Fig. 44). Mesoscutum mat, with thin indistinct punctures. Scutellum white dorsally, black at apex. Abdominal tergites 1 and 2 black with yellow apical band; tergite 3 black with brownish red (0.2) apical band, tergite 4 brownish red in basal half, blackish in apical half; tergites 5-7 black, except for white hind margin of tergite 7; tergite 8 with white dorsally.

Female: unknown.

14. *Lymeon mandibularis* sp. n. (Figs 10, 19, 23, 26, 32, 39, 58-60)

Holotype. ♀, **Mexico, Yucatán:** Sudzal Chico (SMSP), Febrero 1999 (Hugo Delfin).



Figs 43-50. *Lyneon*, male, colour pattern, lateral view. 43, *L. rufoniger* sp. n., body; 44, *L. maculipes* Cameron (type), thorax; 45, *L. rufithorax* Cameron, thorax; 46, *L. rufoalbus* sp. n., abdomen; 47, 48, *L. atrator* sp. n. (47, abdomen; 48, part of hind leg); 49, *L. acceptus* Cresson, hind leg; 50, *L. maculipes* Cameron (type), hind leg.

Paratypes. Mexico. Tamaulipas: 1 ♂, Cd Victoria, canyon Novillo, 28.VI.1986 (A. del Valle); 1 ♂, Gomez Farinas, Los Cedros, Malaise trap, 12-19.VI.1999 (S. Hernández A.); *Yucatán:* 4 ♀, Sudzal Chico, XII.1998, II and VI.1999 (Hugo Delfin) (SMSP); 1 ♂, Corral (SMSC), Abril 1999 (Hugo Delfin); 5 ♂, 9 km N Teya Pueblo, Selva baja caducifolia, 5-19.VIII and 28.X.1999 (D. Burgos).

Description. Female (holotype). Fore wing 6.8 mm long. Antenna with 28 flagellar segments; flagellar segments 1 and 2 subequal and combined about 1.45 times as long as maximum diameter of eye; segments 4-9 moderately compressed; segment 7 about 1.6 times as long as wide and about 1.4 times as wide as segment 1 in the middle. Clypeus strongly convex in lower 0.2 and sharply sloping backward to lower margin. Mandibles distinctly swollen (an autapomorphy!), their lower margin rounded, without carina or keel basally; labrum exposed (Fig. 23). Face mat, rather coarsely punctate centrally and very finely granulate laterally, covered with fine and scarce setiferous punctures. Frons with median longitudinal carina and more or less transverse rugae deviating from this carina and from front ocellus; frons laterally very finely granulate, without rugae. Temples strongly narrowed beyond eyes and broadened to mandibles; in profile, their maximum length about 3.5 times the minimum length (at level of upper 0.25 of eye). Occipital carina slightly sinuate just before its connection with hypostomal carina; oral carina weakly raised, moderately long (about as long as malar space). Malar space 0.6 times as long as basal width of mandible. Epomia distinct; pronotum almost polished in upper 0.4. Notauli long, not deep. Mesoscutum mat and, also as mesosternum, covered with rather large and moderately dense punctures; mesopleurum in upper half covered with coarse long rugae, without noticeable punctures; speculum large and polished; lower part of mesopleurum and lower division of metapleurum scabrous, irregularly punctato-rugose. Metanotum from postscutellum to base of hind wing covered with vertical rugae (crenulae). Basal part of propodeum rugulose; pleural areas with more or less horizontal dense rugae. Apophyses almost conical (weakly depressed), 0.66 times as long as wide at base; propodeum between apophyses and on apical area rather strongly rugose-striate, without punctures; groove between propodeum and metanotum shallow, moderately wide, with a few wrinkles. Areolet small, 0.4 times as long as second recurrent vein above the bulla (Fig. 10); nervulus anterfurcal; nervellus intercepted at lower 0.32; brachiella present, reaching about 0.7 the distance to wing margin. Hind femur 4.9 times as long as wide; proportion of segments 1-5 of hind tarsus 6.0 : 2.7 : 1.7 : 0.5 : 1.6. Tergite 2 mat, granulate, with very scarce setiferous punctures; hairs short; sculpture of following tergites rather similar. Tip of upper valve of ovipositor

beyond the nodus very slender (Fig. 39), 0.9 times as long as 2nd segment of hind tarsus and 7.5 times as long as its height on nodus. Ovipositor as long as hind tibia; sheath about 0.7 times as long as hind tibia.

Antenna black, scape white ventrally; flagellar segments 4-11 and apical 0.2 of segment 3 white, darkened ventrally; the flat ventral side of segments 12-28 reddish brown. Head white; broad median longitudinal stripe on frons (from antennal sockets to vertex), hind half of vertex, and hind margin of temples black; occiput completely black. Thorax black with pale (whitish yellow) marks (Fig. 19); two median lines on mesoscutum, scutellum dorsally to its posterior margin, postscutellum at apex, two large spots on propodeum (Fig. 26) pale. Legs pale brownish yellow with fore and middle coxae and trochanters white and fore and middle tarsus with segments 3-4 brown dorsally and segment 5 entirely dark brown; middle tibia with small sub-basal whitish spot dorsally. Hind coxa pale reddish, with white dorsoposterior spot (Fig. 32); hind trochanters, femur and tibia brownish yellow; tibia infusate at extreme base and with small subbasal whitish spot; hind tarsus white with basal 0.4 of segment 1 brownish yellow and segments 4 and 5 entirely dark brown. Wings hyaline; pterostigma light brownish.

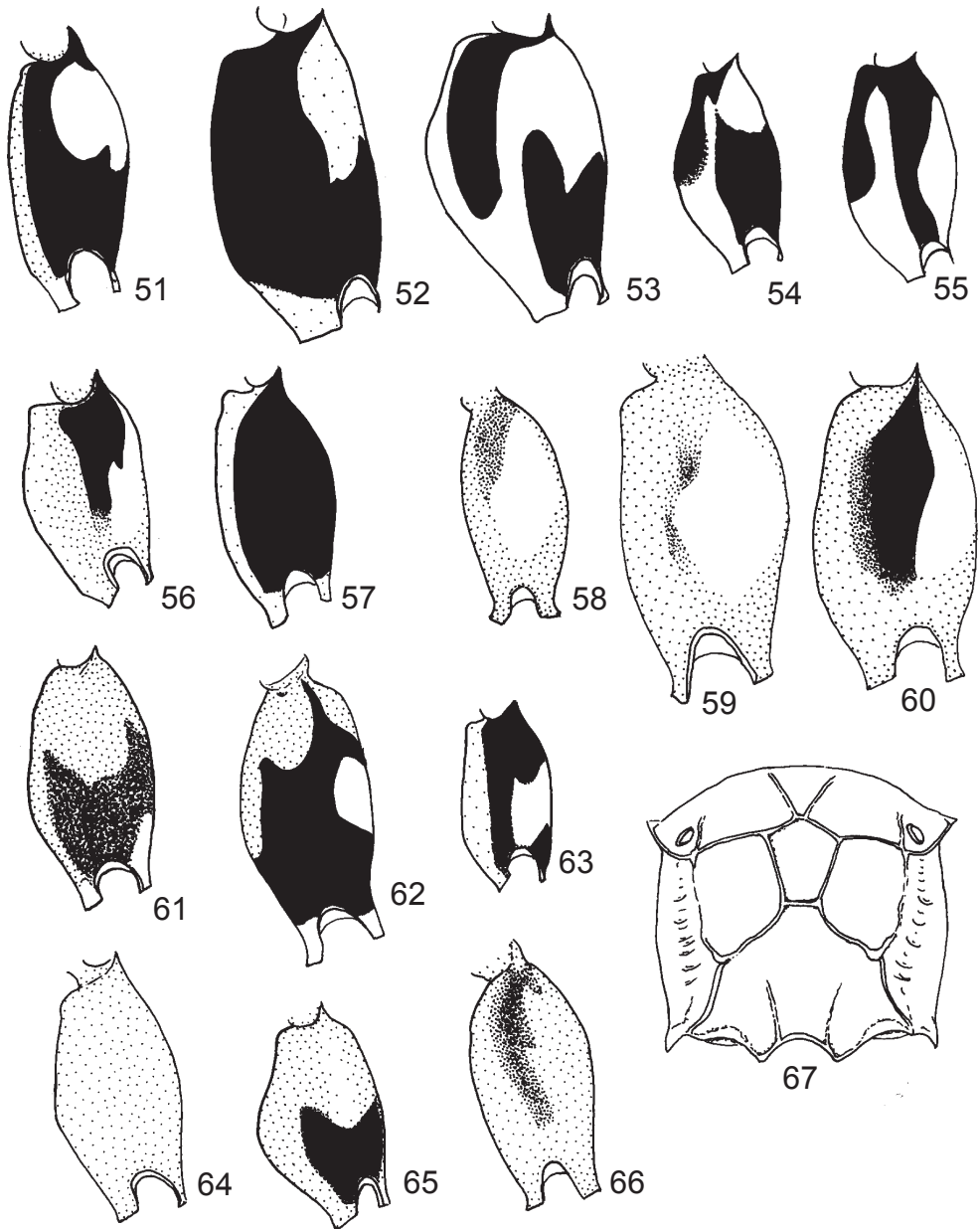
Male. Fore wing 6-7 mm long. Flagellum 28-30-segmented; segments 12 to 15 with a linear tyloid on each. Scape and apex of pedicel white ventrally; flagellar segments (6-7)8-14(15-16) completely white. Apophyses distinct, but smaller than in female. Coloration of body similar to that in female, but often speculum and hind margin of mesopleurum completely pale yellow, black spot between apophyses usually narrower or sometimes absent (except for apex); hind coxa varies, but always with dorsoposterior white spot (Figs 58-60); extreme base and apex of hind tibia fuscous; hind tarsus almost completely white; parameres white with apical and dorsal margins fuscous.

Diagnosis. *L. mandibularis* is a distinctive species easily recognized by its mandibles, which are swollen at base and without any carina on lower margin (Fig. 23). The antenna of male is with about flagellar segments 7-15 white.

15. *Lymeon? mexicanus* (Cameron, 1886)

Cameron, 1886: 259, ♀ (*Hemiteles*; type: ♀, Mexico, destroyed; pin with label is in BMNH); Townes & Townes, 1966: 91 (*Lymeon?*).

Diagnosis. This species belongs to the group of species with entirely red body and head; petiole yellow at base. Antennae blackish, with white ring



Figs 51-67. *Lymeon*, hind coxa of male (51-66) and propodeum (67), dorsal view. **51,** *L. acceptus* Cresson; **52,** *L. atrator* sp. n.; **53,** *L. cinctiventris* Cushman; **54,** *L. lassatus* Cresson; **55,** *L. moratus* Cresson; **56,** *L. junctus* Cresson; **57,** *L. patruelis* Cresson; **58-60,** *L. mandibularis* sp. n. (variation); **61,** *L. rufatus* sp. n.; **62,** *L. rufinotum* sp. n.; **63,** *L. rufoalbus* sp. n.; **64,** *L. rufoniger* sp. n.; **65,** *L. tricoloripes* sp. n.; **66,** *L. tantillus* Cresson; **67,** *L. rufinotum*.

at middle of flagellum, paler at base. It differs from other *Lymeon* in having the propodeum with both transverse carinae distinct and apical carina

without "tubercles" (apophyses), and fore wing with three fuscous bands: on basal vein, on areolet, and at apex.

16. *Lymeon moratus* (Cresson, 1873) (Figs 34, 55)

Cresson, 1873: 158, ♀, ♂ [*Mesostenus (Mesostenus)*]; type, ♀, Mexico, Orizaba]; 1916: 44 (lectotype); Townes, 1946: 41 (*Lymeon*); Townes & Townes, 1966: 91 (bibl.).

Material. Mexico. Nuevo Leon: 1 ♀, Cola de Caballo, 11.VIII.1981 (E. Ruiz C.); 1 ♀, Carr. a Raices, Allende, huerta citricos, tr. McPhail, 20.II.1986 (M.R. Cantú); 3 ♂, 1 ♀, Presa La Boca, Santiago, tr. McPhail, 14.III, 2.V, 20.VIII and 8.XII.1987 (H. Sosa B.); *Tamaulipas:* 2 ♀, Hidalgo, Sta Engracia, maleza, 19.XI.1994 (C. Covarrubias D., S. Hernández A.); 1 ♀, Hidalgo, Rio Blanco, ej. El Chorrillo, galeria, 11.III.1995 (C. Covarrubias D., S. Hernández A.); 1 ♀, Cd Victoria, 2.VI.1981 (H. Ruiz C.); 1 ♀, Cd Victoria, rio San Marcos, ex pods of Leguminosae (*Acacia?* sp.), December 2003 (V. Fursov); 7 ♀, 2 ♂, Cd Victoria, canyon Novillo, 10.VI-28.X.1985 (Serena); 5 ♀, 18 ♂, same locality, 21.II-26.VII.1985 (A. del Valle); 1 ♀, same locality, 800 m, bosque de encino-pino, 17.IV.1988 (R. Meza); 1 ♀, Cd Victoria, canyon La Libertad, IX.1992 (O. Escamilla); 1 ♀, same locality, 14.VI.1998 (Kasparyan); 1 ♀, same locality, Los Troncones, 25.IX.1986 (A. del Valle); 1 ♀, same locality, bosque de encino-pino, 12.III.1988 (R. Meza); 1 ♀, Cd Victoria, La Misión, VIII.1992 (O. Escamilla); 3 ♀, 1 ♂, km 68, Victoria – Soto La Marina, Villa Casas, 13.III.1985, 18.III and 14.IV.1987 (E., H. & J. Ruiz C.); 1 ♀, Soto la Marina, galeria, 27.V.2000 (Kasparyan); 1 ♀, Llera, Rio Guayalejo, 11.VIII.2000 (Kasparyan); 2 ♀, 1 ♂, Gomez Farias, 16.III.1989 (E. and H. Ruiz C.); 5 ♀, Gomez Farias, Los Cedros, 340 m, tr. Malaise, 7.I-13.II.1999 (S. Hernández); 8 ♂, same locality, 13.II-26.VI.1999 (S. Hernández A.); 1 ♀, 1 ♂, Gomez Farias, Alta Cimas, 940 m, tr. Malaise, 27.II-20.III.1999 (S. Hernández A.); 23 ♂, same locality, 27.III-28.VIII.1999 (S. Hernández A.); 1 ♂, same locality, 20.III.1999 (Kasparyan); *Morelos:* 1 ♀, Cuautlixco, 1320 m, 28.II.1995 (J. Flores); *Veracruz:* lectotype (ANSP); 1 ♀, 1 ♂, Agazapan, 6.V.1992, and Chico Zapote, 3.VI.1992 (Luis Quiroz); 2 ♂, Tuxpan, Ojite and Tihuatlan, citricos, 19.X and 10.XI.1995 (R. Herrera and R.C. Azuara); *Yucatán:* 1 ♀, 1 ♂, 9 km N Teya Pueblo, border Selva baja caducifolia and milpa, 27-29.X.1999 (D. Burgos).

Diagnosis. *L. moratus* is rather common in Mexico and closely related to the commonest North American species *L. orbis* (Figs 70, 71) habitually and chromatically. The female of *L. moratus* differs from that of *L. orbis* in having the hind coxa white with black marks (Fig. 34) (in the female of *L. orbis*, hind coxa predominantly light reddish). The hind coxa of males of both species has a dorsal black band, but the coxa of *L. moratus* is usually also with an anterobasal black spot (Fig. 55), which is absent in *L. orbis* (Fig. 71); however, this character varies. Males of *L. moratus* can be distinguished from those of other Mexican species of *Lymeon* also by the sculpture of mesoscutum, which is polished and impunctate in its hind half. Abdominal tergites of male are black with white apical band, but sometimes tergite 4 varies to entirely reddish; hind tibia dirty brownish with black base and apex, sometimes almost entirely blackish.

17. *Lymeon nasutus* (Pratt, 1945)

Pratt, 1945 : 561, ♀ (*Nasutocryptus*; type: ♀, USA, New Mexico, Alamogordo); Townes & Townes, 1962 : 398 (*Lymeon*).

Diagnosis. *L. nasutus* is an entirely reddish species with orbits and scutellum pale reddish and segment 5 of hind tarsus brown. It can be easily distinguished from other species of the genus by its unusual clypeus, which is projecting ventrally as conical point. The species is found in the USA close to the border of Mexico.

18. *Lymeon novatus* (Cresson, 1873) (Fig. 28)

Cresson, 1873: 158, ♀, ♂ [*Mesostenus (Mesostenus)*]; type, ♀, Mexico, Mirador]; Townes, 1946: 41 (*Lymeon*); Townes & Townes, 1966: 91 (bibl.).

Material. Mexico. Veracruz: type (ANSP); *Tamaulipas:* 1 ♀, Cd.Victoria, Canyon Novillo, 21.VI.1985 (A. del Valle); 1 ♀, Llera, matorral, 44 km S Cd.Victoria, Malaise tr., 21-28.X.2000 (Kasparyan); 1 ♀, 2 ♂, Gomez Farias, Los Cedros, 340 m, Malaise tr., 6-20.II.1999 (S. Hernández A.); 1 ♀, 1 ♂, same locality, III.2002 (D. Kasparyan); 1 ♀, Gomez Farias, Altas Cimas, 940 m, Malaise tr., 1-8.V.1999 (S. Hernández A.).

Diagnosis. *L. novatus* can easily be recognized by the coloration of propodeum (Fig. 28) and entirely pale mesopleurum and metapleurum (except for weak blackish spot under subtegular ridge).

19. *Lymeon orbis* (Say, 1836) (Figs 70, 71)

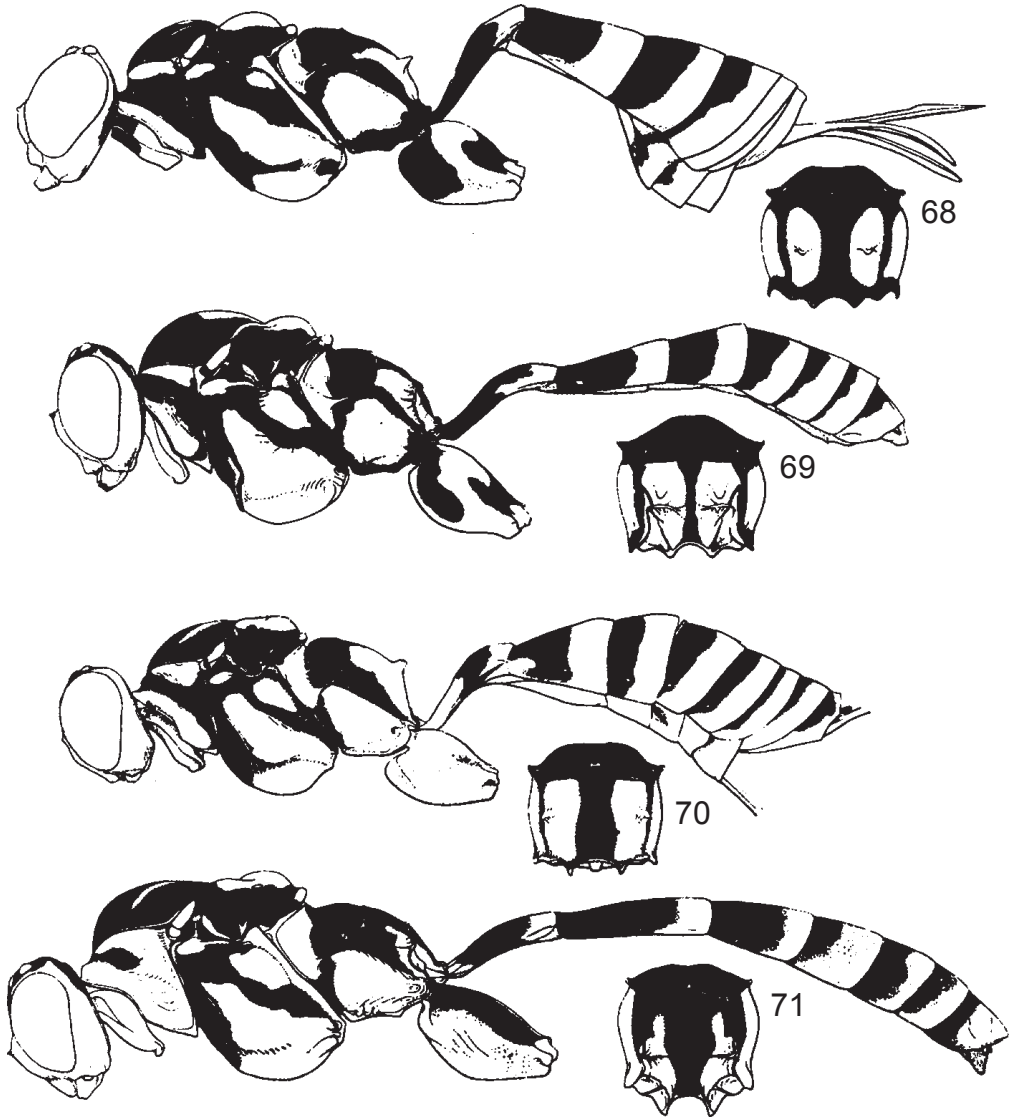
Say, 1836: 231, [♀], [*Cryptus*]; type: ♀, USA, Indiana, (destroyed)]; Townes & Townes, 1962 (*Lymeon*); =*Mesostenus diligens* Cresson, 1878, =*Lymeon annulicornis* Ashmead, 1894); Porter, 1977: 69, 83; Carlson, 1979: 475; Yu & Horstmann, 1997: 267.

Material. USA. Illinois: ♀ (type of *Mesostenus diligens*) (ANSP); *Florida:* ♀♀ and ♂♂, Gainesville (AEI, USNM); 12 ♀, 4 ♂, same locality, May 1988 (Kasparyan) (Mus. St.Petersburg and Mus. UAT).

Diagnosis. *L. orbis* is widely distributed in the east of the USA and recorded on the border with Mexico (Brownsville, Texas). *L. orbis* is closely related to the Mexican species *L. moratus*, but female differs from the latter in the predominantly pale reddish hind coxa. The data on distribution of this species in Mexico, Nuevo Leon (Porter, 1977) refer to *L. moratus*.

20. *Lymeon patruelis* (Cresson, 1873) (Figs 20, 57)

Cresson, 1873: 170, ♀ (*Hemiteles*; lectotype: ♀, Mexico, Orizaba); 1916: 48 (lectotype); Townes, 1946: 42 (*Lymeon*); Townes & Townes, 1966: 92 (bibl.). — *rarus* Cresson, 1873: 171, ♂ (*Hemiteles*; type, ♂, Mexico, Orizaba), **syn. n.**; Townes, 1946: 43 (*Lymeon*); Townes & Townes, 1966: 92 (bibl.).



Figs 68–71. *Lymeon*, colour pattern of body (lateral view) and propodeum (dorsal view) (after Townes & Townes, 1962). **68, 69,** *L. cinctiventris* Cushman (68, female; 69, male); **70, 71,** *L. orbus* Say (70, female; 71, male).

Material. Mexico. Tamaulipas: 3 ♀, Llera, ej. La Libertad, 24.III.1990 (E. Ruíz, M. Aquino, F. Varela P.); 2 ♀, Gomez Farias, Los Cedros, 340 m, tr. Malaise, 27-29.VII.1993 (J. Woolley, K. Wikse); 1 ♀, 1 ♂, same locality, tr. amarillas, 25-26.II.1995 (S. Nico et al.); 18 ♀, 13 ♂, same locality, tr. Malaise, 28.XI.1998-8.V.1999 (Kasparyan, S. Hernández A., C. Covarrubias D.); 5 ♀, 1 ♂ (of them 3 ♀ in St.Petersburg), same locality, 24.I.1999 and 23.XII.2003 (Kasparyan); 1 ♀, Gomez Farias, Rio Frio, galleria, 17.II.1995 (C. Covarrubias D., S. Hernández A.); **Veracruz:** lectotype (ANSP); 1 ♀, Tuxpan, Coloman, citricos, 5.III.1996 (R. Herrera del Angel).

Remarks. Both types have a broad black spot

under subtegular ridge, which expands to front part of speculum and on mesopleural pit (Fig. 20); mesepimeron entirely yellowish, except for very narrow fuscous stripe in upper half of mesopleural suture. Prepectus entirely black in female (the type of *L. patruelis*), pale in male (the type of *L. rarus*). Propodeum black with two large pale spots, which cover apophyses and extend to apex of propodeum (in male, pale coloration of spots confluent laterally with pale coloration of metapleurum). White dorsal spot at base of pedi-

cel large in female and smaller in male. Hind coxa of male almost entirely black dorsally (Fig. 57).

21. *Lymeon rufatus* sp. n.
(Figs. 4, 61)

Holotype. ♀, **Mexico**, *Yucatán*, Corral (SMSC), De-ciembre 1998 (Hugo Delfin).

Paratypes. **Mexico**, *Yucatán*: 1 ♀, same data as holotype; 5 ♀, 3 ♂, Sudzal Chico (SMSP, SMSC), XII.1998, II and XI.1999 (Hugo Delfin); 1 ♀, Xcoblacal (SMSC), XII.1998 (Hugo Delfin); 2 ♀, 9 km N Teya Pueblo, selva baja caducifolia, 13-14.X.1999 (D. Burgos).

Description. *Female* (type). Fore wing 5 mm long. Antenna with 23 flagellar segments; flagellar segments 1 and 2 subequal and combined 1.4 times as long as maximum diameter of eye; segments 5-9 moderately compressed; segment 7 about 1.8 times as long as wide and 1.8 times as wide as segment 1 in its middle. Central part of face finely granulate, mat; central part of frons with thin longitudinal carina, finely rugose (on black median band), lateral parts of frons almost smooth, mat, with short, rather dense hairs. Temples strongly narrowed behind the eyes and strongly broadened to mandibles (Fig. 4); in profile, their maximum length about 2.5 times the minimum length. Occipital carina almost straight before connection with hypostomal carina and rather sharp; oral carina just beyond the mandible raised as low lobe. Epomia distinct and very oblique, crossed by transverse pronotal groove about at 45°; pronotum beyond epomia superficially striato-punctate. Notauli sharp anteriorly, moderately short, not extending to centre of mesoscutum. Mesoscutum mat, shagreened, with fine dense punctures. Mesopleurum densely longitudinally striate; speculum polished, large. Metapleurum entirely and rather finely striato-punctate, striae dense and oblique (direction from base of middle coxa to apophyse); these rugae partly continue on pleural area of propodeum. Propodeum basal to basal carina mat, almost without rugae; beyond the basal carina coarsely irregularly rugose; between apophyses, rugae have tendency to be parallel. Apophyses conical, rather strong, slightly depressed (Fig. 4). Areolet rather small, about half as long as second recurrent vein above the bulla. Nervulus weakly antefurcal; postnervulus intercepted at upper 0.36; nervulus intercepted at lower 0.38; brachiella very short, about 0.25 times as long as distance from its base to anal margin of wing. Hind femur 5.2 times as long as wide. Tergite 2 mat, evenly granulate; its basal 0.2 without pubescence, posterior 0.8 covered with fine dense short hairs; similar hairs present on tergites 3-7. Tip of upper valve of ovipositor beyond the nodus 0.9 times as long as segment 2 of hind tarsus and 5 times

as long as its height on nodus. Ovipositor 0.85 times as long as hind tibia; ovipositor sheath about 0.58 times as long as hind tibia.

Antenna black; scape and pedicel beneath, apex of segment 4, and segments 5 to 10 (except ventrally) white. Head white; median longitudinal stripe on frons, which covers also ocellar area, black; vertex brownish red (except for orbits); narrow hind part of temples in their upper 0.4 along occipital carina, and upper half of occiput blackish. Thorax reddish (Fig. 4); propleurae in median parts brownish, widely bordered with white; pronotum with wide white band on front margin and with yellowish white elongate spot on dorsolateral margin beyond epomia; tegula brownish; front and hind margin of mesopleurum with narrow reddish yellow line; subtegular ridge, apex of mesepimeron, most of upper division of metapleurum, and apophyses white. Scutellum, mesosternum and small spot in lower hind corner of metapleurum reddish yellow. Fore wing distinctly infuscate at apex (in some paratypes not darkened). Pterostigma brownish. Fore and middle coxae and trochanters white with weak brownish marks; fore and middle femora and tibiae pale yellowish with ventroposterior side whitish and dorsoposterior side pale brownish; fore and middle tarsi pale brownish dorsally, pale ventrally (segment 5 entirely brown). Hind coxa red with dorsoapical white spot (Fig. 4); trochanters brownish with yellowish dorsal and ventral spots; hind femur reddish, darkened at extreme apex; hind tibia reddish brown (more reddish ventrally), with white spot in subbasal 0.2 (darkened at extreme base); hind tarsus white, except for brownish segments 5 and basal 0.3 of segment 1. Abdominal segment 1 from base to spiracles (petiole) reddish, between spiracles dorsally blackish, white apically; other segments black and white (Fig. 4).

Male. Fore wing 3.8-4.6 mm; flagellum 22-24-segmented; about segments 12 to 14 with tyloids. Coloration more or less similar to that in female, but flagellum entirely blackish, vertex black (except for orbits); marks on epomia, lateral suture of mesoscutum, at base of pronotum, dorsoapical half of hind coxa and hind trochanters almost completely brownish. Median 0.4 of abdominal segment 2 blackish; tergites 4-6 entirely black; segments 7-8 (except black base of segment 7) and genitalia white.

Diagnosis. *L. rufatus* resembles *L. ingenuus* in having red thorax, fore wing usually without dark bands (or only with apical one), white apical band on tergites 4-5 shortly interrupted dorsally by black, legs rufous with white fore coxa, base of hind tibia and most of hind tarsus. It can be easily separated from *L. ingenuus* by the features given in the key (couplet 11).

22. *Lymeon rufinotum* sp. n.
(Figs 1, 62, 67)

Holotype. ♀, **Mexico**, *Tamaulipas*, Gomez Farias, Alta Cima, 900 m, tr. Malaise, 12-19.VIII.2000 (Kasparian).

Paratypes (same locality as holotype): 1 ♀, 24-31.VII.1999 (S. Hernández); 1 ♂, 19-26.VIII.2000 (Kasparian).

Description. Female (holotype). Fore wing 6.8 mm long. Antenna with 24 flagellar segments; first flagellar segment as long as 2nd, and both segments combined 1.26 times as long as maximum diameter of eye; segments 5-9 moderately compressed; segment 7 about twice as long as wide and 1.4 times as wide as segment 1; malar space 0.9 times as long as basal width of mandible. Temples very strongly narrowed beyond eyes, in profile strongly expanded from top of head to mandible, their maximum length (below) 3 times the minimum length (at level of upper two-thirds of eye). Occipital carina before connection with hypostomal carina slightly sinuate and carinate; oral carina (just beyond mandible) forms distinct lobe. Epomia strong. Notauli sharp, extending to centre of mesoscutum; mesoscutum and mesosternum mat, with similar dense, more or less uniform and moderately fine punctures. Mesopleurum scabrous (with small irregular rugosity, partly punctate); its upper division densely punctate. Propodeum with coarse irregular rugae, which are shallower basad of basal carina; apophyses rather large, more or less conical, slightly depressed. Areolet rather small, about 0.4 times as long as second recurrent vein above the bulla; nervulus distinctly antefurcal; nervellus intercepted at lower 0.36; hind femur 5.1 times as long as high. Tergite 2 evenly and finely granulate, with fine sparse hairs, which are very scarce in basal third. Tip of upper valve of ovipositor beyond the nodus about 0.85 times as long as segment 2 of hind tarsus; ovipositor sheath 0.6 times as long as tibia.

Antennae black; scape below reddish brown with small white spot; flagellar segments 5-10 white, blackish ventrally; 10-12 apical segments brownish ventrally. Head white; face with brownish central mark (which is expanded to clypeal fovea in the female paratype); lower margin of clypeus light rufous. Frons with wide median longitudinal black stripe, which extends to occipital carina and expands along the carina on hind half of vertex and continues as narrow band on hind 0.1-0.2 of temple; cheeks beyond the mandible entirely white. Occiput entirely black. Thorax red; tegulae brown; scutellum whitish dorsally; other pale marks on thorax, coxae and black abdomen as figured (Fig. 1). Fore wing with apex and large spot on brachial cell and on adjacent part of discocubital cell fuscous. Fore and middle trochanters and femora pale rufous,

brownish posterodorsally and very pale (almost whitish) posteriorly; tibiae pale rufous, whitish in basal 0.15 and slightly darkened antero- and posteroventrally; tarsi brownish. Hind coxae and trochanters as in Fig. 1; hind femur red with blackish apex; hind tibia and tarsus as in Fig. 1.

Male rather similar to female, but darker; antenna with flagellum completely black; propleurum blackish; pronotum black with white marks on front and upper lateral margins; hind coxa tricoloured, but dorsally and apically predominantly black (Fig. 62); hind femur reddish, strongly darkened (almost black) at base, at apex and dorso-posteriorly; hind tibia black, white in basal 0.23. Fore wing 5.8 mm long, widely fuscous at apex but without proximal dark mark. Propodeum with distinctly separated basal area and areola (Fig. 67); apophyses absent. Second tergite twice as long as wide; hairs longer than in female, but also sparser in basal half; segments 4-6 entirely black.

Diagnosis. *L. rufinotum* is similar to *L. rufithorax* and *L. rufoniger* in having red thorax, dark marks on front wings (on brachial cell and at apex), trochanters partly brown, hind tibia with white basal spot, and tergites 4-5 black. It differs from both species in the predominantly white hind tarsus and tricoloured dorsally hind coxa (Fig. 1) (in females of *L. rufithorax* and *L. rufoniger*, the hind coxa is reddish and hind tarsus uniformly rufous). It differs from *L. rufoniger* also in having orbits and face predominantly white and only tergites 4-5 black (in *L. rufoniger*, the head is black, except for white lateral sides of frons, and tergites 4-6 black).

23. *Lymeon rufithorax* (Cameron, 1886)
(Figs 3, 45)

Cameron, 1886: 254, ♀ [*Hemiteles*]; typus: ♀, Panama: Volcan de Chiriqui at 2500-4000 ft. (BMNH); Townes & Townes, 1966: 93 (*Lymeon*).

Material. **Panama**: type (BMNH). **Mexico**. *Oaxaca*: 2 ♀, Tuxtepec, Chiltepec, galeria, 23.III.1997 (A. Martinez, C. Covarrubias, S. Nico); *Veracruz*: 1 ♂, Tuxpan, Tihuatlan, citricos, 10.XI.1995 (R.C. Azuara); *Tamaulipas*: 1 ♀, 3 ♂ (of them 1 ♀, 1 ♂ in Mus. St.Petersburg), El Limon, 8 km N Cd Mante, valley, 25.XII.1998 (Kasparian).

Male (**nov.**). Fore wing 4-4.7 mm long; flagellum 22-24-segmented; tyloids linear, lying on segments (11)12-14. Male strongly differs from female in coloration: flagellum entirely black; face and clypeus completely white; pronotum (except for white front margin) and mesoscutum black; scutellum black, white dorsally (except for black hind margin); mesopleurum, metapleurum and propodeum coloured as in Fig. 45; fore and middle coxae and trochanters white; hind tarsal segments 2 and 3 and apex of basitarsus white;

tergite 4 black, light rufous or whitish laterally; tergites 5 and 6 completely black; tergite 7 white.

Diagnosis. *L. rufithorax* is related to *L. rufinotum* and *L. rufoniger*; all females of these species have the thorax red, fore wing with two blackish bands (at apex and on brachial cell), trochanters partly brown, base of hind tibia whitish, and at least tergites 4 and 5 completely black (Figs 1, 3, 5). *L. rufithorax* differs from *L. rufoniger* in the entirely white orbits of eyes (in *L. rufoniger*, head predominantly black) and black tergites 4-5 (Fig. 3) (in *L. rufoniger*, tergites 4-6 black). It differs from *L. rufinotum* in having the clypeus black basally and apically, upper lateral margin of pronotum, scutellum and hind coxa red (with whitish yellow marks in *L. rufinotum* – Fig. 1), hind tarsus rufous (Fig. 3) (predominantly white in *L. rufinotum* – Fig. 1).

24. *Lymeon rufoalbus* sp. n.
(Figs 46, 63)

Holotype. ♂, **Mexico**, *Yucatán*, Sudzal Chico (SMSP), November 1999 (Hugo Delfin).

Description. *Male* (holotype). Fore wing 3.4 mm long. Antenna with 23 flagellar segments; flagellar segments 1 and 2 combined about 1.15 times as long as maximum diameter of eye; tyloids not discernible. Face and frons smooth, granulate in the middle and very finely granulate laterally, with fine and moderately dense setiferous punctures. Temples strongly narrowed beyond the eyes, their hind margin parallel to hind margin of eye. Occipital carina not sinuate before its connection with hypostomal carina; oral carina low, as high as occipital carina, and about as long as malar space; malar space 0.4 times as long as basal width of mandible. Epomia short, lying above transverse groove of pronotum (not crosses the groove); pronotum granulate, without any rugae on hind (vertical) margin. Notauli rather sharp, moderately long. Mesoscutum, mesosternum and lower half of mesopleurum mat and covered with moderately fine and dense punctures; upper part of mesopleurum before the speculum covered with horizontal rugae, without noticeable punctures; speculum large and polished; metapleurum finely granulate. Propodeum mat, granulate; basal transverse carina strong; apical carina represented by short and weak lateral crests; groove between metanotum and propodeum wide, shallow and smooth. Areolet small, about half as long as second recurrent vein above the bulla; nervulus weakly antefurcal; nervellus intercepted at lower 0.38; brachiella absent. Hind femur 5 times as long as wide; proportion of segments 1-5 of hind tarsus 5.4 : 2.6 : 1.9 : 0.9 : 1.4. Tergites 2 and 3 mat, granulate, with moderately dense rough hairs.

Antenna blackish with scape ventrally and pedicel on upper margin yellowish white. Head white with a large median black spot on frons and ocellar area; vertex reddish (except for orbits); occiput brownish in upper 0.6. Thorax light reddish; propleurum and broad band on front margin of pronotum, subtegular ridge, apex of mesepimeron and small spot on crests of propodeum white. Transverse pronotal groove, tegulae, two longitudinal submedian lines on hind half of mesoscutum and hind margin of scutellum brown. Abdomen black, banded with white in apical part of tergites 1, 3, 7 and at base of tergite 4; parameres white (Fig. 46); petiole yellowish brown ventrally. Fore and middle coxae and trochanters white; middle coxa with two brownish stripes dorsoapically; middle trochanter with brownish stripe anteriorly. Fore and middle legs beyond the trochanters very pale brownish with last segment of tarsi brown and segments 1-4 of middle tarsus brownish (segments are paler at joints). Hind coxa pale ventrally and laterally, black and white dorsally (Fig. 63); hind trochanter I white with anterior and posterior brown marks; trochanter II brownish with yellowish dorsal part. Hind femur very pale brownish with brown line anteriorly and dark brown in apical 0.1. Hind tibia blackish brown, slightly paler before the base. Hind tarsus brown with segments 2 and 3 white. Fore wing hyaline, slightly infusate at apex, just before areolet and along upper half of second recurrent vein.

Diagnosis. *L. rufoalbus* is a small species, which immediately can be recognized by unusual colour pattern of male: thorax entirely red with propleurum and front margin of pronotum white, and abdomen black with white bands on tergites 1, 3, 4, and 7 (Fig. 46).

25. *Lymeon rufoniger* sp. n.
(Figs 5, 11, 43, 64)

Holotype. ♀, **Mexico**, *Tamaulipas*, Llera, El Encino, 3.III.1989 (R. Thompson).

Paratypes. **Mexico**. *Tabasco*: 1 ♂, Centro, Lagartena Platanal, arbustos, 26.III.1997 (A. Martinez, C. Covarrubias, S. Nico); *Oaxaca*: 1 ♂, Tuxtepec, galeria, cafetal, 23.III.1997 (A. Martinez, C. Covarrubias, S. Niño); *Chiapas*: 1 ♀, 2 ♂ (males in yellow trap), Palengue, selva alta, 3-4.VI.1999 (A. Martinez, C. Covarrubias, S. Nico).

Description. *Female* (holotype). Fore wing about 7 mm long. Antenna with 23 flagellar segments; flagellar segments 1 and 2 subequal and together 1.6 times as long as maximum diameter of eye; segments 4-9 distinctly compressed; segment 7 about 1.5 times as long as wide and about 1.8 times as wide as segment 1 in the middle. Central part of face mat, with moderately large and rather dense, superficial (not deep) punctures; central part of frons rugose (in female paratype,

frons granulate and almost smooth). Temples strongly narrowed beyond the eyes and moderately broadened to mandible; in profile, their maximum length about twice the minimum length (at level of upper 0.25 of eye). Occipital carina weakly sinuate before connection with hypostomal carina; oral carina beyond mandible weakly raised. Epomia distinct. Notauli rather sharp, extending to centre of mesoscutum; mesoscutum and mesosternum mat, with fine dense punctures. Mesopleurum, metapleurum and propodeum with sculpture similar to that in *L. rufinotum*, but groove beyond the postscutellum wide, shallow and with transverse rugae. Apophyses conical, slightly depressed, their length about 0.7 times the basal width. Areolet large, about 0.8 times as long (height) as second recurrent vein above the bulla; nervulus distinctly antefurcal; nervellus in hind wing intercepted at lower 0.36. Hind femur 5.6 times as long as wide. Tergite 2 mat, evenly granulate; its pubescence scarce in basal 0.35 and rather dense in apical 0.65. Tip of upper valve of ovipositor beyond the nodus 0.9 times as long as segment 2 of hind tarsus. Ovipositor as long as hind tibia; ovipositor sheath broken, perhaps about 0.63 times as long as hind tibia.

Antennae black; scape brownish black ventrally; base of first flagellar segment and apex of pedicel brownish; flagellar segments 4-9 white with ventral side blackish. Head black, except for wide orbital bands on frons (from upper margin of antennal sockets to top of eyes). Palpi white. Thorax red; only front margin of pronotum, spot on subtegular ridge, spot on front margin of tegula, and apophyses white. Fore wing with two dark brown bands: one at apex and another covers brachial cell and adjacent parts of anal and discocubital cells. Fore and middle coxae almost entirely whitish; hind coxa entirely red. Trochanters dark brown, reddish on hind margin and with yellowish spots ventrally. Femora reddish; hind femur darkened at apex (Fig. 5). Fore and middle tibiae rufous with whitish basal 0.2, partly brownish dorsally; hind tibia blackish brown with reddish brown apex and white base (Fig. 5). Fore and middle tarsi reddish brown; hind tarsus reddish with last segment brown. Abdomen black with petiole reddish and dorsal band on tergites 1-2 and 6-8 white (Fig. 5).

Male. Fore wing about 5 mm. Antenna with 25 flagellar segments; about flagellar segments 12 to 15 with a linear tyloid. Flagellum black; scape and pedicel pale rufous, except dorsally. Head white anteriorly, on check and lower half of temple; frons with black median stripe, which extends to occipital carina and expands on hind half of vertex and upper half of temple (Fig. 43). Thorax and abdomen black with white spots and bands (Fig. 43); mesoscutum with a pair of me-

dian whitish stripes; scutellum white dorsally, except for black hind margin; tergite 4 entirely and basal half of tergite 3 reddish; fore and middle coxae and trochanters, and hind tarsus white (except for blackish tarsal segments 4, 5 and basal half of segment 1).

Diagnosis. *L. rufoniger* is one of the most distinctive species within the group of species with red thorax and fore wings banded with fuscous. The female (Fig. 5) is immediately recognizable on account of his black head with only lateral sides of frons white; pronotum on upper lateral margin without white mark; hind tarsus reddish; tergites 3-5 entirely black. The body of male (Fig. 43) is black with white spots and bands; apical half of 3rd tergite and tergite 4 entirely reddish.

26. *Lymeon rufotibialis* sp. n. (Figs 2, 12)

Holotype. ♀, **Mexico**, Yucatán, Sudzal Chico (SMSP), Febrero 1999 (Hugo Delfim).

Description. Female (holotype). Fore wing 6.6 mm long. Antenna with 26 flagellar segments; flagellar segments 1 and 2 subequal and combined about 1.5 times as long as maximum diameter of eye; segments 4-9 moderately compressed; segment 7 about twice as long as wide and about 1.6 times as wide as segment 1 in the middle; apex of flagellum filiform. Face mat, finely granulate, with thin transverse striae at centre, and with moderately fine and sparse setiferous punctures. Frons with median longitudinal carina and with oblique more or less transverse rugae, deviating from this carina and from front ocellus; orbits of frons granulate, without rugae. Temples strongly narrowed beyond the eyes and broadened to mandibles; in profile, their maximum length about 2.5 times the minimum length (at level of upper 0.25 of eye). Occipital carina not sinuate before its connection with hypostomal carina; oral carina weakly raised, rather long (about as long as malar space). Epomia obscured by adjacent rugae. Notauli long and strong. Mesoscutum mat and, also as mesosternum, covered with moderately fine and dense punctures. Mesopleurum entirely covered with coarse long rugae, without noticeable punctures. Speculum polished. Metapleurum and pleural areas of propodeum scabrous, densely and more or less longitudinally rugose. Apophyses conical. Propodeum rather superficially rugose-reticulate, without punctures; groove between propodeum and metanotum narrow and rather deep. Areolet of moderate size, 0.75 times as long as second recurrent vein above the bulla; nervulus antefurcal, nervellus intercepted at lower 0.35; brachiella entirely absent (Fig. 12). Hind femur

5.3 times as long as wide. Tergite 2 mat, granulate, with fine dense setiferous punctures (except for basal 0.23, where hairs almost absent); hairs short, distances between their bases as long as hairs; following tergites with similar sculpture and pubescence. Tip of upper valve of ovipositor beyond the nodus as long as 2nd segment of hind tarsus. Ovipositor 1.5 times as long as hind tibia; ovipositor sheath as long as hind tibia.

Antenna black with scape pale ventrally; flagellar segments 4-10 (and apex of segment 3) white, except ventrally. Head white with malar space, lower and upper margins of clypeus, teeth of mandibles, small median spot in upper part of face, median longitudinal band from antennal sockets to vertex, hind half of vertex, hind margin of temples in upper 0.4, occiput in upper 0.6, all black. Prothorax, mesonotum and metanotum black with white marks; mesopleurum, metapleurum and propodeum reddish with white marks (Fig. 2). Mesoscutum with a pair of white lines just outside of notauli and with white lateral prescutellar carinae; scutellum white dorsally, with black apex; postscutellum black. Propodeum on front margin brownish. Legs rufous; fore and middle coxae dorsally white with brownish apical spot; hind coxa reddish with white dorsoposterior spot; fore and middle tarsi brownish; hind tarsus with segments 1-3 white; basal 0.3 of segment 1 pale rufous; apex of segment 3 and segments 4-5 entirely brown. Abdominal tergites black with white apical band, which on tergites 5 and 6 is very narrow mediodorsally. Fore wing weakly infuscate on brachial cell, on posterior (lower) part of discocubital cell, and at apex.

Diagnosis. *L. rufotibialis* is immediately recognizable by its colour pattern of thorax as it is the only species in Mexico with red propodeum and black (with two submedian yellow stripes) mesoscutum. Hind tibia entirely rufous (Fig. 2).

27. *Lymeon sexlineatus* (Cameron, 1886) (Figs 7, 21)

Cameron, 1886: 255, ♀ (*Hemiteles*; type: ♀, Mexico, Presidio); Townes & Townes, 1966: 93 (*Lymeon*).

Material. **Mexico**, type (BMNH).

Diagnosis. The species is immediately recognizable by the unusual for the genus coloration of mesoscutum bearing on its central lobe anterolaterally two large yellow spots (Fig. 21).

Remarks. In the type of *L. sexlineatus*, fore wing 5.8 mm, antennae missing. Head white with only ocellar area, median spot on vertex and upper 0.4 of occiput black. Thorax whitish yellow with black line on transverse groove of pronotum, black marks on mesonotum (Fig. 21), on sides of scutellum and postscutellum, and with black line, which extends

from mesopleural pit along mesepimeron to upper margin and further to subalar prominence of front wing. Propodeum whitish with basal part before basal transverse carina (except for small pale spots before spiracles), pleural carinae, and apical median longitudinal spot (not extending to basal carina) all black. Areolet large. Abdomen yellowish white; tergite 1 with black band between spiracles; tergite 2 with subbasal black band (base of tergite pale); tergites 3 and 4 black in basal 0.3-0.4, other tergites whitish (their basal parts are hidden). Coloration of hind coxa as in *L. flavovariiegatus* (Fig. 33).

28. *Lymeon subflavescens* (Cresson, 1865)

Cresson, 1865: 24, ♂ (*Hemiteles*; type: ♂, Cuba); Townes & Townes, 1962: 397 (*Lymeon*); 1966: 93 (bibl.; = *Hemiteles incertus* Cresson, 1865, ♀, Cuba, = *Christolia ruficeps* Cameron, 1906: 279, ♀, Cuba).

Material. **Cuba**, 1 ♀, 1 ♂ (types of *Hemiteles incertus* and *H. subflavescens*) (ANSP).

Diagnosis. *L. subflavescens* is distributed in Cuba, Jamaica and Puerto Rico. It closely resembles *L. bicinctus* (Cuba, Florida) in that both have antennae without white band (in female and male), wings fuscous, brachiella absent, head and thorax red with orbits and large spot on mesopleurum white. *L. subflavescens* differs from *L. bicinctus* mainly in the coloration of abdomen and metapleurum (see key).

Host: *Diaphania flegia* Cramer, 1777 (Pyraustidae).

29. *Lymeon sulsus* (Cresson, 1873) (Figs 29, 40)

Cresson, 1873: 175, ♀ (*Hemiteles*; type: ♀, Mexico, Orizaba); Townes, 1946: 44 (*Lymeon*); Townes & Townes, 1966: 94 (bibl.).

Material. **Mexico**, Veracruz, ♀ (type) (ANSP).

Diagnosis. *L. sulsus* closely resembles *L. junctus* in the almost entirely reddish body. The female differs from *L. junctus* in having scape white ventrally, pedicel without white dorsal spot, white band on flagellum complete (not interrupted ventrally with fuscous), speculum not separated anteriorly by oblique black band, etc. The base of propodeum is partly fuscous.

30. *Lymeon tantillus* (Cresson, 1873) (Figs 22, 27, 41, 66)

Cresson, 1873: 134, ♂ (*Cryptus*; type: ♂, Mexico, Cordoba); Townes, 1946: 44 (*Lymeon*); Townes & Townes, 1966: 94 (bibl.).

Material. **Mexico**, Tamaulipas: 1 ♀, Hidalgo, Rio Blanco, Ej. El Chorrillo, 11.III.1995 (C. Covarrubias D., S.

Hernández A.); 2 ♂, Canyon Salto de Tigre, 40 km NNW Cd Victoria, 27.IV.2000 (Kasparyan); 1 ♀, Cd.Victoria, Canyon Novillo, 1000 m, 29.XI.1981 (R. Meza); 3 ♀, 6 ♂, Canyon Novillo: 21.IV-26.VII.1985 (A. del Valle); 1 ♂, same locality, 8.VII.1985 (Serna); 1 ♀, same locality, 14.VI.1986 (Guevara); 1 ♂, same locality, pinoencino, 840-900 m, 30.IV.1988 (J. de León); 1 ♀, same locality, 4.IV.1999 (G. Gaona); 2 ♀, same locality, 2.VI.1999 (H. Olazarán A.); 2 ♀, same locality, 10.I.2004 (D. Kasparyan); 2 ♀, Cd.Victoria, Canyon La Libertad, 23.VI.1998 (D. Kasparyan); 1 ♂, Troncones, 26.II.1989 (R. Thompson F.); 2 ♂, Jaumave, 22.IX.1989 (S. Calderón) and 13.III.1999 (G. Gaona); 3 ♂, Llera, Rio Guayalejo, 11.VIII.2000 (Kasparyan); 3 ♀, 3 ♂, Llera, Ej. La Libertad, 24.III. and 31.V.1990 (M. Aquino, R. Rocha P., E. Ruíz C., S. Varela P.); 1 ♀, 2 ♂, Gomez Farias, 16.III.1989 (H. Ruíz C.); 1 ♂, Gomez Farias, 13.XII.1990 (E. Ruíz C.); 1 ♀, Gomez Farias, El Nacimiento, 17.IX.1998 (D. Kasparyan); 1 ♀, Gomez Farias, Los Cedros, 340 m, Malaise tr., 21.V.1993 (J. Coronado B.); 1 ♂, same locality, YPL 94037, 18-19.VII.1994 (J.B. Woolley); 5 ♀, Los Cedros, 340 m, tr. amarillas, 24-26.II and 13.V.1995 (S. Nico, J. Coronado); 1 ♀, 1 ♂, Los Cedros, 340 m, 12.X.1998 and 24.I.1999 (D. Kasparyan); 7 ♀, 54 ♂, Los Cedros, 340 m, Malaise tr., 16.XII.1998-12.VI.1999 (S. Hernández A.); 20 ♂, Gomez Farias, Altas Cimas, 940 m, Malaise tr., 24.IV-24.VII.1999 (S. Hernández A.); 3 ♀, Gomez Farias, Ej. San Pedrillo, selva mediana, 17-18.II.1995 (C. Covarrubias D., S. Hernández A.); *Morelos*: 1 ♀, Cuautlixco, 1320 m, 28.II.1995 (J. Flores); 1 ♀, Tlaltizapan, Ticuman, 15.III.1995 (J. Flores); *Veracruz*: 1 ♂ (type) (ANSP); 1 ♂, Apazapan, 19.II.1992, 347 m (Luis Quiroz); 2 ♂, Tuxpan, Coloman, 6.III.1996 (R. Herrera A., M. Molina); *Yucatán*: 3 ♀, 2 ♂, Corral (SMSC), I-III, VIII.1999 (Hugo Delfin); 12 ♀, 7 ♂, Sudzal Chico (SMSP), I-III, VI, VII, XI.1999 (Hugo Delfin); *Quintana Roo*: 1 ♂, F. Carillo Puerto, selva baja, 30.III.1997 (A. Martinez et al.).

Female (nov.). Fore wing 5-7 mm long. Antenna with 24-26 flagellar segments; flagellar segments 1 and 2 subequal and combined 1.3 times as long as maximum diameter of eye; segments 4-9 distinctly compressed; segment 7 about 1.7 times as long as wide and about 1.5 times as wide as segment 1 in the middle. Central part of face mat, with moderately large and rather dense, superficial (not deep) punctures; central part of frons rugose, with median longitudinal carina; frons laterally very finely granulate. Temples strongly narrowed beyond eyes and moderately expanded to mandible; in profile, their maximum length about twice the minimum length (at level of upper 0.25 of eye). Occipital carina weakly sinuate before connection with hypostomal carina; oral carina beyond mandible short, distinctly raised. Epomia weak, obscured by adjacent wrinkles. Notauli rather sharp, thin, extending to centre of mesoscutum; mesoscutum finely scabrous, with indistinct fine dense punctures on lateral lobes. Mesopleurum, metapleurum, and propodeum basal to basal carina mat, with scabrous sculpture; speculum polished. Propodeum with coarse rugae on pleural area and between apophyses. Apophyses slightly depressed, about 1-1.2 times as long as their basal width. Areolet

large, about as long as second recurrent vein above the bulla; nervulus distinctly antefurcal; nervellus in hind wing intercepted at lower 0.3. Hind femur about 5.3 times as long as wide. Tergite 2 mat, evenly granulate; its pubescence rather dense (sparse in basal 0.3). Tip of upper valve of ovipositor beyond the nodus 0.9 times as long as segment 2 of hind tarsus. Ovipositor 1.1 times as long as hind tibia; ovipositor sheath about 0.7 times as long as hind tibia.

Antennae black; scape with ventral white spot, base of first flagellar segment and apex of pedicel brownish; flagellar segments 4-9, apex of segment 3 and base of segment 10 white dorsally. Head white with apical half of mandible, broad median stripe extending from antennal sockets to occipital carina, hind half of vertex, and occiput except for its lower 0.2, all black. Propleurum white with median longitudinal black line; pronotum and mesopleurum as in Fig. 22. Mesoscutum black with two broad submedian yellowish bands just outside notaulae. Scutellum and postscutellum white dorsally. Metapleurum completely white. Propodeum black with two broad whitish spots from basal transverse carina to hind margin (Fig. 27). Legs light rufous with fore coxa, dorsal spot on middle coxa, segments 1-3 of hind tarsus (except for basal 0.3 of segment 1) white; segments (3)4-5 of hind tarsus dark brown. Pterostigma yellowish rufous. Petiole light reddish; postpetiole white, usually with fuscous spot between spiracles. Tergites 2-8 black in basal 0.5-0.7 and white apically. Sternites white with basolateral blackish spots, which on sternites 5 and 6 are confluent at base of sternites.

Diagnosis. *L. tantillus* is one of the most distinctive species within the group of species with the body black and white. It is immediately recognizable on account of black-bordered mesopleurum (except ventrally) (Fig. 22). Mesoscutum of male with subquadrate median yellow spot; hind coxa usually reddish (Fig. 66).

Remarks. This species is most common in the north-east of Mexico.

31. *Lymeon tinctipennis* sp. n. (Figs 8, 37)

Holotype. ♀, **Mexico**, *Oaxaca*, Sola de Vega, Santos Reyes, galeria, 6.IV.1997 (A. Martinez, C. Covarrubias, S. Niño).

Description. **Female** (holotype). Fore wing 6.0 mm long. Antenna with 24 flagellar segments; flagellar segments 1 and 2 subequal and combined about 1.3 times as long as maximum diameter of eye; segments 4-9 moderately compressed; segment 7 about 1.6 times as long as wide and about 1.5 times as wide as segment 1 in the middle; apex of flagellum filiform. Face mat, finely rugose-

punctate at centre and very finely granulate laterally, with very fine and rather dense setiferous punctures. Frons with median longitudinal carina and with more or less transverse rugae, deviating from this carina and from front ocellus; orbits of frons very finely granulate, without rugae. Temples strongly narrowed beyond eyes and broadened to mandibles; in profile, their maximum length about 2.3 times the minimum length (at level of upper 0.25 of eye). Occipital carina not sinuate before its connection with hypostomal carina; oral carina weakly raised, moderately long (about as long as malar space); malar space half as long as basal width of mandible. Epomia obscured by adjacent rugae. Notauli long, not deep, rugose. Mesoscutum mat and, also as mesosternum and mesopleurum just above sternaulus, covered with very fine and dense punctures; most part of mesopleurum covered with coarse long rugae, without noticeable punctures; speculum large and polished. Metapleurum and pleural areas of propodeum scabrous, densely and more or less longitudinally rugose. Apophyses almost conical (weakly depressed), 0.8 times as long as wide at base. Propodeum rather strongly rugose-striate, without punctures; groove between propodeum and metanotum narrow and rather deep. Areolet rather large, 0.85 times as long as second recurrent vein above the bulla; nervellus anterfurcal; nervellus intercepted at lower 0.25; brachiella present, reaching about 0.6 of the distance to wing margin. Hind femur 4.8 times as long as wide; proportion of segments 1-5 of hind tarsus 5.8 : 2.5 : 1.5 : 0.4 : 1.9. Tergite 2 mat, granulate with fine dense setiferous punctures (except for basal 0.23, where hairs almost absent); hairs short, distances between their bases as long as hairs; sculpture of subsequent tergites is rather similar but finer. Tip of upper valve of ovipositor beyond the nodus rather stout (Fig. 37), as long as 2nd segment of hind tarsus and 3.7 times as long as its height on nodus. Ovipositor sheath 0.8 times as long as hind tibia.

Antenna black with flagellar segments 4-10 (and apical half of segment 3) white, except ventrally. Head white with a large spot above the clypeus, malar space, lower and upper margins of clypeus, teeth of mandibles, small median spot in upper part of face, median longitudinal band from antennal sockets to vertex, hind half of vertex, hind margin of temples, occiput completely black. Body black; broad band on front margin of pronotum (except for lower corners), median spot on its dorsolateral margin, two median lines on mesoscutum, scutellum dorsally (its posterior, vertical side black), tegulae, subtegular ridge, a large median spot on mesopleurum and a small one in hind part of metapleurum, upper division of metapleurum completely, apophyses, postpetiole and hind margin of tergite 2, tergite 7 dor-

sally, all white. Fore and middle legs reddish yellow with coxae and trochanters white and tarsal segments 3-5 brown; middle tibia with small subbasal whitish spot dorsally. Hind coxa, trochanters and femur entirely reddish; hind tibia dirty reddish yellow, darkened at extreme base and with narrow white subbasal ring; hind tarsus white with basal 0.3 of segment 1 and segments 4 and 5 completely brownish. Fore wing hyaline with brown on brachial cell and distal to basal vein, and with brown subapical band.

Diagnosis. *L. tinctipennis* is immediately recognizable by its unusual colour pattern: head and thorax black with white marks (mesosternum entirely black), abdomen reddish with white dorsum of tergite 7, and fore wing with two brownish bands.

32. *Lymeon transilis* (Cresson, 1873)

Cresson, 1873: 134, ♀ (*Hemiteles*); type: ♀, Mexico, Orizaba); Cameron, 1886: 257; Townes, 1946: 45 (*Lymeon*); Townes & Townes, 1966: 94 (bibl.)

Material. Mexico, Veracruz: type (ANSP).

33. *Lymeon tricoloripes* sp. n. (Figs 9, 42, 65)

Holotype. ♀, Mexico, Veracruz, Tuxpan, Ojite, citricos, 10.IV.1996 (M. Molina V.).

Paratypes. Mexico, Nuevo Leon: 1 ♀, Ca.P.La Boca, Santiago, tr. McPhail, 14.III.1987 (H. Sosa); *Tamaulipas*: 2 ♀, Cd Victoria, canyon Novillo, 5.VIII and 22.X.1985 (Serna); 1 ♀, same locality, Sept. 1992 (O. Escamilla); 1 ♀, Cd. Victoria, La Miston, Agosto 1992 (O. Escamilla); 1 ♂, Llera, Ej. La Libertad, 24.III.1990 (R. Rocha); 1 ♀, Llera, matorral 44 km S Cd Victoria, tr Malaise, 1-7.X.2000 (Kasparyan); 1 ♀, Gomez Farias, Los Cedros 340 m, tr. amarillas, 26.II.1995 (S. Nico et al.); 5 ♀, 8 ♂, same locality, tr Malaise, 6.II-19.VI.1999 (S. Hernández A.); 2 ♂, same locality, IV.2002 (Kasparyan); 1 ♀, 4 ♂, Gomez Farias, Alta Cimas, 940 m, tr. Malaise, 27.III-5.VI.1999 (S. Hernández A.); 3 ♂, same locality, 8.V.1999 and tr. Malaise, 9-16.IX.2000 (Kasparyan); Veracruz: 1 ♀, Agazapan, 347 m, 6.XI.1991 (L. Quiroz).

Description. Female (holotype). Fore wing 6.2 mm long. Antenna with 25 flagellar segments; flagellar segments 1 and 2 subequal and combined about 1.4 times as long as maximum diameter of eye; segments 4-9 moderately compressed; segment 7 about 1.8 times as long as wide and about 1.4 times as wide as segment 1 in the middle. Clypeus in profile evenly convex. Face and lateral parts of frons mat, uniformly granulate, with rather sparse and moderately coarse setiferous punctures. Frons with median longitudinal carina and with short rugae deviating from front ocellus; frons lateral to median carina very finely granulate, without rugae. Temples strongly narrowed beyond eyes and broadened to mandibles; in profile, their maximum

length about 2.5 times the minimum length (at level of upper 0.25 of eye). Occipital carina slightly sinuate just before its connection with hypostomal carina; oral carina distinctly raised and rather short (about 0.6 times as long as malar space). Malar space 0.6 times as long as basal width of mandible. Epomia distinct, oblique, partly obscured by adjacent wrinkles; pronotum more or less smooth in upper 0.3, with very fine granulation. Notauli long and deep. Mesoscutum mat, on central lobe anteriorly with dense and coarse punctures, on lateral lobes evenly granulate, without punctures and hairs (except for margins). Scutellum very finely granulate, shiny. Mesopleurum and mesosternum more or less smooth, without noticeable rugae, very finely granulate, with rather sparse small punctures. Speculum large and almost polished, without hairs. Sculpture of lower division of metapleurum similar to that of mesopleurum; upper division of metapleurum almost polished before front end of pleural carina and without hairs, but dorsally with hairs and punctures. Groove between propodeum and metanotum moderately deep, narrow and polished. Propodeum granulate at base (before basal transverse carina) and on yellow spots before apophyses; on median longitudinal black stripe (between apophyses), with irregular rugosity. Apophyses short, weakly depressed, 0.66 times as long as wide at base. Areolet large (Fig. 9), as long as second recurrent vein above the bulla; nervulus interstitial; nervellus intercepted at lower 0.27; brachiella present, reaching about two-thirds the distance to wing margin. Hind femur 5.0 times as long as wide; proportion of segments 1-5 of hind tarsus 5.2 : 2.1 : 1.4 : 0.4 : 1.5. Tergite 2 mat, granulate, with very scarce setiferous punctures; hairs short. Sculpture of following tergites rather similar. Tip of upper valve of ovipositor beyond the nodus moderately stout (Fig. 42), 0.75 times as long as 2nd segment of hind tarsus. Ovipositor sheath about 0.6 times as long as hind tibia.

Antenna black; scape white ventrally; flagellar segments 5-10 white, segments 5 and 10 fuscous ventrally; two apical segments brownish. Head white; broad median longitudinal stripe on frons (from antennal sockets to vertex), hind half of vertex, hind margin of temples in upper 0.3, and occiput in upper half black. Thorax dorsally black with pale marks: two broad submedian stripes on mesoscutum, lateral prescutellar carinae, scutellum dorsally to its posterior margin, postscutellum, two large spots on propodeum (more or less as in *L. tantillus* – Fig. 27) whitish yellow. Thorax laterally coloured more or less as in *L. mandibularis* (Fig. 19), but lateral lobes of pronotum in dorsal 0.3 (above transverse groove) and front upper corner of mesopleurum entirely pale; black coloration

beyond the subtegular ridge somewhat reduced but speculum and mesopleural suture entirely black; prepectus black, except for yellow on prepectal carina. Black line at pleural carina of propodeum narrow, not widened to basal transverse carina. Legs pale rufous with fore and middle coxae white; fore trochanter I with brownish spot dorsally; fore and middle tarsus with segments 5 dark brown. Hind coxa tricoloured (similar to that in *L. flavovariiegatus* – Fig. 33): pale reddish anteriorly and ventrally, blackish at extreme base and dorsoapically, and whitish in basal 0.6 dorsally and posteriorly; hind tarsus white with basal half of segment 1 and extreme apex of segment 4 pale rufous, segment 5 entirely dark brown. Wings hyaline; pterostigma yellowish.

Male. Fore wing 3.5-5.3 mm long. Flagellum 21-24-segmented; about segments 11 to 14 with a linear tyloid on each. Scape and apex of pedicel reddish ventrally; flagellar segments completely black. Orbits yellow, in upper third of temple interrupted with black or with strong constriction. Apophyses reduced to weak crests, which connect with carina arched anteriorly. Coloration of thorax similar to that in female, but prepectus completely and lower part of metapleurum black. Fore and middle legs reddish yellow; coxae and trochanters I white; middle tarsi brownish; hind coxa tricoloured (Fig. 65); hind trochanters blackish; hind femur reddish, sometimes weakly darkened dorsally at apex; hind tibia blackish or blackish brown (darker at apex); hind tarsus white with basal 0.2-0.3 of segment 1 and segment 5 completely black. Tergites black with apical white band; tergite 3 entirely black (or reddish posteriorly); tergite 4 entirely reddish or usually blackish posteriorly. Sternites 2-6 yellowish; sternites 7-8 brown; parameres brown with base sometimes reddish. Pterostigma dark brown or brownish yellow with dark margins.

Diagnosis. *L. tricoloripes* closely resembles *L. sexlineatus* and *L. flavovariiegatus*; it differs from the first in the coloration of mesoscutum and from the second in the distinct apophyses.

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