

# New taxa of Anostostomatidae and Prophalangopsidae (Orthoptera)

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13 new species, 3 new genera, and 1 new tribe of the subfamilies Lutosinae, Anabropsinae, Anostostomatinae, and Prophalangopsinae from South and Central America, Vietnam, China, Madagascar, and Australia are described. Additional remarks to some taxa of these families are given.

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This paper is based mainly on the material deposited in the collection of Zoological Institute, Russian Academy of Sciences, St. Petersburg (ZIAS). The type material of some species from the collection of the Natural History Museum (British Museum), London (BMNH) was used also.

Superfam. STENOPELMATOIDEA Burm.

Family ANOSTOSTOMATIDAE Sauss.

Subfamily LUTOSINAE Gor.

***Lutosa normalis* sp. n.**

(Figs 1-4, 20, 21)

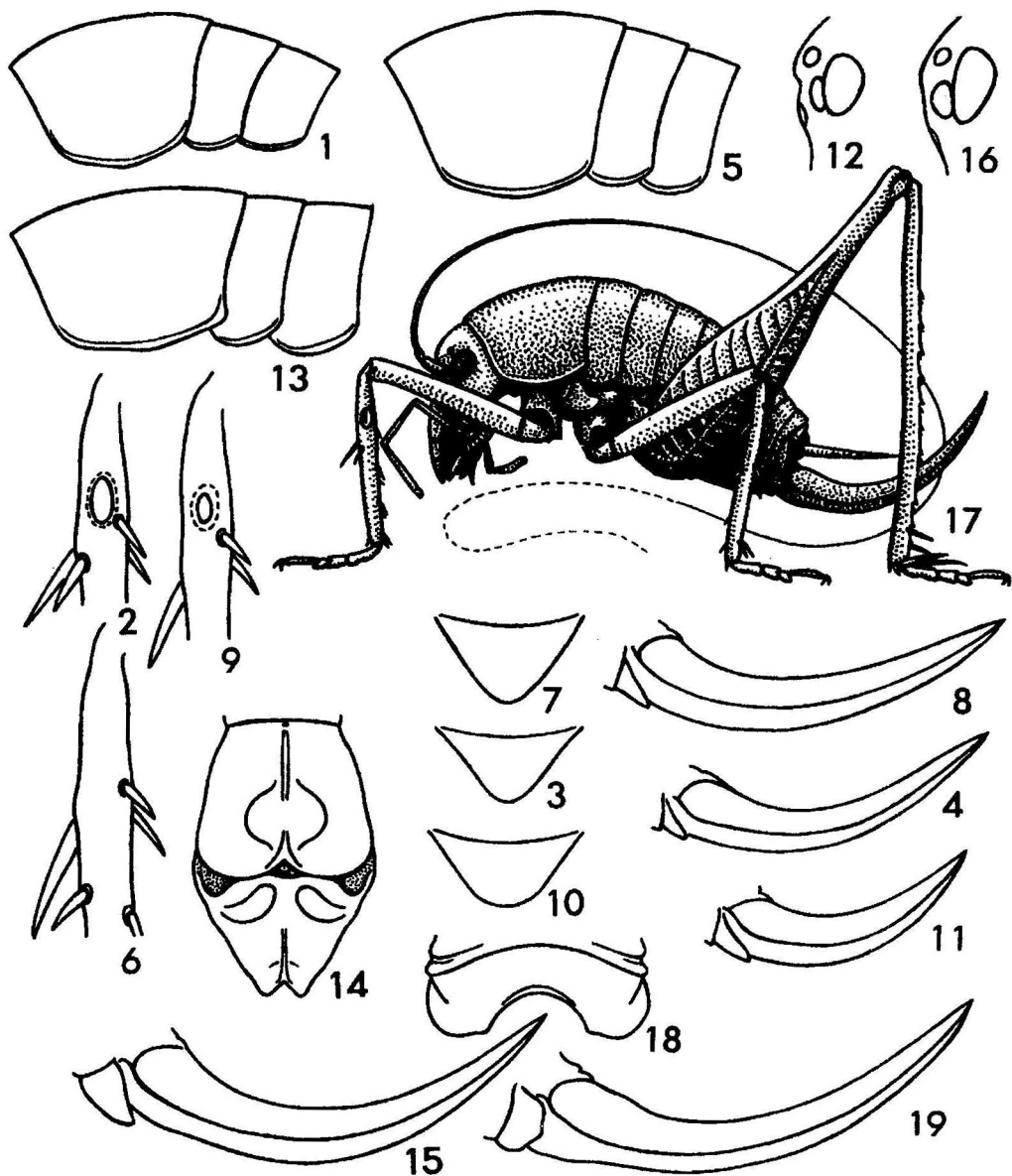
*Holotype*. ♂, **Brazil**, state São Paulo, environs of São Sebastião town, forest, 27.VII.1966, I.S. Darevsky (ZIAS).

*Paratypes*. 3 ♀, same data as for holotype, but 26-27.VII.1966 (ZIAS).

*Description*. Male (holotype). Body more or less brown; upper part of head (over median ocelli and upper half of eyes) intensively brown with dark brown rostrum between ocelli and light (yellowish) spot between lateral ocellus, eye, and antennal cavity; lower part of head yellowish with light brown mandibles and slight brownish spots under eyes and antennal cavities; antennae with spotted scape, intensely brown proximal part of flagellum, and light brown rest of flagellum; pronotum dark brown with reddish brown lower half of lateral lobes; all other tergites brown, more or less darkish; legs and lower part of body light brown with

yellowish proximal part of femora, distal part of tibiae, and tarsi (apices of hind femora and bases of hind tibiae darkish); cerci, epiproct, paraprocts, and genital plate more or less darkened, brownish. Width of antennal cavity, width of rostrum between these cavities, and distance between lateral ocelli almost equal. Pronotum not very high (fore femora almost 1.4 times as long as height of pronotum) (Fig. 1). Wings absent. Femora without spines excepting apices of hind femora, which have 1 spinule at lower edge of outer apical lobe and 1 spinule at hind edge of inner apical lobe; fore tibiae with rather large and oval tympana (both tympana almost equal), 2 upper not apical spines (long inner and short outer) (Fig. 2), 4 pairs of lower not apical spines, and 4 apical spines; middle tibiae with 2 upper outer, 3 upper inner, 4 lower outer, and 3 lower inner not apical spines at left leg, with 1 upper outer, 4 upper inner, 2 lower outer, and 3 lower inner not apical spines at right leg (this leg abnormal, with twisted tibia), with 4 apical spines; hind tibiae with 9-12 outer and 10 inner upper not apical (not articulated) spines, 1 small lower not apical spine, and 8 apical spines (their structure typical of this subfamily). Abdominal tergites without any lobes, processes, or notches, excepting 10th tergite, which is divided into 2 lateral halves and with a pair of small hooks near median line; epiproct and processes of paraprocts as in Fig. 20; genital plate short, with convex hind edge and rather long styli (Fig. 21).

Female. Very similar to male in general appearance; spines of middle tibiae as in left leg



Figs 1-19. *Lutosa* and *Neolutosa*. 1-4, *L. normalis* sp. n. (1, 2, holotype); 5-8, *L. ? surda* sp. n.; 9-11, *L. anomala* sp. n.; 12-15, *N. aculeata* sp. n. (12, 13, holotype); 16-19, *N. emarginata* sp. n. Thoracic tergites from side (1, 5, 13); proximal part of outer side of fore tibia (inner tympanum indicated by interrupted line) (2, 6, 9); female genital plate (3, 7, 10), this plate with abdominal sternite (14) or apex of the latter (18) from below; ovipositor with genital plate from side (4, 8, 11, 15, 19); rostral part of head with eye from side (12, 16); general view of insect from side (17). Fig. 17 after Gorochov (1995).

of holotype; hind tibiae sometimes without any lower not apical spines; cerci sometimes light brownish. Genital plate and ovipositor as in Figs 3, 4, brown.

Length (mm). Body: ♂ 20, ♀ 18-22; pronotum: ♂ 7.7, ♀ 7.5-8.2; hind femora: ♂ 20, ♀ 18.5-21; hind tibiae: ♂ 18.5, ♀ 17.5-19.5; ovipositor 10-11.5.

**Comparison.** The new species is similar to *L. imitata* Levada & Diniz-Filho and *L. paranensis* Rehn. *L. normalis* differs from these 2 species in the shape of the male genital plate with convex (not emarginate or sinuate) hind edge and rather long styli (Figs 21, 23), from *L. brasiliensis* (Br.-W.) in the smaller size, almost not curved hind tibiae, and not emarginate male genital plate, from *L. cubaensis* (Haan) in the smaller size, only 1 (not 2) outer upper not apical spine of fore tibiae, and also the not emarginate male genital plate, from *L. goeldiana* (Sauss.) in the only 0-1 (not 2-3) small lower not apical spine of hind tibiae and the male genital plate without hind notch between styli, from *L. marginalis* Walk. in the distinctly shorter distance between outer tympanum and outer upper proximal spine of fore tibiae as well as in the more angular apex of the female genital plate, from *L. obliqua* (Walk.) in the uniform coloration of the upper part of pronotum and more or less identical size of upper not apical spines of hind tibiae, and from *L. ? inermis* Salfi, **stat. n.** (this taxon was described as a variety of *L. cubaensis*, but it is a distinct species maybe not belonging to *Lutosa*) in the larger size and in the ovipositor much shorter than hind femur.

**Note.** It is possible that *L. normalis* was recently determined as *L. brasiliensis* by Levada & Diniz-Filho (1993), but there are minor distinctions between the holotype of *L. normalis* and the specimen figured in the cited paper (Figs 20, 22) (for distinguishing of *L. brasiliensis* from these specimens see Comparison).

### ***Lutosa anomala* sp. n.**

(Figs 9-11)

**Holotype.** ♀, Brazil, state São Paulo, environs of São Sebastião town, forest, 27.VII.1966, I.S. Darevsky (ZIAS).

**Description.** Female (holotype). Very similar to *L. normalis* in general appearance including coloration, but slightly larger, fore tibiae with small outer tympanum (distinctly smaller than inner one) and without outer upper proximal spine (Fig. 9), middle tibiae with 2 inner (and 2 outer) upper not apical spines, hind tibiae with 9 inner and 9-10 outer upper not apical (not ar-

ticulated) spines, genital plate with wider apex (Fig. 10), and ovipositor higher (wider) and shorter (Fig. 11).

Male unknown.

Length (mm). Body 19; pronotum 7.8; hind femora 21; hind tibiae 20; ovipositor 8.7.

**Comparison.** *L. anomala* differs from all other species of the genus in the presence of only 1 (not 2) upper not apical spine of fore tibiae and some other above-mentioned characters.

### ***Lutosa? surda* sp. n.**

(Figs 5-8)

**Holotype.** ♀, Paraguay, "P-to Bertoni Alto Parana", under stone, 9.XII.1914, I.D. Strelnikov & N.P. Tanasichuk (ZIAS).

**Description.** Female (holotype). Similar to both previous species (*L. normalis* and *L. anomala*) in general appearance, but distinctly larger, coloration of pronotum more uniform (brown) and distal part of tibiae light brown (not yellowish), width of antennal cavity as well as distance between lateral ocelli slightly less than width of rostrum between antennal cavities, pronotum somewhat higher (Fig. 5), fore tibiae without any tympana (Fig. 6) (spines of fore and middle tibiae as in *L. normalis*), hind femora without any apical spinules, hind tibiae with 11 inner and 11-12 outer upper not apical (not articulated) spines. Genital plate and ovipositor very similar to those of *L. normalis* (Figs 7, 8).

Male unknown.

Length (mm). Body 26; pronotum 9; hind femora 22; hind tibiae 21; ovipositor 13.

**Comparison.** *L. ? surda* clearly differs from all congeners in the absence of tympana. Presence and absence of tympana in the same genus occurs rarely in Ensifera, and *L. ? surda* may belong to a new genus, but this problem can be clarified only after discovery of male.

### **Genus *Neolutosa* gen. n.**

Type species *Neolutosa aculeata* sp. n.

**Diagnosis.** Similar to *Lutosa* Walk., but differs in somewhat longer legs, almost angular projection between lower and hind edges of pronotal lateral lobe (Figs 13, 17), large paired lobes of 10th abdominal tergite of male covering base of epiproct and provided with hooks at apices (Figs 24, 25), complicated processes of male paraprocts (Fig. 26), and emarginated hind edge of female genital plate (Figs 14, 18).

**Included species.** Type species and *N. emarginata* sp. n.

**Comparison.** The new genus is distinguished from *Apotetamenus* Br.-W. by the distinctly shorter pronotum, from *Licodia* Walk. (which is a possible representative of Lutosinae) by the absence of sexual dimorphism in the structure of head, from *Hydrolutos* Issa & Jaffe by the absence of any projections of 8th abdominal tergite of male, and from all these genera also by the above-mentioned structure of abdominal apex.

***Neolutosa aculeata* sp. n.**

(Figs 12-15, 24-28)

**Holotype.** ♂, **Brazil** (without more exact locality) (ZIAS).

**Paratype.** ♀, same data as for holotype (ZIAS).

**Description.** Male (holotype). Coloration brownish; head light brown with dark brown upper projection of rostrum (from apex of this projection to lower and upper edges of lateral ocelli), darkish longitudinal lines above median part of this projection, above lateral ocelli, and above eyes, slightly darkened, small, indistinct spots under eyes and under median ocellus, and brown mandibles; antennae light brownish; pronotum light brown with rather narrow median stripe and rather narrow band along hind edge brown; all other tergites more or less uniformly brown; lower part of body, legs, and cerci light brown, but with slightly darkened proximal part of hind tibiae and very light all tarsi and distal parts of all tibiae. Head with distinct upper projection of rostrum (Fig. 12); rostrum between antennal cavities slightly narrower than these cavities; distance between lateral ocelli slightly greater than their diameter. Pronotum rather low (Fig. 13). Wings absent. Femora without spines, excepting apices of hind femora bearing 1 spinule at hind edge of inner apical lobe and 1 spinule at lower edge of outer apical lobe; fore tibiae with rather large and oval tympana (both tympana almost equal), 2 upper not apical spines (long inner and short outer), 4 pairs of lower not apical spines, and 4 apical spines; middle tibiae with 4 lower outer, 3 lower inner, 2 upper outer, 3 upper inner not apical spines, and 4 apical spines; hind tibiae with 11 outer and 11 inner upper not apical (not articulated) spines, with 1 small lower not apical spine, and with 8 long apical spines (their structure typical of this subfamily). Abdominal tergites simple, excepting 10th tergite, which is modified as in Figs 24, 25; epiproct with truncate apex; paraprocts as in Fig. 26; genital plate as in Figs 27, 28.

**Female.** Very similar to male in general appearance, but just lighter, hind tibiae with 10

upper inner not apical (not articulated) spines, 10th abdominal tergite distinctly divided into halves by membranous median area and with a pair of rather small lower lobes near median line. Genital plate almost triangular, with small apical notch (Fig. 14); ovipositor as in Fig. 15.

**Length (mm).** Body: ♂ 27, ♀ 26; pronotum: ♂ 9, ♀ 9.2; hind femora: ♂ 25.5, ♀ 25; hind tibiae: ♂ 24.5, ♀ 24; ovipositor 14.5.

***Neolutosa emarginata* sp. n.**

(Figs 16-19)

**Holotype.** ♀, Central America (?), "C.-Amer." (ZIAS).

**Description.** Female (holotype). Similar to *N. aculeata*, but slightly larger, coloration almost uniformly brown with darkish mandibles, distal part of femora (excepting lightish upper apical part), and genital plate, light indistinct spots on base of antennae, light brown labrum, maxillae, labium, palpi, lower part of body, base of femora, distal part of tibiae, tarsi, abdominal apex, and base of ovipositor, upper rostral projection of head fused with lower one (Fig. 16), antennal cavities distinctly wider than rostrum between them (almost 1.5 times as wide as rostrum), distance between lateral ocelli almost 2.5 times their diameter, pronotum slightly higher (Fig. 17), middle tibiae with 4 pairs of lower spines, hind tibiae with 11 outer and 10 inner upper not apical (not articulated) spines, 10th abdominal tergite with almost indistinct pair lower lobes, and genital plate very transverse, with widely and deeply emarginate hind edge (Fig. 18). Ovipositor as in Fig. 19.

**Male unknown.**

**Length (mm).** Body 29; pronotum 10.5; hind femora 30; hind tibiae 28.5; ovipositor 15.5.

**Note.** This specimen has been recently misidentified as *L. marginalis* Walk. by Gorochov (1995: Fig. 748).

Subfamily ANABROPSINAE Rentz & Weissm.

Tribe Anabropsini s. str.

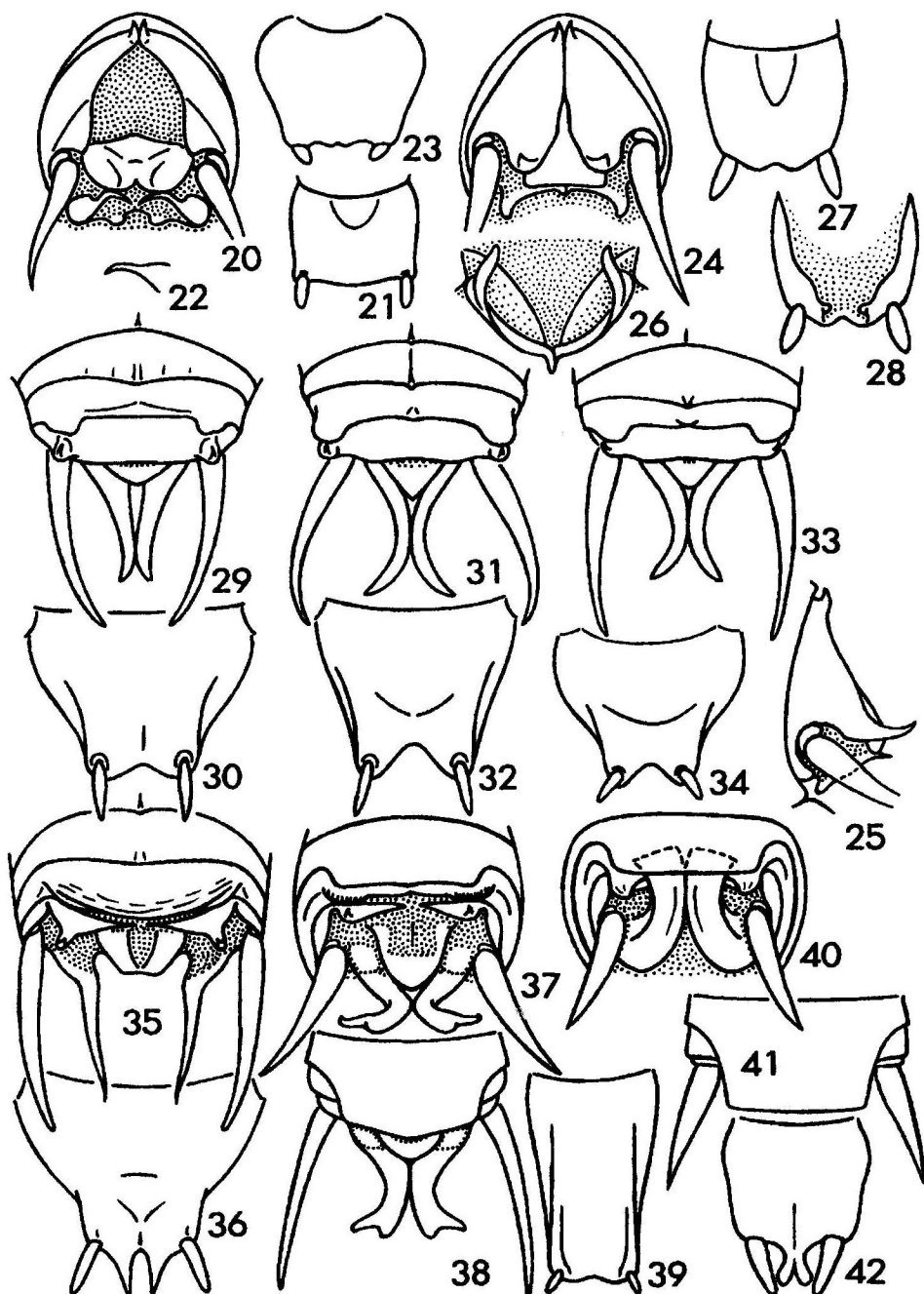
***Anabropsis spinigera* sp. n.**

(Figs 29, 30, 43-46, 68)

**Holotype.** ♂, **Costa Rica**, "Puntarenas Prov. San Vito, 6 km S. Cerro Cruces, alt. 5000', 16.III.69, D.C. Rentz" (ZIAS).

**Paratype.** ♀, **Costa Rica**, "Puntarenas Prov. San Vito, 2 km S. Finca Las Cruces, Alt. 4000', 14.III.1969, 08°42'N 83°0'W, D.C. Rentz collector" (ZIAS).





**Figs 20-42.** *Lutosa*, *Neolutosa*, *Anabropsis*, *Brachyporus*, and *Penalva*, ♂. 20, 21, *L. normalis* sp. n.; 22, *L. ?normalis* (from: Levada & Diniz-Filho, 1993: Fig. 2A); 23, *L. imitata* Lev. & D.-F.; 24-28, *N. aculeata* sp. n.; 29, 30, *A. spinigera* sp. n.; 31, 32, *A. modesta* sp. n.; 33, 34, *A. mexicana* (Sauss.); 35, 36, *B. spinulentus* sp. n.; 37-39, *P. spinosula* sp. n.; 40-42, *P. lateralis* Walk. (holotype). Male abdominal apex (without genital plate and genitalia) from behind (20, 24, 40), from side (25), from above (29, 31, 33, 38, 41), from above and slightly behind (35), from behind and slightly above (37); male genital plate from below (21, 23, 27, 30, 32, 34, 36, 39, 42) and from above (28); complicated paraproctal processes from below (26).

**Description.** Male (holotype). General coloration more or less brownish; head light brown with darkish vertex behind eyes and narrow median stripe from apex of rostrum to darkish part of vertex, V-shaped spot under rostral apex (but over median ocellus), large spots on frons under eyes and antennal cavities, paired small spots on clypeal suture, and scarcely distinct spot on base of mandibles; antennae with spotted scape and light brown flagellum, excepting darkish its basal part; pronotum dark brown with numerous, almost indistinct, very small, lightish spots; tegmina almost dark brown; other parts of body light brown with darkened distal part of femora and proximal part of tibiae, slightly darkened upper part of hind femora and hind part of 1st-8th abdominal tergites (all these slightly darkened parts with lighter spots as in pronotum). Rostrum between antennal cavities almost half as wide as antennal cavity. Pronotum long; its lateral lobes without humeral notch, with long, oblique hind edge (Fig. 43). Tegmina strongly shortened, extending to distal part of 1st abdominal tergite; their apex rounded, almost not narrowing (Fig. 44). Femora almost unarmed (with only 1 very small spine at inner apical lobe of middle and hind femora and at inner lower edge of left hind femur); both tympana equal, rather large, oval; upper side of fore tibiae with 2 not apical spines: longer inner at middle part of tibiae and shorter outer between the latter spine and apical spines; lower side of these tibiae with 4 pairs of not apical spines; apex of these tibiae with 4 apical spines; middle tibiae with 4 pairs of lower, 3 upper inner, and 2 upper outer not apical spines; apex of these tibiae with 4 apical spines; hind tibiae with 11 inner and 11-12 outer upper not apical (not articulated) spines, with 8 apical spines (typical of this subfamily). Abdominal tergites: 1st-8th with slight median carina at hind half, 9th with a pair of distinct hind lobes, 10th undivided, rather wide, and with paired lateral hooks under hind lobes of 9th tergite; epiproct simple, almost triangular; paraprocts with rather long and slightly curved finger-like process (Fig. 29); genital plate with slight hind notch and normal styli (Fig. 30).

Female. Similar to male in general appearance, but just darker. Abdominal tergites rather simple; paraprocts with small finger-like projection; ovipositor slightly arched, with almost rounded apex (Fig. 46); genital plate as in Fig. 45.

Length (mm). Body: ♂ 32, ♀ 35; pronotum: ♂ 9.5, ♀ 10.5; tegmina: ♂ 7.2, ♀ 8; hind femora: ♂ 25, ♀ 28; hind tibiae: ♂ 24.5, ♀ 27; ovipositor 14.

**Comparison.** This new species is similar to *A. costaricensis* Rehn and *A. mexicana* (Sauss.). It differs from the first species in the somewhat longer pronotum (Figs 43, 47) and presence of 2 upper not apical spines of fore tibiae, from the second species also in the absence of humeral notch at pronotal lateral lobes (Figs 43, 51) and fine distinctions in the structure of abdominal apex (Figs 29, 30, 33, 34, 45, 46, 53, 54), from all other American Anabropsinae in the strongly shortened tegmina.

### *Anabropsis modesta* sp. n.

(Figs 31, 32, 49, 50, 67)

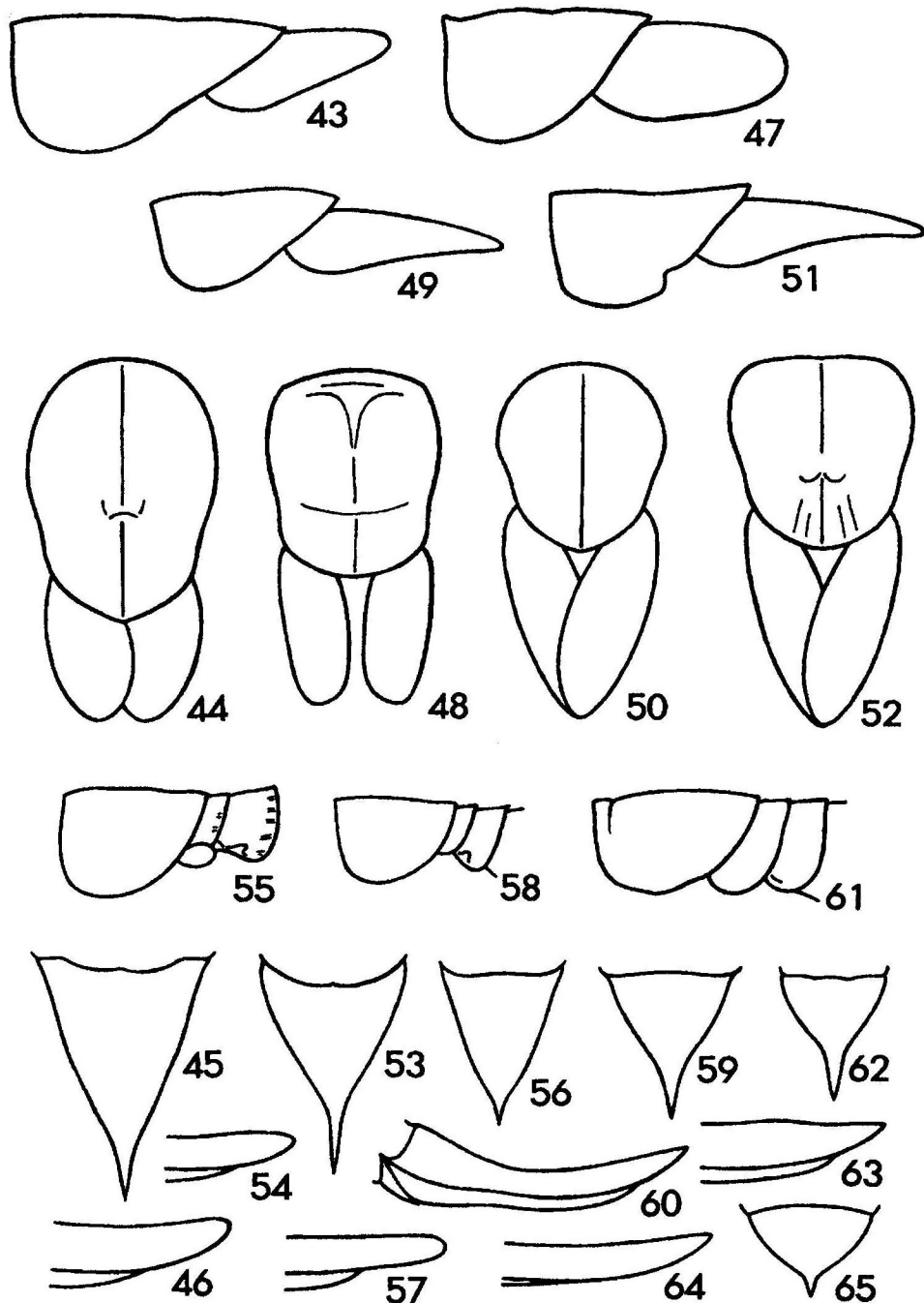
**Holotype.** ♂, Mexico (?), "Valearul" (ZIAS).

**Description.** Male (holotype). General coloration reddish brown, not dark; head almost uniformly brownish: upper part of head darkish (brown), its lower part slightly lighter with almost light brown mouthparts; antennae yellowish with brownish spots on scape; pronotum brown with numerous almost indistinct small lightish spots; tegmina almost light brown; other parts of body more or less light brown with group of slightly darkened spots on upper part of hind femora, along their outer longitudinal ridge and both their lower keels (these ridge and keels with small yellowish spots also). Rostrum between antennal cavities almost half as wide as antennal cavity. Pronotum rather short; its lateral lobes without humeral notch, with rather short, oblique hind edge (Fig. 49). Tegmina not strongly shortened, extending to distal part of 4th abdominal tergite; their apex narrowly rounded (Fig. 50). Femora with 1 small spine at inner apical lobe of middle and hind femora, 0-2 outer small not apical spines at lower side of middle femora, 2 outer and 3-4 inner small not apical spines at lower side of hind femora; both tympana equal, rather large, oval; spines of tibiae as in *A. spinigera*, excepting number of not apical spines of hind tibiae: 8-9 inner and 9 outer upper not articulated spines, 1 inner and 2 outer lower spines. Abdominal tergites: 1st-8th with distinct median carina, 9th with a pair of distinct hind lobes and small hind median tubercle, 10th as in *A. spinigera*; epiproct and paraprocts similar to those of *A. spinigera*, but genital plate with rather deep hind notch and normal styli (Figs 31, 32).

Female unknown.

Length (mm). Body 22; pronotum 7; tegmina 8.2; hind femora 19.3; hind tibiae 18.5.

**Comparison.** *A. modesta* is similar to *A. costaricensis* and *A. spinigera*, but differs from the first species in the longer tympana which



**Figs 43-65.** 43-46, *Anabropsis spinigera* sp. n. (43, 44, holotype); 47, 48, *A. costaricensis* Rehn (holotype); 49, 50, *A. modesta* sp. n.; 51-54, *A. mexicana* (Sauss.); 55-57, *A.? microptera* sp. n.; 58-60, *A.? saltator* (Sauss. & Pict.) (holotype); 61-63, *Apteranabropsis minuta* sp. n.; 64, 65, *Penalva spinosula* sp. n. Pronotum and contour of tegmina from side (43, 47, 49, 51) and from above (44, 48, 50, 52); thoracic tergites (with contour of tegmina, if the latter developed) from side (55, 58, 61); female genital plate from below (45, 53, 56, 59, 62, 65); ovipositor (with genital plate) (60) and its distal part (46, 54, 57, 63, 64) from side.

are slightly longer than pronotum (the tegmina of *A. costaricensis* are shorter than pronotum) and with narrowly rounded apex (this apex in *A. costaricensis* is rotundato-truncate) (Figs 47-50), from the second species in the shorter pronotum (Figs 43, 44, 49, 50) and the presence of only 1 upper not apical spine of fore tibiae, from the other American *Anabropsinae* in the same characters as *A. spinigera*.

### ***Anabropsis? microptera* sp. n.**

(Figs 55-57)

*Holotype*. ♀, Mexico, state Oaxaca, between Oaxaca city and Tuxtepec town, forest, 20.IX.1989, I.M. Kerzhner (ZIAS).

*Description*. Female (holotype). General coloration brownish, rather spotted; head yellowish with greyish brown upper part and numerous distinct dark spots and dots; pronotum brown, rather dark, with lightish small spots and line along lower edge of pronotal lateral lobes; tergites of pterothorax and abdomen brownish with darker hind parts; legs yellowish with slight darkish spots on femora and proximal part of tibiae, almost black longitudinal stripe along outer side of hind femora (from middle part of proximal half to apex), blackish stripe along upper inner side of these femora, and very dark base of hind tibiae; lower part of body, cerci, and ovipositor light brownish. Structure of rostrum similar to that of *A. modesta*. Pronotum similar to that of *A. costaricensis* (Fig. 55). Tegmina very short, extending to only distal part of mesonotum (their position imaginal); hind wings rudimentary (their position nymphal) (Fig. 55). Hind part of pterothoracic and abdominal tergites with rather numerous, short and low longitudinal ridges (Fig. 55). Spines of legs as in *A. spinigera*, but femora without any not apical spines, upper side of fore tibiae with only inner not apical spine, hind tibiae with 8-10 outer and 8 inner upper not apical (not articulated) spines, with 1 inner and 2 outer lower not apical spines. Abdominal tergites: 1st-8th as in *A. modesta*, 9th and 10th simple; epiproct simple; paraprocts almost without any projections; genital plate as in Fig. 56; ovipositor slightly arched, with round apex (Fig. 57).

Male unknown.

Length (mm). Body 23; pronotum 5.3; tegmina 1.5; hind femora 17.3; hind tibiae 16.2; ovipositor 10.5.

*Comparison*. *A.? microptera* differs from all other representatives of *Anabropsis* (including

problematic ones) in the very small tegmina, the small size, and round apex of ovipositor (Figs 57, 60).

### ***Anabropsis? saltator* (Sauss. & Pict.)**

(Figs 58-60)

= *Schaenobates saltator* Saussure & Pictet, 1897.

*Holotype*. ♀, Costa Rica, "Irazu, 6-7000 ft, H. Rogers", "Brit. Mus. 189-235" (BMNH).

*Note*. This specimen was recently examined by Johns (1997). He considers it is "almost certainly a juvenile female", but it is an imago as its ovipositor and genital plate are distinctly imaginal (Fig. 59, 60). It is possible this author was misled by the nymphal position of wing rudiments in this female (Fig. 58), but similar condition is present in hind wings in the imago of *A.? microptera* and in all wings in the imago of *Apteranabropsis cervicornis* (Karny) (Gorochov, 1998: Fig. 16).

### **Genus *Apteranabropsis* Gor.**

*Note*. The genera *Paterdecolyus* Griff., *Pteranabropsis* Gor., and *Apteranabropsis* were recently synonymized with each other, but not with *Anabropsis* Rehn (Johns, 1997). This action is illogical as the genus *Paterdecolyus* sensu Johns has no any distinctions from *Anabropsis*. I think there are only 2 logical decisions: (1) the return to the old opinion (there is only 1 diverse genus *Anabropsis* with maybe several subgenera), (2) the division of the numerous species from America, Asia, and other regions into several related genera. At present, I am inclined to the second opinion.

The genus *Apteranabropsis* differs from *Paterdecolyus* and *Pteranabropsis* in the rather short hind lobes of metathoracic sternite (these lobes in *Apteranabropsis* are more similar to those of *Anabropsis* than to those of both latter genera) (Figs 66-76), from *Paterdecolyus* also in the presence of both tympana [the outer tympanum in *Apteranabropsis* is sometimes partly reduced, in *Paterdecolyus* is absent (Griffini, 1913); the generic position of 3 Japanese species without any tympana (Sugimoto & Ichikawa, 1998) is not clear], from *Pteranabropsis* also in the absence of ability to fly, and from true *Anabropsis* (several American species similar to *A. mexicana*) in the absence of wings or the presence of only very short wings as well as the longer male genital plate (I had no opportunity to examine the males of any apterous or almost apterous American *Anabropsinae*).

**Apteranabropsis minuta** sp. n.

(Figs 61-63, 69)

*Holotype.* ♀, Vietnam, prov. Lao Cai, distr. Sa Pa, Mt. Fan Si Pan, 1900-2500 m, 22°20'58"N, 103°46'15"E, 20.IV-9.V.1999, N.L. Orlov (ZIAS).

*Description.* Female (holotype). Upper part of body more or less dark brown; lower part of body light brown; head (without mouthparts) almost uniformly dark brown with slightly lighter genae; mouthparts light brown with dark brown anteclypeus; antennae with spotted scape, slightly darkened proximal part of flagellum, and light rest of flagellum; thoracic tergites uniformly dark brown; abdominal tergites with light brown lateral parts and small lightish spots (not numerous on fore tergites and numerous on hind tergites); cerci, epiproct, paraprocts, and base of ovipositor light brown; legs light brown with slightly darkened middle parts of femora and tibiae, greyish brown distal part of femora and proximal part of tibiae, darkish spines of hind tibiae, and yellowish, rather small spot on apex of all femora. Rostrum between antennal cavities almost half as wide as antennal cavity. Pronotum rather short; its lateral lobes without humeral notch, with very short, oblique hind edge (Fig. 61). Wings absent. Femora with only 1 small spine at inner apical lobe of hind femora; tympana oval: inner large, outer slightly smaller; spines of tibiae as in 2 precedent species of *Anabropsis*, excepting number of not apical spines of hind tibiae: 10-11 inner and 11-12 outer upper not articulated spines, 1 inner and 2 outer lower spines. Abdomen without any distinct modifications; genital plate as in Fig. 62; ovipositor more or less arched, with acute apex (Fig. 63).

Male unknown.

Length (mm). Body 21; pronotum 6.4; hind femora 18.5; hind tibiae 18; ovipositor 10.

*Comparison.* This new species is similar to *A. sinica* (B.-Bien.), but is smaller and the upper not apical spines of its hind tibiae are more or less identical. It differs from *A. miser* (B.-Bien.) in the uniform coloration of pronotum, slightly larger size, and absence of lower not apical spines of hind femora. *A. minuta* is distinguished from the other possible congeners by the much smaller size and/or different coloration (more uniform or darker).

**Apteranabropsis costulata** sp. n.

(Fig. 70)

*Holotype.* Deitonymph of ♀, China, prov. Yunnan, environs of Simao, 1300 m, 29.III.1957, D.V. Panfilov (ZIAS).

*Note.* This specimen is the paratype of *A. sinica* (B.-Bien.). The detailed description of it was published by Bey-Bienko (1962) and Gorochov (1998). Both the authors indicated clear differences between the holotype of *A. sinica* (male from environs of Pingbian, Yunnan) and this specimen. At present, it is clear that the latter specimen belongs to a new species, which differs from *A. sinica* in the head with a distinct longitudinal median carina at the vertex, almost identical upper not apical spines of hind tibiae, and presence of distinct, low and short longitudinal ridges at the pterothoracic and abdominal tergites (Gorochov, 1998: Fig. 21). These ridges are similar to those of *Anabropsis microptera* (Fig. 55) and distinguish the new species from all the other congeners (other distinctions are the comparatively large size, more or less uniform brown coloration, presence of both rather large tympana, and absence of not apical spines of all femora).

**Tribe Brachyporini** trib.n.

Type genus *Brachyporus* Br.-W. (Madagascar).

*Diagnosis.* This tribe is similar to Anabropsini in presence of paired small hind lobes of 9th male abdominal tergite and great distance between hooks of 10th male abdominal tergite, but differs from them in absence of distinct spine-like paired processes of pterothoracic and mesothoracic sternites as well as in characteristic structure of male abdominal apex: 10th tergite with membranous median area, very narrow medial parts of both halves of this tergite, almost membranous narrow zones between lateral parts of this halves and base of hooks (Figs 35, 37).

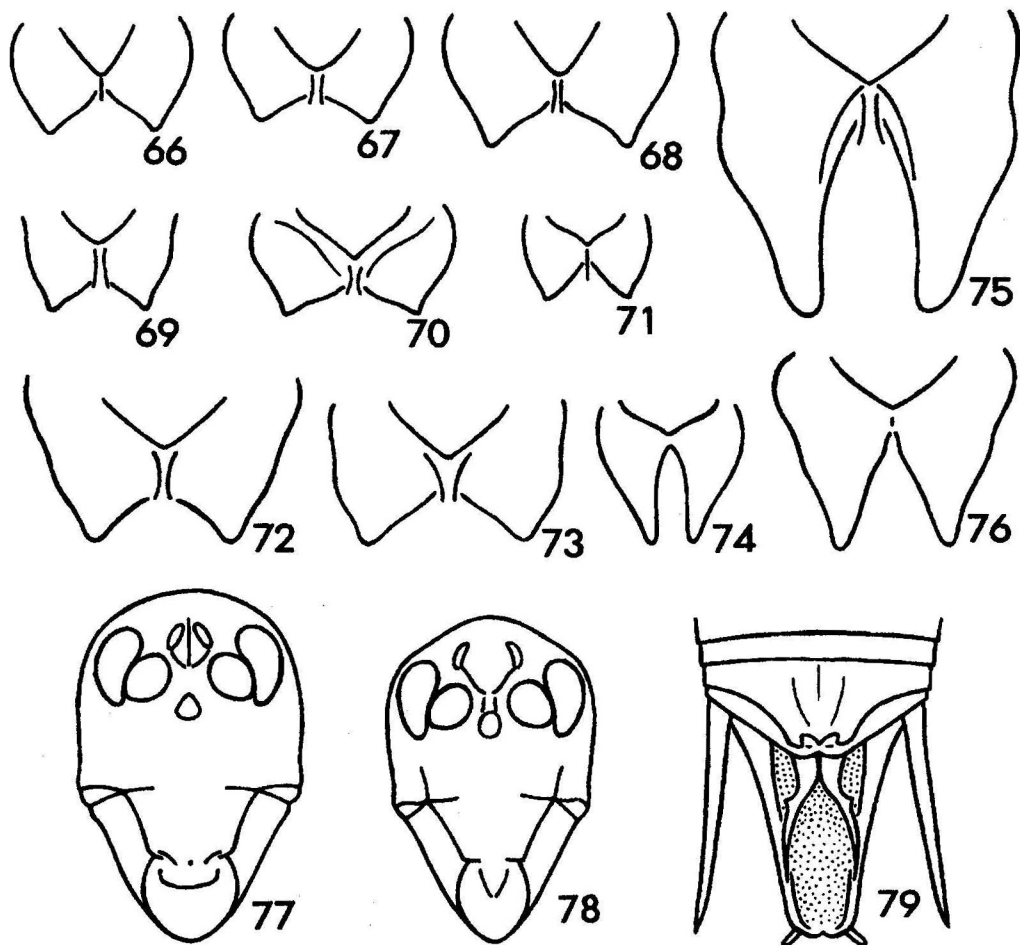
*Included genera.* Type genus and *Penalva* Walk.

**Brachyporus spinulentus** sp. n.

(Figs 35, 36, 77)

*Holotype.* ♂, Madagascar, "Nosy Be, Hellville, I.1905. Matissen" (ZIAS).

*Description.* Male (holotype). Almost uniformly brown; lower part of head slightly lighter than upper one; mouthparts light brown with slightly darker clypeus and labrum; base of antennae light brown with indistinct darkish spots on scape (rest of antennae missing); thorax and abdomen with brown tergites and slightly lighter lower parts; legs light brown with slightly darker distal half of femora and proximal half of tibiae; cerci, epiproct, paraprocts, and genital plate light. Antennal



Figs 66-79. 66, *Anabropsis mexicana* (Sauss.); 67, *A. modesta* sp. n.; 68, *A. spinigera* sp. n. (holotype); 69, *Apteranabropsis minuta* sp. n.; 70, *A. costulata* sp. n.; 71, *A. miser* (B.-Bien.) (paratype); 72, *A. tonkinensis* (Rehn); 73, *A. cervicornis* (Karny); 74, *Paterdecolyus panteli* Griff.; 75, *Pteranabropsis carli* (Griff.); 76, *P. carnarius* Gor. (paratype); 77, *Brachyporus spinulentus* sp. n.; 78, *Penalva spinosula* sp. n. (holotype); 79, *Leponosandrus lepismoides* (Walk.) (holotype). Hind lobes of metathoracic sternite from below (66-76); head in front (77, 78); male abdominal apex from above (79).

cavities almost 1.5 times as wide as rostrum between them; width of lateral ocelli 2.3 times distance between them (Fig. 77). Wings absent. Femora with only 1 small spine at inner apical lobe of hind femora; both tympana equal, rather large, oval; fore tibiae with 1 inner upper not apical spine, 4 pairs of lower not apical spines, and 4 apical spines; middle tibiae with 4 pairs of lower not apical spines, 2 outer and 3 inner upper not apical spines, and 4 apical spines; hind tibiae with 9 inner and 9 outer upper not apical (not articulated) spines, only 2 lower outer not apical spines, and 8 apical

spines (typical of this subfamily); arolium of tarsi very small, rudimentary. Abdominal tergites: 9th with short, wide, rounded hind projection between paired very small lobes, 10th as in Fig. 35; epiproct small, simple; paraprocts with long process narrowing to apex; genital plate with a pair of apical spines and normal styli (Figs 35, 36).

Female unknown.

Length (mm). Body 39; pronotum 7.4; hind femora 28.5; hind tibiae 28.

*Comparison.* The new species differs from *B. personatus* Br.-W. in the presence of a pair



of spine-like processes at the apex of the male genital plate (the apex of this plate in *B. personatus* is deeply and roundly emarginate), from *B. miser* Griff. in the distinctly larger size, from *B. pallidifrons* Karny and *B. berlandi* Karny in the almost uniform coloration of legs (the distal part of hind femora of these species is with light apex).

# Genus *Penalva* Walk.

At present, this genus is divided into 2 subgenera (nominotypical and *Trihoplophora* Br.-W.), but the distinctions between these groups are unclear.

## *Penalva spinosula* sp. n.

(Figs 37-39, 64, 65, 78)

*Holotype*. ♂, Australia, "40-50 km W Coff's Harbour, XI.96, Polenov" (ZIAS).

*Paratype*. ♀, same data as for holotype (ZIAS).

*Description*. Male (holotype). Upper parts of body dark brown and lower parts light brown; head over median ocellus, antennal cavities, and eyes darkish, but lower part of head yellowish with rather narrow vertical stripe between eye and hind part of genae; antennae darkish with light lateral halves between eye and hind part of genae; antennae darkish with light lateral halves of basal part; pronotum dark with lightish longitudinal spot along lower edge of lateral lobe; proximal part of femora, distal part of tibiae, and tarsi lightish; other parts of legs darkened (without any other spots); tergites of mesothorax, metathorax, and fore half of abdomen dark; other abdominal tergites slightly lighter, but paired hind lobes of 9th tergite and apex of paired hooks of 10th tergite dark; cerci, epiproct, paraprocts, and genital plate light. Head with rather wide rostrum between lateral ocelli (similar to that of Lutosinae) (Fig. 78). Pronotum without hind lobe of disc (humeral notches absent); wings absent; mesonotum and metanotum rather small. Fore femora without spines; middle and hind femora with only 1 very small inner apical spine; both tympana equal, rather large, oval; fore tibiae with 2 inner upper not apical spines, 4 pairs of lower not apical spines, and 4 apical spines; middle tibiae with 2 outer and 3 inner upper not apical spines (other spines as in fore tibiae); hind tibiae with 7 outer and 6-7 inner upper not apical (not articulated) spines, 1 pair of lower spines at middle part of tibiae, and 8 apical spines (typical of this subfamily); arolium of tarsi not developed. Abdominal tergites: 8th with characteristic hind projection

(Fig. 37, 38), 9th with a pair of small, rugose hind lobes, 10th almost divided into 4 sclerites (2 medial of them with paired hooks under hind lobes of 9th tergite); epiproct rather simple, with rounded hind part and almost membranous area above it; paraprocts with curved process (its apex with notch) (Figs 37, 38); genital plate rather long, with normal styli (Fig. 39).

Female. Similar to male in general appearance, but femora somewhat lighter; basal part of ovipositor light brown, and its other parts darker, brown. Abdominal tergites: 8th without any distinct hind lobe, 9th with very short, rather wide, and rounded hind lobe, 10th divided into 2 lateral halves, but this division not very distinct; genital plate as in Fig. 65; ovipositor almost straight, with apical part narrow, acute, and slightly curved upwards (Fig. 64).

Length (mm). Body: ♂ 29, ♀ 32; pronotum: ♂ 7.2, ♀ 8; hind femora: ♂ 25, ♀ 27.5; hind tibiae: ♂ 24.5, ♀ 27; ovipositor 20.

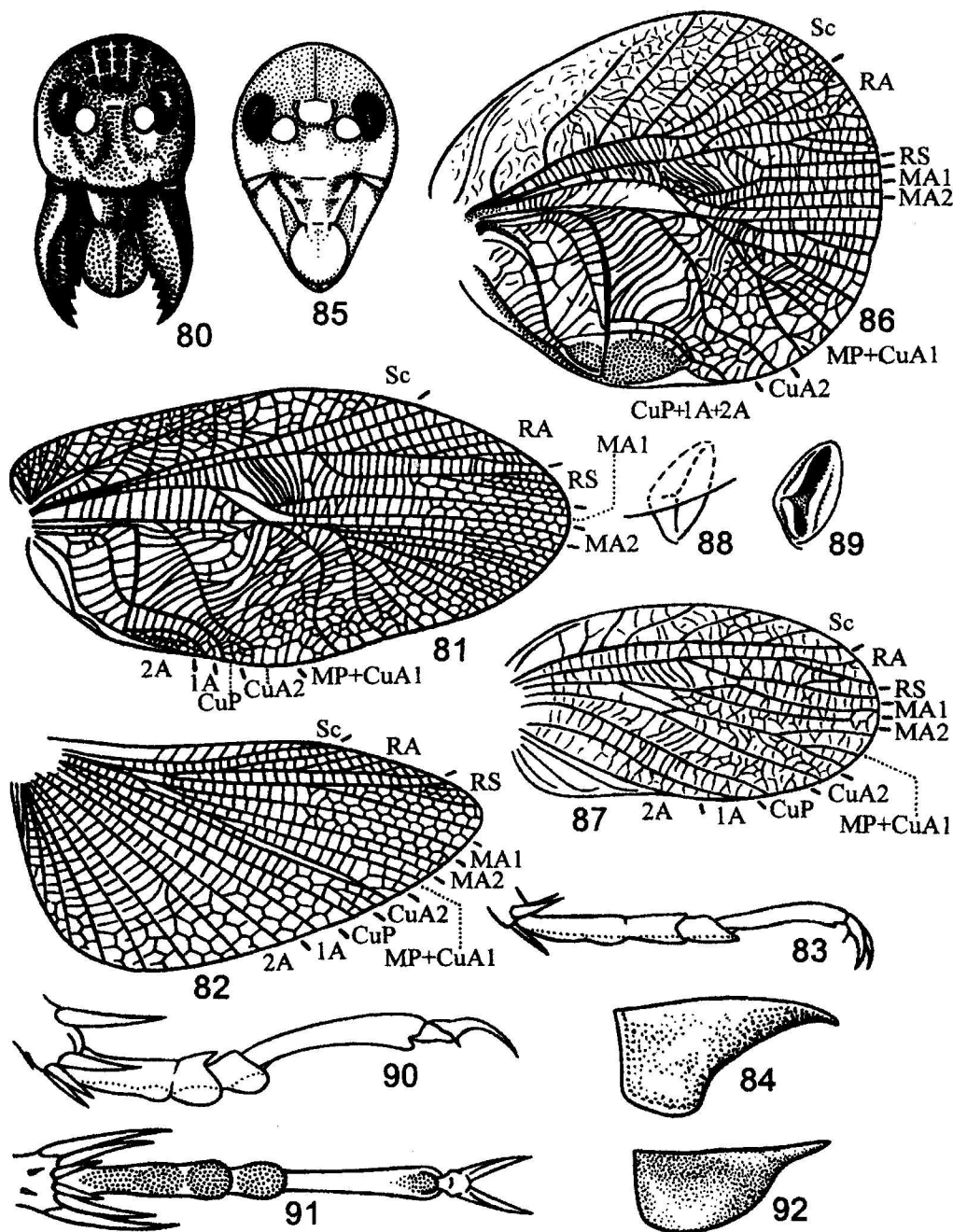
*Comparison*. This species is similar to *P. lateralis* Walk. in the structure of the male abdominal apex (Figs 37, 38, 40, 41), but differs in the presence of tympana and different shape of male genital plate (Figs 39, 42). *P. spinosula* is distinguished from *P. uniformis* Karny and *P. abnormis* (Br.-W.) by the shorter ovipositor (the lengths of ovipositor and hind tibiae in 2 latter species are almost equal). *P. flavocalceatus* (Karny), which is a possible member of the same genus according to Johns (1997), differs from the new species in the spotted apex of hind femora and rather short ovipositor.

Subfam. ANOSTOSOMATINAE Sauss.

## Genus *Leponosandrus* gen. n.

Type species *Ceuthophilus leptismoides* Walker, 1871 (Australia).

*Diagnosis*. Rather small. Mandibles of both sexes similar, without sexual dimorphism. All wings and tympana absent. Fore and middle tibiae slightly spindle-like (maybe one of adaptations to more or less digging mode of life). Hind legs adapted to jumps; outer side of hind femora with distinct chevron ridges. Male abdominal apex: 9th tergite with hind median projection; 10th tergite with hind projection also and with a pair of not large, lobe-like hooks near its apex (these hooks disposed behind projection of 9th tergite and contacting with each other by their bases); paraprocts with rather long and narrow process; genital plate very long and with styli (Fig. 79). Ovipositor well developed.



Figs 80-92. *Prophalangopsis* and *Tarragoilus*, ♂. 80-84, *P. obscura* (Walk.); 85-92, *T. diuturnus* sp. n. Head in front (80, 85); tegmen (81, 86); hind wing (82, 87); hind tarsus from side (83, 90) and from below (91); pronotum from side (84, 92); fore stigma of thorax with closed (88, stigma partly covered by lateral lobe of pronotum) and opened valvulae (89). Figs 80, 83, and 84 after Zeuner (1939); Figs 81 and 82 after Sharov (1968).

*Included species.* Only type species.

*Comparison.* The new genus differs from all known genera of this family in the combination of characters (especially the structure of the male abdominal apex).

## Superfam. HAGLOIDEA Handl.

### Fam. PROPHALANGOPSIDAE Kirby

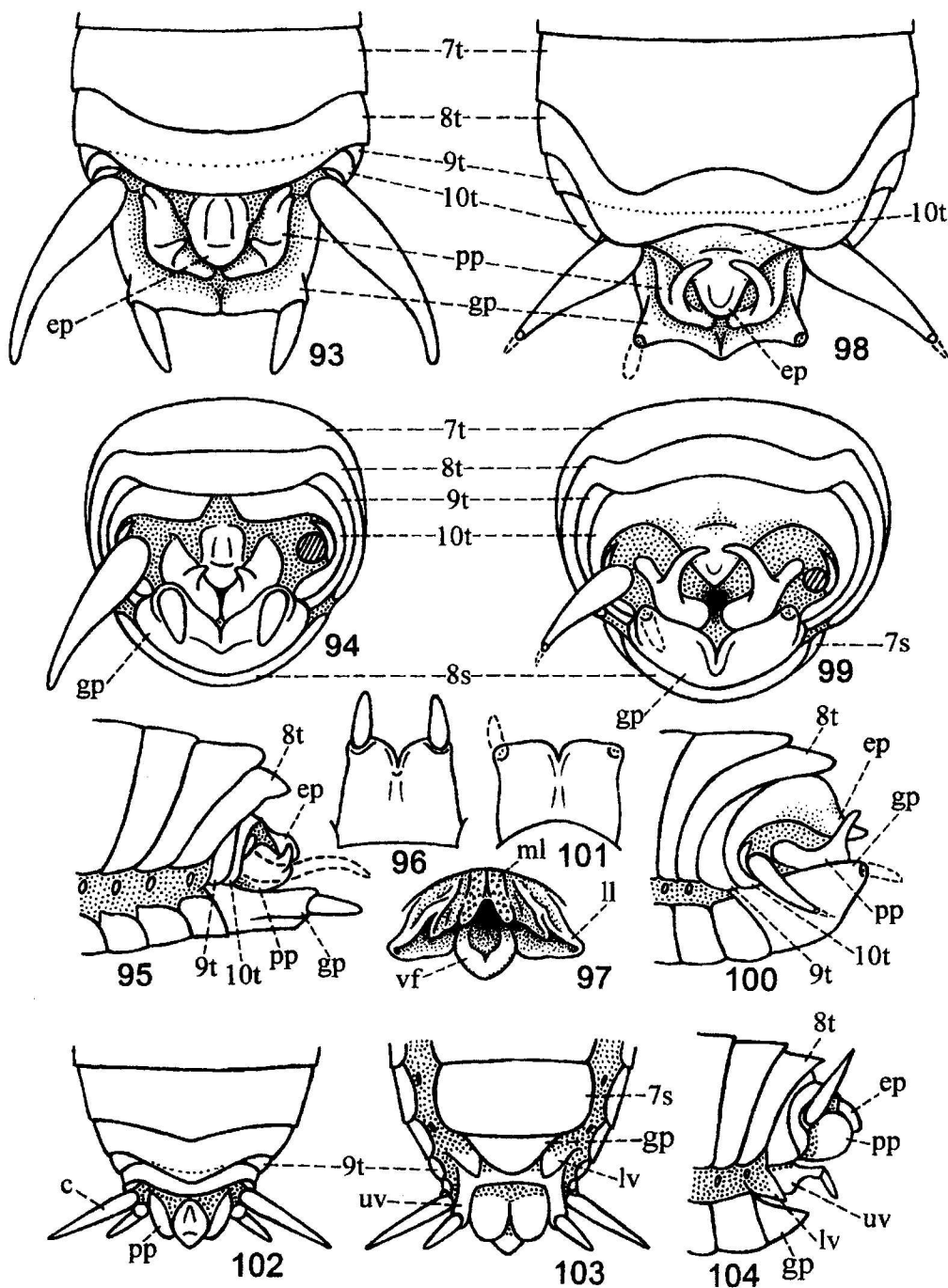
This primitive family is a possible ancestral group of the superfamilies Stenopelmatoidea and Tettigoniodea. Numerous fossils of Prophalangopsidae are known from Jurassic to Paleocene (other Hagloidea are known from Triassic to Cretaceous). 1 recent species of true Prophalangopsidae, *Prophalangopsis obscura* (Walk.), was known up to now by 1 male collected in "British India" in the century before last (Walker, 1869). This species is included in the monotypical subfamily Prophalangopsinae (the genera *Cyphoderris* Uhler and *Paracyphoderris* Stor. are sometimes united with *Prophalangopsis* Walk., but they are representatives of the separated subfamily Cyphoderrinae, which maybe belongs to the family Haglotettigoniidae of Tettigoniodea) (Gorochov, 1995). The discovery of the second recent representative of Prophalangopsinae allows us to give a more detailed description of this subfamily and first short information about its ecological characteristics.

### Subfam. PROPHALANGOPSINAE Kirby

*Description.* Head rather high and short, with round fore part, very short rounded rostrum (almost without it), rather small eyes situated approximately at middle part of head, comparatively wide area between lateral ocelli, and indistinct median ocellus (general shape of head more similar to that of unspecialized Stenopelmatoidea and Cyphoderrinae than to that of Tettigoniidae) (Figs 80, 85, 105); mouthparts unmodified: clypeus rather large, mandibles more or less predatory, lacinia with 3 apical hooks (spines), galea not shortened, hypopharynx simple; antennae long, typical of Ensifera. Pronotum rather long, with large hind lobe of disc (Figs 84, 92); this lobe covers up base of tegmina (Fig. 106) and lateral lobes partly cover up fore stigmata of thorax (Fig. 88); these stigmata similar to those of Anostomatidae and Cyphoderrinae (Figs 88, 89); with 3 more or less distinct soft valvulae and 2

tracheal openings, but these openings without any distinct acoustic dilatations (Grylloidea and Tettigoniidae usually with characteristic acoustic dilatations of fore stigmata of thorax); sternites of thorax transverse, with a pair of short angular hind lobes. Legs with short spine on fore and middle coxae and without distinct spine on hind coxae; femora without more or less large spines; tibiae with rather large spines; fore tibiae with paired open tympana, which are oval and rather large (but tibiae in region of these tympana almost not widened); all tarsi practically 3-segmented (first and second tarsal segments fused with each other, but region of this fusion well distinct), with narrow pulvillae on sole (pulvillae of first tarsal segments poorly developed and more or less fused with those of second ones) (Figs 83, 90, 91). Male tegmina with well developed stridulatory apparatus (lancet-like area between *R* and base of *MA1* moderately widened, with more or less oblique transverse veinlets; area between *M* and *CuA* also widened; region of branches of *MP+CuA1* reaching apical part of tegmina; areas between *MP+CuA1* and *CuP* strongly widened; transverse venation between *MP+CuA1* and *CuA2* irregular; transverse veinlets between *CuA2* and *CuP* oblique; middle part of *1A* fused with stridulatory vein) (Figs 81, 86). Hind wings developed, but shorter than tegmina (Figs 82, 87). Abdomen without distinct pseudotympanal organs; abdominal apex with hind lobes of dorsal part of 7th and 8th tergites, narrow 9th tergite covered with hind lobe of 8th tergite, rather narrow 10th tergite, male paraprocts provided with characteristic upper hook-like process, almost unmodified epiproct, rather simple genital plate provided with paired styli in male, and short soft cerci (Figs 93-96, 98-101, 102, 104); male genitalia membranous (hagloid type) with rather short medial lobes of dorsal fold, a pair of larger lateral lobes, and unpaired narrow lobe of ventral fold (Fig. 97); ovipositor reduced as structure of genital region in female (or deutonymph of female) rather special: 9th sternite of abdomen transverse, with a pair of hind lateral short processes provided with rather large stylus at apex, 8th abdominal sternite membranous in median part and with short angular lateral lobes, genital plate rather small and with round apex (Figs 103, 104) (these descriptions of genitalia are based on only new material).

*Included genera:* *Prophalangopsis* Walker, 1871 (= *Tarraga* Walker, 1869) and *Tarragoilus* gen. n. (for ecological peculiarities of the latter genus see description of *T. diuturnus* sp. n.).



**Figs 93-104.** *Tarragoilus* and *Prophalangopsis*. 93-97, *T. diuturnus* sp. n., ♂; 98-101, *P. obscura* (Walk.), ♂; 102-104, *T. diuturnus*, ♀ (or deutonymph of ♀). Abdominal apex (membranous parts covered with dots) from above (93, 98, 102), from behind (94, 99), from side (95 (cercus is shown by interrupted line), 100, 104), and from below (103); genital plate from below (96, 101); membranous genitalia from behind and partly above (97). Abbreviations: 7-8s, 7-8th sternites; 7-10t, 7-10th tergites; ep, epiproct; gp, genital plate; ll, lateral lobe; ml, medial lobe; lv, rudiment of lower valva of ovipositor; pp, paraproct; uv, rudiment of upper valva of ovipositor; vf, ventral fold.

Genus *Tarragoilus* gen. n.

Type species *Tarragoilus diuturnus* sp. n.

**Diagnosis.** The new genus is similar to *Prophalangopsis*, but differs in numerous characters. Mandibles slightly shorter (Figs 80, 85). Pronotum with longer lateral lobes and shorter hind lobe of disc (Figs 84, 92). Legs distinctly shorter: fore femora slightly shorter than pronotum (in *Prophalangopsis*, not shorter); hind femora with more or less dilated proximal part, adapted to jumping (Fig. 105) (in *Prophalangopsis*, they are rather narrow, almost not adapted to jumping); middle and hind femora with small denticles on lower surface (in *Prophalangopsis*, these denticles absent); tarsi shorter: apical spines of hind tibiae almost reaching region of fusion of first and second tarsal segments (in *Prophalangopsis*, these spines considerably not reaching this region) (Figs 83, 90, 91). Male tegmina partly shortened, almost round, without distinct *C*, with widened subcostal area and longer branches of *Sc*, widened area between *Sc* and *R*, not comb-like *RA*, single *RS*, 2 branches of *MA2* (second branch possibly originated from first branch of *MP+CuA1*), rather small distance between bases of *MA1* and *MP*, almost transparent area between *M* and *CuA*, less numerous branches of *MP+CuA1* with last branch of this vein not separated from other its branches, rather narrow area between *MP+CuA1* and *CuA2*, distinctly wider area between *CuA2* and *CuP*, more arched stridulatory vein, and wider and sclerotized region of chords (for comparison see Figs 81, 86). Male hind wings also shortened, oval, with venation more similar to that of tegmina than to that of hind wings of all other known Hagloidea (recent and fossil): subcostal, interradiar, medial and intercubital areas somewhat widened, *Sc* almost reaching apical part of wing and with rather long branches, *RA* with 2 branches, *RS* and *MA2* single, *MP+CuA1* with 3 branches, bases of 4 latter veins not moved to basal part of wing, part of vein between base of *MP+CuA1* and its fan of branches rather long, *CuP* and *1A* slightly S-shaped, region of few branches of *2A* small and almost not fan-like, transverse venation more or less irregular (for comparison see Figs 82, 87). Hind lobes of 7th and 8th abdominal tergites of male shorter, without any median notch (in *Prophalangopsis*, these lobes longer and with short median notch); 10th abdominal tergite of male divided into 2 lateral parts by membranous stripe and distinctly separated from epiproct (in *Prophalangopsis*, this tergite not divided and fused with epip-

roct); male paraprocts with distinctly shorter process (for comparison see Figs 93-95, 98-100).

*Included species:* only type species.

*Tarragoilus diuturnus* sp. n.

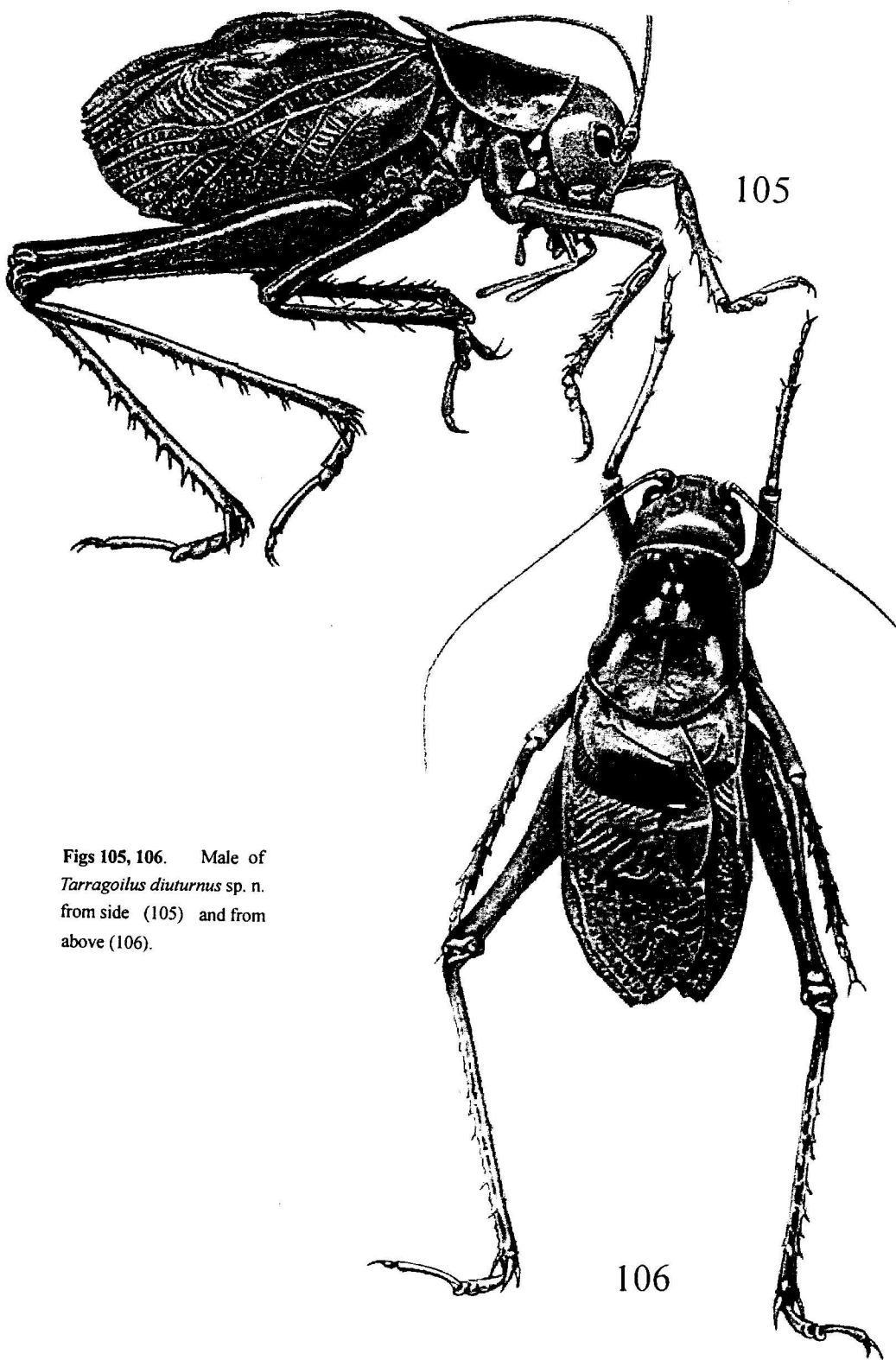
(Figs 85-97, 102-106)

**Holotype.** ♂, China, Sichuan, SSW of Shimian, E slope of Mt. 4977 in W of Lijipin vill., 3000-4200 m, 5.VII.2000, I. Belousov, I. Kabak (ZIAS).

**Paratypes.** China, Sichuan: 1 ♀ (or nymph of ♀), SSW of Shimian, SE slope of Mt. 4977 in SW of Lijipin vill., 2400-2700 m, 3.VII.2000, I. Belousov, I. Kabak, G. Davidian (ZIAS); 1 nymph of ♂, SW of Hunzi vill., 2800-2900 m, 24.VI.2000, I. Belousov, I. Kabak, G. Davidian (ZIAS).

**Description.** Male (holotype). Head light brown; its lower part (under eyes) and genae almost yellowish with small darkenings on clypeus, base and distal part of mandibles, and lateral part of base of light scape (other parts of antennae brown); upper part of head slightly darker with lighter 7 longitudinal lines, spots behind eyes, and band along hind part of vertex (excepting small median area separated from other part of vertex by lighter transverse stripe) (Figs 85, 105, 106). Pronotum narrowing in front, with semi-cylindrical fore third and flat rest of disc provided with low median longitudinal convexity; fore half of pronotum brown with dark brown and light spots on disc and light lower part of lateral lobes; hind half of pronotum more or less light brown with small dark spots on disc, light longitudinal spots along lateral edges of disc, and almost dark brown lateral lobes (Figs 92, 105, 106); other parts of thorax light, almost unicolorous. Legs light brown, unicolorous, but with somewhat darkened apical part of femora, base of tibiae, and numerous small spots on outer surface of hind femora; fore femora without denticles, middle femora with 1 outer lower denticle near apex; hind femora with 11-12 outer and 10-16 inner lower denticles; fore tibiae with 1 inner upper and 4 pairs of lower not apical spines, a pair of upper and a pair of lower apical spines; middle tibiae with spines similar to those of fore tibiae, but with 2 pairs of upper not apical spines and 1 inner upper spine near base of tibiae; hind tibiae with 10-14 outer and 11-13 inner upper not apical and not articulated spines (some of them very small and irregularly situated), 5-6 outer and 3 inner lower small spines (these spines, all apical spines, and not apical spines of fore and middle tibiae articulated), 3 pairs of apical spines (upper pair longest and lower one shortest); first and second segments of hind tarsi (fused with each other) twice as long as those of fore and middle tarsi. Tegmina





Figs 105, 106. Male of *Tarragoilus diuturnus* sp. n. from side (105) and from above (106).



reaching abdominal apex, inflated, almost uniformly light brown with somewhat lighter lateral half; hind wings also almost reaching abdominal apex, very light; venation of tegmina and hind wings as in Figs 86, 87. Abdomen with light brown unicolorous sternites and abdominal apex, and with brown (rather dark) 8 fore tergites provided with rather small light spots near hind edge (but hind lobes of 7th and 8th tergites light); structure of abdominal apex as in Figs 93-96; genitalia with numerous very small denticles on medial lobes of dorsal fold (Fig. 97).

Female (or deutonymph of female). Structure, size, and coloration similar to those of male, but pronotum with somewhat narrower and less flat hind part of disc, wings very small and with nymphal structure and position (tegmina slightly larger than hind wing and almost covered by pronotum, but hind wings partly covered by tegmina), right fore tibiae with 2 inner upper not apical (articulated) spines, hind lobes of 7th and 8th tergites of abdomen distinctly shorter and narrower, 10th abdominal tergite without distinct division into 2 lateral parts, paraprocts unmodified (Figs 102, 104), genital plate and rudiment of ovipositor as in Figs 103, 104.

Nymph (protonymph or deutonymph) of male. Similar to male, but distinctly smaller and darker, with pronotum, wings, abdominal tergites, and paraprocts almost as in female (but coloration of pronotum peculiar: rather dark brown with only several very small lightish spots on disc), genital plate distinctly shorter and with rather large angular median notch.

Length (mm). Body: ♂ 25, ♀ 30; pronotum: ♂ 9.8, ♀ 9.8; tegmina: ♂ 20, ♀ 4; hind femora: ♂ 18.5, ♀ 19; hind tibiae: ♂ 18.2, ♀ 18.3.

*Ecological characteristics.* This species was collected in mountain mixed forest under stones near streams. The scared specimens hid in water (this information was kindly presented by Dr. I.I. Kabak, Zoological Institute, National Academy of Sciences of Kazakhstan, Almaty).

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