FOLIA ENTOMOLOGICA HUNGARICA
ROVARTANI KÖZLEMÉNYEK
LX 1999 pp. 153–164

New Auchenorrhyncha species from Hungary (Homoptera)

A. Orosz

New Auchenorrhyncha species from Hungary (Homoptera) — Three new species, *Tachycixius soosi* sp. n., *Rhopalopyx brachyanus* sp. n. and *Psammotettix remanei* sp. n. from Hungary are described from the collection of the Hungarian Natural History Müseum. Three other taxa, *Macrosteles septemnotatus* (Fallén, 1806), *Paralimnus zachvatkini* Emeljanov, 1964 and *Psammotettix agrestis* Logvinenko, 1966 are first recorded from Hungary. With 50 figures.

INTRODUCTION

The intense faunistic studies in the newly established national parks of Hungary have produced a vast entomological material of several, less explored insect groups. The elaboration of this material resulted in the discoveries of the three new species described below and of some further species reported here for the first time from Hungary. The semi-automatic methods used during these studies (e.g. the Malaise trap and the D-Vac trap) could also help in the better exploration of certain habitats (e.g. the forest canopy) and giving a good chance for finding the less abundant or even rare species.

The taxonomic and faunistical novelties are discussed below, following the sequence proposed by Nast (1972).

CIXIIDAE

Tachycixius soosi sp. n.
(Figs 1–14)

The genus *Tachycixius* W. Wagner, 1939 has been represented in the Hungarian fauna by two species, *T. pilosus* (Olivier, 1791) and *T. desertorum* (Fieber, 1876). The specimens of the new species were collected in the Bükk Mts (NE Hungary), within the framework of the "Síkfőkút Project" research programme. The Síkfőkút area lies at the south-western part of the Bükk mountains, covered mostly by large patches of turkey-oak forest (*Quercetum petreae-cerris*). Most of the known specimens were collected by a permanent Malaise trap operating in one of these forest patches, an additional specimen was found in the material of a pheromone trap put in a vineyard nearby the village Demjén, SW of Síkfőkút. This latter site is also surrounded by larger mixed forest patch-

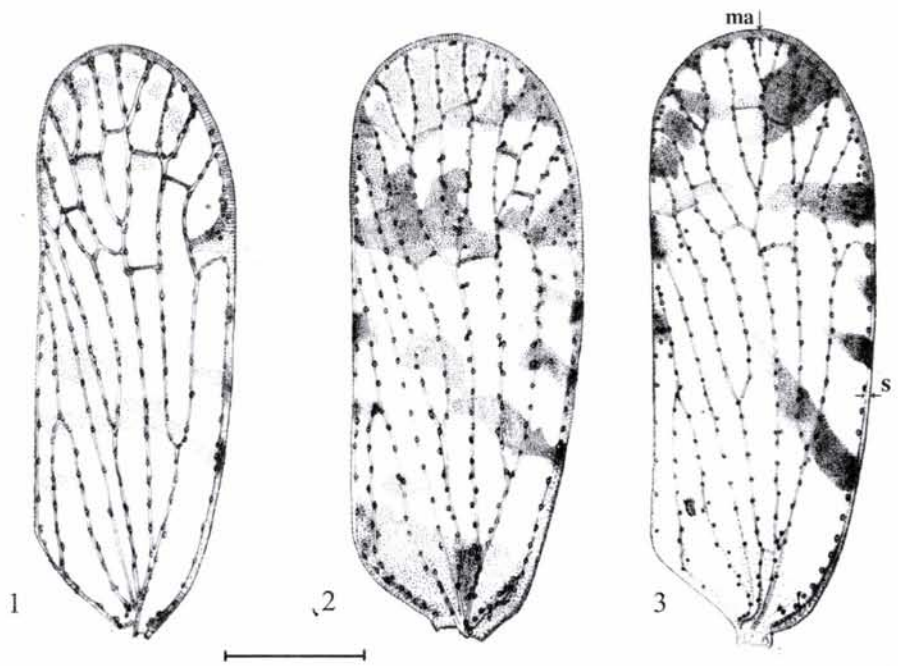
es, dominated by oak. The supposed foodplants of the new species, similarly to the related *T. pilosus*, are *Quercus* species.

Material examined — Holotype: male, "Síkfőkút, Malaise csapda. Erdő szélén. Sz 1987.08.19". Allotype: female, "Síkfőkút, Malaise csapda. Erdő szélén. Sz 1987.08.22". Paratypes: 5 males, 2 females, from the same locality, 18.08; 20.08; 23.08, 30.08; 3.09; 10.09; 1 male, Demjén, 12.09.1995. The type material is deposited in the Hungarian Natural History Museum, Budapest (HNHM).

Description — Measures: Holotype: body length 5.12 mm, fore wing length 4.48 mm, fore wing width 1.36 mm. Allotype: body length 5.96 mm, fore wing length 5.08 mm, fore wing width 1.76 mm. Paratypes. Males: body length 4.56–5.24 mm, fore wing length 3.88–4.5 mm, fore wing width 1.28–1.54 mm. Females: body length 5.5–6.14 mm, fore wing length 4.74–5.08 mm, fore wing width 1.46–1.76 mm.

External morphology (Figs 1–3) — Resembles *T. pilosus* but much paler in colouration. Frons, postclypeus, vertex, pronotum and mesonotum pale brownish ochreous or amber-yellow. Frons somewhat darker than postclypeus, its medial and lateral ribs prominently yellowish in contrast to brownish ground colour of vertex; ribs of mesonotum similarly yellowish. Abdomen pale brown, fore wing transparent with weak, smoky pattern, with fine tubercles along veins and apical margin (Fig. 1); intensity of darker pattern stronger in females.

The fore wings of the related species are usually with stronger maculation (Figs 2–3; 2: *T. pilosus*; 3: *T. desertorum*), the pattern is strongly variable, especially in *T. pilosus*. Fore wings of *T. soosi* are narrower than those of *T. pilosus*, length/width rate is 3.02 in



Figs 1–3. Fore wings of *Tachycixius* spp. 1: *Tachycixius soosi* sp.n., 2: *T. pilosus*, 3: *T. desertorum*. (Scale bar = 1 mm)

average (this rate is 2.81 in *T. pilosus*), the apical part is more acute. Outer third of fore wing with continuously broadened, wrinkled margin running from apex of clavus towards pterostigma, its width (ma) always smaller than that of costal margin at middle of wing (s); ma < s. This is a good key feature for the species as this rate is just the opposite in the two related species.

Male genitalia and anal tube (Figs 4–14): The configuration of the anal tube (Figs 8–10) is similar to that of *T. pilosus*, its apical part asymmetrical, its left lobe (from caudal view) is almost three times as long as right lobe, both lobes projecting downwards. The paramera show no differences comparing with those of the related taxa. Aedeagus (Figs 4–6) with two subbasal sclerotized teeth ventrally (Fig. 5); medial part of phallosoma with slightly curved appendix projecting forward and downwards; apical part of aedeagus with two lateral appendices and with terminal "banner". Right lateral appendix slightly curved, running parallel with phallosoma towards internal part of body; left lateral appendix about half as long but strongly curved, almost S-shaped. The shape and position of these appendices are good distinctive features comparing with those of *T. pilosus*. The terminal part of the aedeagus, the "banner" is strongly sclerotized, originating from the left side of apex of aedeagus, being spatulate at elbow, running to the right side over phallosoma. The variation of these structures is rather small (see Figs 11–14).

The female genitalia of *T. soosi* show no remarkable differences comparing with those of *T. pilosus*, only slightly paler, ochreous brown in colouration.

Identification key to the three Hungarian species

1.	Medial part of phallosoma with three appendices	*T. desertorum*
	Medial part of phallosoma with one appendix only	2.
2.	Left lateral appendix of phallosoma slightly curved, projecting towards internal part of body, its tip extending near to basal part of aedeagus	*T. pilosus*
	Left lateral appendix of phallosoma strongly curved, almost S-shaped, its tip not extending over origin of medial appendix	*T. soosi*

The new species is dedicated to the memory of the late Dr. Árpád Soós, Curator of the Hemipteran collections of the HNHM, Budapest, who with great patience had led me into the taxonomy of Homoptera.

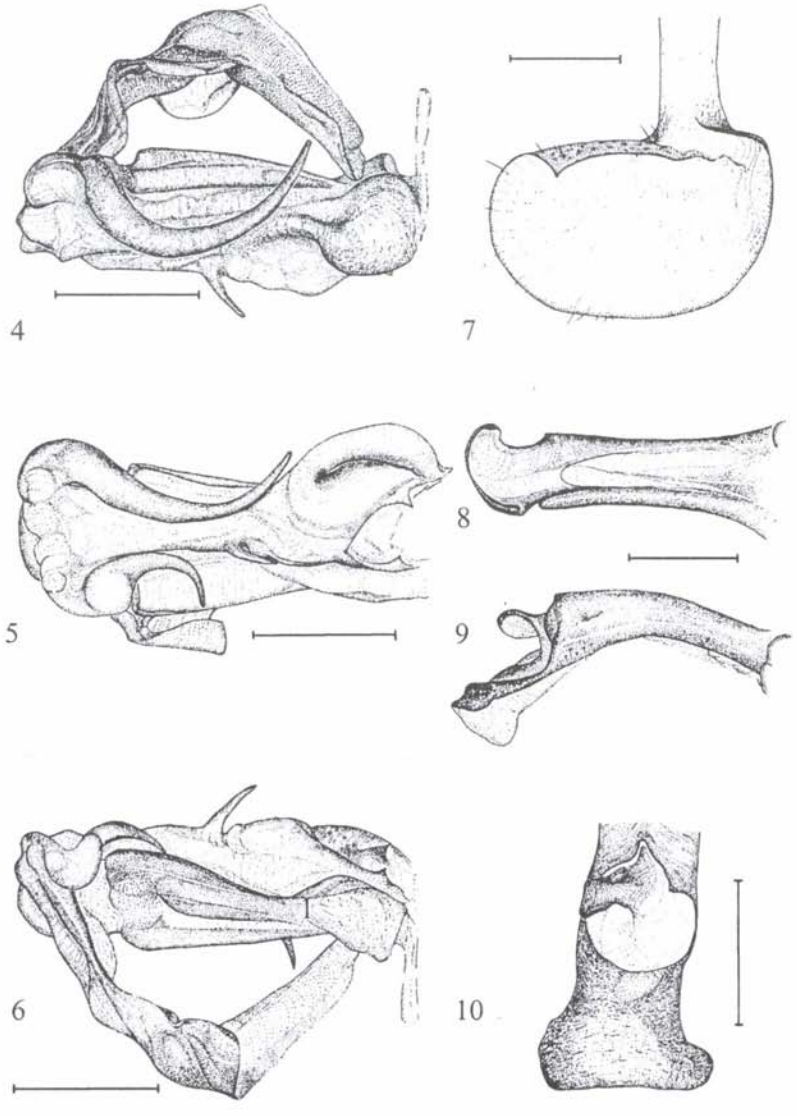
CICADELLIDAE

Rhopalopyx brachyanus sp. n.
(Figs 16–31)

The intense collectings made in the area of the Körös–Maros National Park, SE Hungary, produced a large amount of Cicadellidae specimens. This material was taken with netting and with D-Vac traps, collected mostly in loessy and saline grasslands. One of the dominant species of this material was *Rhopalopyx vitripennis* (Flor, 1861), represented by a large stock of specimens. Some of these specimens, however, show conspicuous morphological differences compared with the "typical" ones. The correct identification of the two different "*vitripennis*" required to clarify the identity of *R. vitripennis* sensu Flor as well as the study of the range of variation of *R. vitripennis* (see the

works of W. Wagner 1947, 1968; Ribaut 1952; Ossiannilsson 1983). These studies revealed the fact that the material examined contains two distinct, sympatric species, one of them is *R. vitripennis* while the other one represents a new, undescribed taxon.

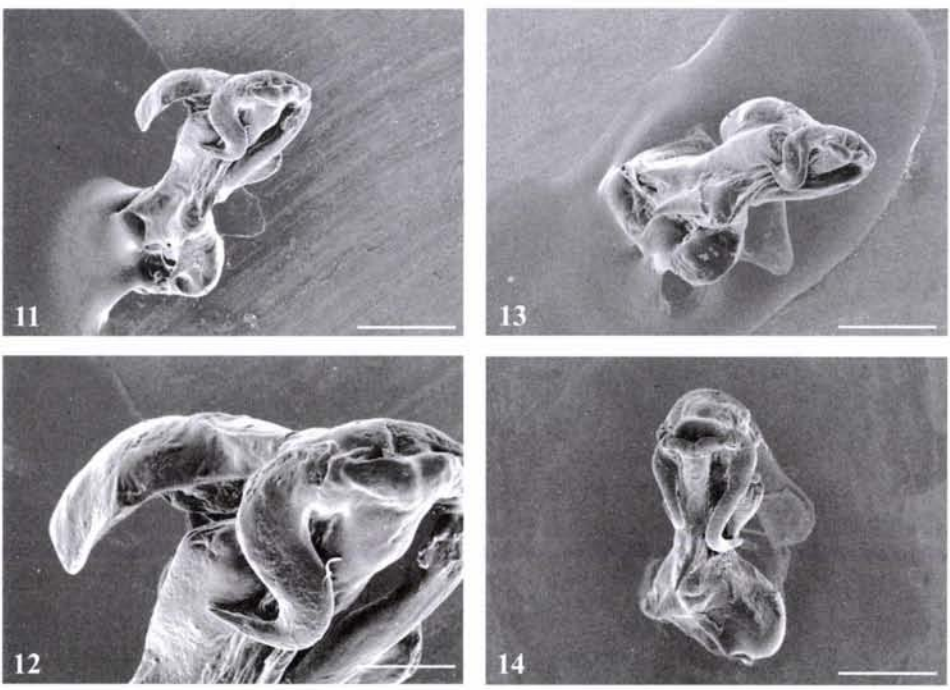
An additional specimen of this species was found later in the collection of Gy. Győrffy, collected in the Kiskunság N. P., the central part of the Hungarian Great Plain.



Figs 4–10. *Tachycixius soosi* sp. n. 4: aedeagus, right side, lateral view; 5: aedeagus, ventral view; 6: aedeagus, left side, lateral view (scale bar = 200 μm); 7: stylus, inner side, dorsal view (scale bar = 100 μm); 8–10: anal tube, 8: ventral view; 9: lateral view; 10: dorsal view. Measures: Figs 8–9: scale bar = 250 μm, Fig. 10: scale bar = 200 μm)

Material examined — Holotype: male, "KMNP. Csanádi puszták.Csikóspuszta, löszgyep/3. 1997. 09.17–18." Paratypes: 3 males, "KMNP. Csanádi puszták. Csikóspuszta, löszgyep/2, löszgyep/3, 1997. 09.17–18."; 1 male, "KNP. Bugacpuszta. 1981.10.09. leg. Gy. Győrffy." The type material is deposited in the Hungarian Natural History Museum, Budapest (HNHM).

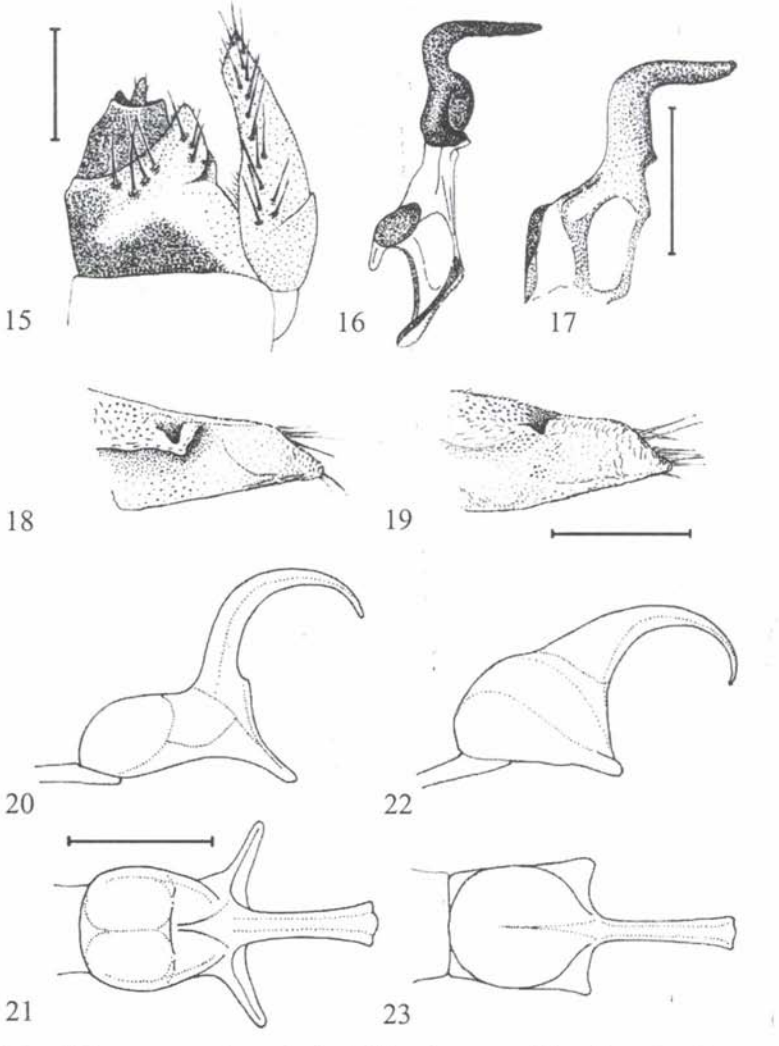
Description — Holotype: body length: 3.775 mm, fore wing length 3 mm, fore wing width 0.8 mm. Paratypes: body length 3.5–3.675 mm, fore wing length 2.76–2.9 mm, fore wing width 0.78–0.84 mm.



Figs 11–14. *Tachycixius soosi* sp. n. 11, 13, 14: aedeagi of paratypes from ventro-lateral and ventral views (scale bar = 198 μm); 12: apical part of aedeagus in larger magnification (scale bar = 75.6 μm)

External morphology (Figs 15, compare Figs 24–27): Basic colouration pale ochreous brown, pattern of body and fore wings matching with that of its closely related species, *Rh. vitripennis*. Frons with brownish pattern consisting of horizontal, parallel stripes running slightly obliquely laterad, interrupted medially by ochreous line. Vertex light brownish ochreous, in some cases with darker brown, parallel medial lines continuing towards inner margin of fore wing clavus. Pronotum and scutum with pale ochreous markings, latter with two symmetrical, whitish spots. Fore wing transparent, with dark brown zone between veins M and Cu extending towards apex of wing. First abdominal segments with dark ventral markings, this pattern becaming much paler towards caudal end of abdomen; dorsal surface blackish brown from basal abdominal segments to tip of anal tube. Lateral and ventral surfaces of valve, genital plates and pygofer pale ochreous brown.

Comparing the external morphological features of *Rh. brachyanus* with those of *Rh. vitripennis,* the length of the anal tube of the new species is much shorter, about one-third of that of *Rh. vitripennis,* the upper part of the pygofer is arcuate, rounded at the origin of anal tube while that of *Rh. vitripennis* has deep, V-shaped incision (compare Figs 24–25). Lateral and apical parts of the pygofer bear long macrosetae in case of the new species, covering the ventral side of the anal tube; the pygofer lobe is rounded, without appendix, the last quarter of its apical part has a membranous lobe, being significantly narrower than that of *Rh. vitripennis* (compare Figs 26–27).



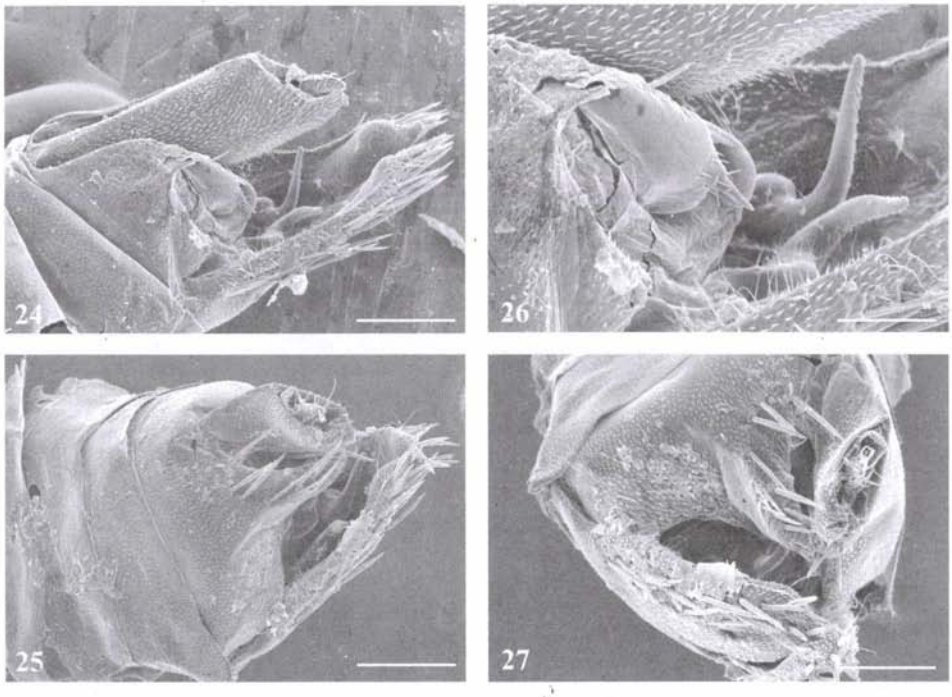
Figs 15–23. Abdomen and male genitalia of *Rhopalopyx* spp. *Rhopalopyx brachyanus* sp.n.: 15: abdomen, lateral view (scale bar = 200 μm); 17: stylus, dorsal view; 19: genital plate, inner side, dorsal view; 22: aedeagus, lateral view; 23: aedeagus, dorsal view. *Rhopalopyx vitripennis*: 16: stylus, dorsal view; 18: genital plate, inner side, dorsal view; 20: aedeagus, lateral view; 21: aedeagus, dorsal view. Measures: Figs 16–17: scale bar = 200 μm, Figs 18–19: scale bar = 250 μm, Figs 20–23: scale bar = 100 μm

Male genitalia (compare Figs 16–23, 28–31): The basal part of the valve of the new species is broader, the apical part is more acute triangular than in *Rh. vitripennis* (compare Figs 18, 19, 28, 29), with a small sclerotized tooth near outer margin from dorsal view. The paramera are medially strongly curved, almost at right angle, directed outwards, this part is thicker, shorter than in *Rh. vitripennis*, without stronger medial depression which is conspicuously present in its sister species (compare Figs 16, 17, 28, 29).

Aedeagus arched in convex curve between connectivum to orificium from lateral view, with slight medial depression (compare 20–23, 30, 31).

Psammotettix remanei sp. n.
(Figs 32–34, 49)

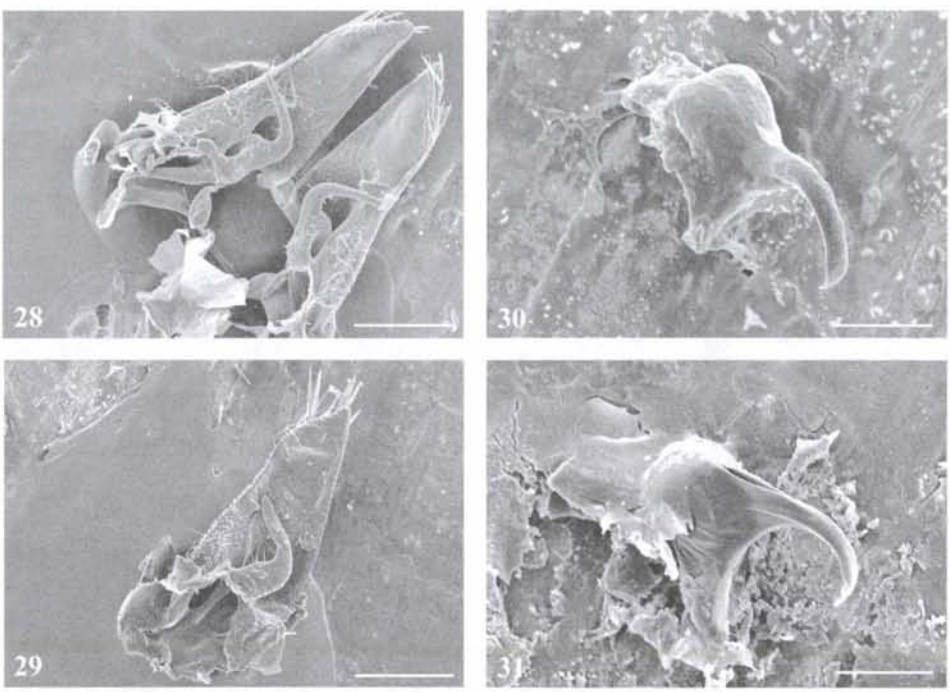
The first three specimens of this species were collected at the seventies in the Bakony Mts, W Hungary. These specimens were tentatively identified as *Psammotettix confinis* (Dahlbom, 1850), recognizing the external and genitalic differences between them and *P. confinis*. The material was, however, too small for the satisfactory determination, therefore no description was made. During the treatment of the material taken at the vicinity of Niederspree in 1998, three other specimens of this curious species (2 males, 1 female) were found. Subsequently two additional males were collected also by Dr. Lauterer at the same place. Checking the whole unidentified *Psammotettix* material and



Figs 24–27. Abdomina of *Rhopalopyx* spp. *Rhopalopyx vitripennis*: 24: abdomen, dorso-lateral view; 26: same, in larger magnification. *Rhopalopyx brachyanus* sp. n.: 25: abdomen, dorso-lateral view; 27: same, postero-lateral view. Measures: Figs 24, 25: scale bar = 183 μm, Fig. 26: scale bar = 78.5 μm, Fig. 27: scale bar = 137.5 μm

all specimens of *P. confinis* preserved in the Hungarian Natural History Museum Budapest, a few further specimens were also found. The whole series contains recently 14 male specimens and a single female, which has not been involved into the type series and the description due to the lack of distinctive, specific features of the females of this group.

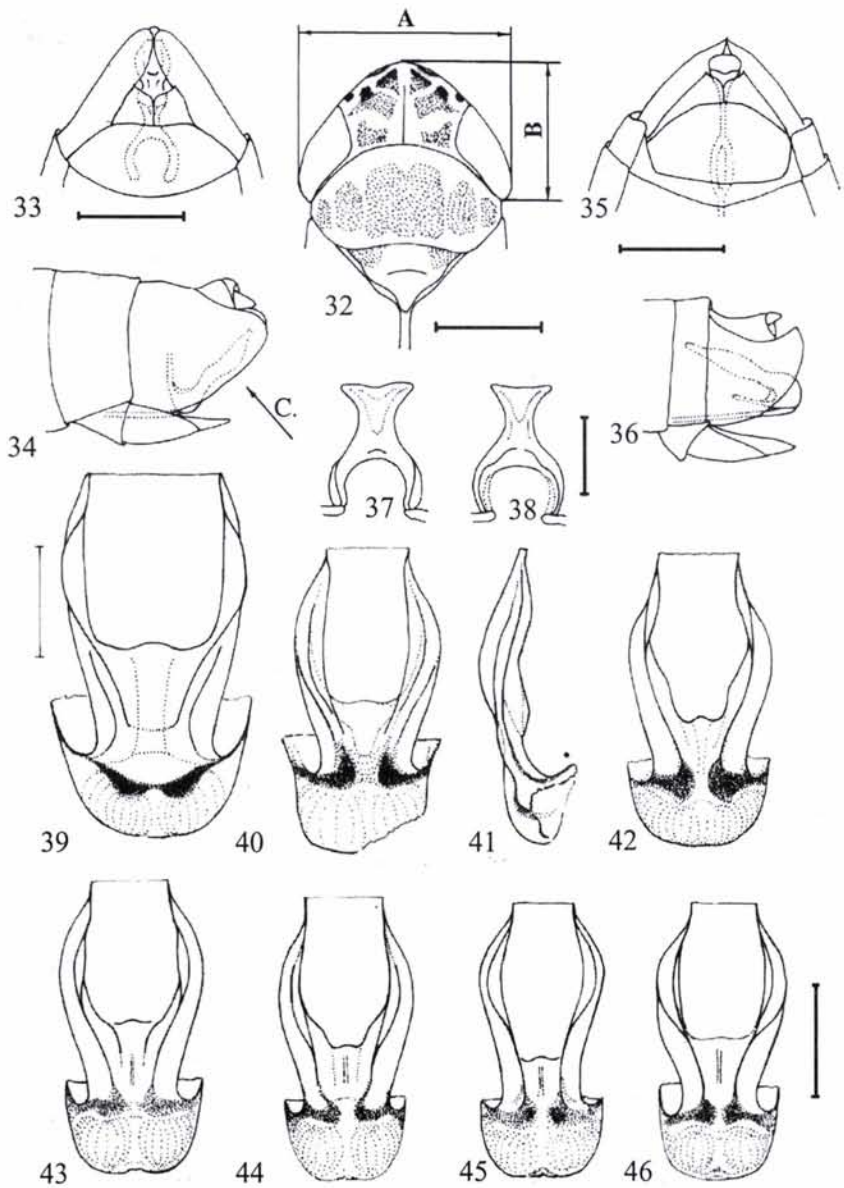
It is worth to mention that I had a longer discussion with Dr. Lauterer about this taxon and the possibility of similar transformation of certain morphological characters caused by the infection of parasitoid Hymenopterans (e.g. *Dryinidae* species). I paid special attention to check the symptoms of the possible presence of ectoparasitoids as signs of sucking, whitenings on the body, asymmetrical or pathological development of different parts of the body, but no such sign was recognized.



Figs 28–31. Male genitalia of *Rhopalopyx* species. *Rhopalopyx vitripennis*: 28: genital plates and stylus, dorsal view; 30: aedeagus, dorso-lateral view. *Rhopalopyx brachyanus*: 29: genital plate and stylus, dorsal view; 31: aedeagus, dorso-lateral view. Measures: Figs 28, 29: scale bar = 184.3 μm, Figs 30, 31: scale bar = 79.1 μm

Material examined — Holotype: male, " Bakonybél, Somhegy. 1977.VIII.28. leg. A. Orosz". The holotype is deposited in the collection of the HNHM, Budapest.

Paratypes: 2 males, "Germania. ex Oberlausitz,distr.Niesky. Biol.Stat. Niederspree. Teichgebiet, 150–200 m. 29.08. 1998. leg P. Lauterer"; 2 males, "Germany. distr. Niesky. Spreeheidehaus. Neue Sorge. 30.08. 1998. leg. A. Orosz; 2 km N of Rietschen. 30.08.1998. leg. A. Orosz"; 1 male, "Hungaria. Szegszárd. Pável. 1898.VI.22."; 1 male, "Izsák. Ujhelyi. 1912.VIII. 15–16."; 2 males, "Klastromalja. Horváth. 1918.VIII.3."; 1 male, "Munkács. Horv. 1918. VIII.4."; 1 male, "Nagy-Rábé. Horv. 1926.VII.12."; 1 male, "Borzavár. Bakony-hg. 1976. VIII.24. leg. A. Orosz"; 2 males, "Fenyőfő.



Figs 32–46. *Psammotettix* spp. *Psammotettix remanei* sp. n.: 32: head, pronotum, dorsal view; 33: abdomen, postero-ventral view (this direction is marked as "direction C" in Fig. 34); 34: abdomen, lateral view; 37: connectivum (holotype); 38: connectivum (paratype); 40, 42–46: aedeagi, dorsal view 40= paratype (Fenyőfő); 42: holotype; 43–46: paratypes, from the following localities: "Neue Sorge", "2 km N of Rietschen", "Oberlausitz", "Izsák"; 41: aedeagus, lateral view (paratype, Fenyőfő). *Psammotettix confinis*: 35: abdomen, postero-ventral view; 36: abdomen, lateral view; 39: aedeagus, dorsal view (Niederspree). Measures: Figs 32–36: scale bar = 500 μm, Figs 37–46: scale bar = 100 μm

1978.VII.22. leg. A. Orosz". The localities "Klastromalja" and "Munkács" are now belongs to Ukraine. The paratypes are deposited in the collections of the HNHM, Budapest and the Moravian Museum, (Dr. Lauterer, Brno).

Description — Holotype: body length 3.6 mm, fore wing length 2.88 mm, fore wing width 0.75 mm.

Paratypes: body length 3.3–3.96 mm, fore wing length 2.425–3.22 mm, fore wing width 0.72–0.95 mm.

General remarks: A conspicuous feature of the species that its head is more conical, more pointed than that of the related *P. confinis*. The rate of the head width/head length (Fig. 32, A:B) of *P. remanei* is 1.52–1.59 for the five specimens from Germany, this rate for the specimens of *P. confinis* collected at the same site is 1.56–1.66. The weighted average for these two groups is 1.56 in *P. remanei* while 1.63 in *P. confinis*. This rate for the whole series of the new species is 1.56–1.66, the weighted average is 1.60.

The ano-genital sector of the new species is "open" in case of the new species from caudal view, the aedeagus is clearly visible. The reason of this phenomenon is that the connectivum being short and the pygofer elongate (see Figs 33–34, 49). In the case of *P. confinis* the connectivum is long, extending over genital plates, its junction to aedeagus is clearly visible from caudal view; the apical part of the aedeagus is directed to the inner regions of the body (see Figs 35–36). In a few, rare cases the aedeagus of *P. confinis* can also be seen from caudal view (Fig. 47), but in most cases it is covered by the pygofer and the anal tube, the genital hole is caudally closed.

External morphology — Figs 37–38, 40–46, 48, 50.

Frons, vertex and pronotum pale ochreous brown, frons with reticulate, oblique, hazelnut-brown pattern, being symmetrical to medial line of frons. Frontal part of vertex slighly culminating, its shape and pattern are illustrated in Fig. 32. Ground colour of scutum ochreous white, with a brownish-orange spot on both sides. Forewings long, extending over tip of abdomen; transparent, with a few dark brown spots, apical cell between R and M and its vicinity with stronger markings; veins pale whitish ochreous. Dorsal surface of abdomen blackish brown, becoming slightly paler towards anal tube, upper part of pygofer and anal tube pale brown. Ventral side of first abdominal segments medially blackish brown, this colour becoming paler towards caudal portion, valve, genital plates and sides of pygofer pale brown or amber-coloured.

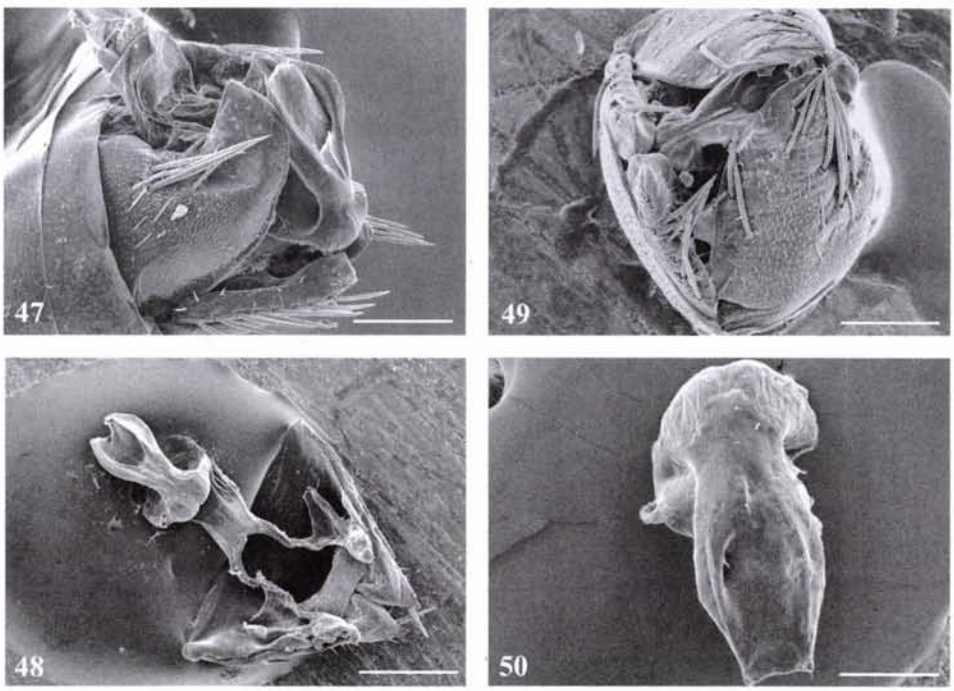
The abdomen is more elongate than that of *P. confinis*, the rate of the total length (from tip of vertex to tip of fore wing)/ body length (from tip of vertex to tip of genital plates) is 1.32–1.34 in *P. remanei* while it is in average 1.39 for *P. confinis*.

The configuration of the valve and the genital plates show no specific differences. Studying the ano-genital sector from lateral view, the pygofer of the new species is extending far over tips of genital plates, its apical part is rounded (Fig. 49), while the apical part of the pygofer of *P. confinis* is pointed, projecting towards the inner body (Fig. 47). It is clearly shown in the picture that the apical part of the pygofer does not reach the tips of the genital plates.

Male genitalia (Figs 37–38, 40–46, 48, 50): Aedeagus spatulate, being typical of the genus, the width of the basal part is smaller than that of the spatula. This spatulate part (Figs 40–46, 50) resembles that of *P. confinis* (Fig. 39), but is somewhat shorter, narrower. The shape of the paramera is similar in the two species, showing no distinctive features. Connectivum short, its proximal part widely open, differing strongly from the other species of the genus, having long, closed connectivum (see Figs 37– 38, 48). (The connectivum could be the only part of the genitalia where the ectoparasitoid infection, mentioned above, could result in a considerable reduction of its length).

The position of the aedeagus (Fig. 48) is artificial, it was turned over and pointing inside of the body, to show the connectivum. The in situ position is illustrated in Fig. 49. The tip of the aedeagus has been damaged during the SEM preparation, therefore the picture (Fig. 48) does not demonstrate the specific features of the new species.

The new species is dedicated to Prof. Dr. Reinhard Remane. He has had very good contact with our institute for several decades, there is a large stock of specimens in the HNHM identified by him, and he helped in my work with his useful advice.



Figs 47–50. Abdomina and male genitalia of *Psammotettix* spp. *Psammotettix confinis*: 47: abdomen, postero-lateral view. *Psammotettix remanei* sp.n.: 48: genitalia, inner side, dorsal view; 49: abdomen, caudal view; 50: aedeagus, dorsal view (paratype, Neue Sorge). Measures: Figs 47–49: scale bar = 135.3 μm, Fig. 50: scale bar = 77.2 μm.

DATA OF THREE SPECIES RECENTLY DISCOVERED IN HUNGARY.

Macrosteles septemnotatus (Fallén, 1806): 1 female, "Zalakomár, Kiskomáromiberek, 1998.08.28. leg. E. Kondorossy". A species distributed in the northern and central parts of the Palaearctic.

Paralimnus zachvatkini Emeljanov, 1964: 1 male, S Hungary, County Baranya, pheromone trap. This species has been recorded only from southern Russia, only a few locality data are known.

Psammotettix agrestis Logvinenko, 1966: three male specimens were found in the Kiskunság National Park, the localities are as follows: "Blaskovics-puszta, gy.h.m.kontr. szikes/4. 1997.10.8–9."; "Csanádi puszta, Csikóspuszta. löszgyep/3–4, 1997.09.17–18". A Ponto-Mediterranean species, a possible relict in Hungary.

REFERENCES

Della Giustina, W. (1989): Homoptéres Cicadellidae, Vol. 3: Compléments aux ovrages d' Henri Ribaut. — *Faune Fr.* **73**: 101–103.

Dlabola, J. (1954): Křísi – Homoptera. — *Fauna ČSR, Sv.* 1.: 233–234, 311.

Emeljanov, A. F. (1964): Subordo Cicadinea (Auchenorrhyncha). — *True Hemiptera of the European part of the USSR, 1.* pp. 343–344, 423, 436.

Horváth, G. (1897): Ordo Hemiptera. — *A Magyar Birodalom Állatvilága (Fauna Regni Hungariae).* — A K.M. Természettudományi Társulat, Budapest, 48–54.

Logvinenko, V. N. (1966): New species of leafhoppers (Homoptera, Auchenorrhyncha) from the Caucasus and Moldavia. — *Revue d'Ent. URSS*, **XLV**, 2, 1966, 409–410.

Logvinenko, V. N. (1975): Fulgoroidea. — *Fauna of Ukrainia* **20**: 49–53.

Nast, J. (1972): *Palearctic Auchenorrhyncha (Homoptera), an annotated checklist.* — Warsawa,PWN-Polish Scientific Publishers. 550 pp.

Ossiannilsson, F. (1978): *The Auchenorrhyncha (Homoptera) of Fennoscandia and Denmark I.* — Scandinavian Science Press Ltd., Klampenborg. p. 41.

Ossiannilsson, F. (1983): *The Auchenorrhyncha (Homoptera) of Fennoscandia and Denmark III.* — Scandinavian Science Press Ltd., , Klampenborg. pp. 695–701.

Remane, R. (1965): Beiträge zur Kenntnis der Gattung Psammotettix HPT. — *Zool. Beitr., N. F.* **11**. H. 1/2: 235–237, 244.

Ribaut, H. (1952): Homoptéres auchenorhynques. II. (Jassidae). — *Faune Fr.* **57**: 128–132, 245–246.

Schiemenz, H., Emmrich, R. and Witsack, W. (1996): Beiträge zur Insektenfauna Ostdeutschlands: Homoptera Auchenorrhyncha (Cicadina). Teil IV: Unterfamilie Deltocephalinae. — *Faun. Abh. staat. Mus. Tierkd.* Dresden, **20** (10): 190, 226–227.

Wagner, W. (1939): Die Zikaden des Mainzer Beckens. — *Jb. nassan. Ver. Naturk.* **86**. pp. 86–98.

Wagner, W. (1947): Neue deutsche Homopteren und Bemerkungen über schon bekannte Arten. — *Verh. Ver. natur. Heimatforsch.* Hamburg **29**: 88–89.

Wagner, W. (1968): Die Grundlagen der dynamischen Taxonomie, zugleich ein Beitrag zur Struktur der Phylogenese. — *Abh. Verh. naturw. Ver.* Hamburg, N.F. **12** (1967): 57–63.

(*Received*: 28th August, 1999)

Author's address: A. OROSZ
Department of Zoology
Hungarian Natural History Museum
H–1088 Budapest, Baross u. 13
HUNGARY