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Department of Systematic Zoology, Charles University, Praha

NOTES ON AMBLYTYLUS MACEDONICUS E. WAGN. AND A. CONCOLOR JAK. FROM SLOVAKIA (HETEROPTERA, MIRIDAE, PHYLINAE)

PAVEL ŠTYS

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Abstract: *Amblytylus macedonicus* E. WAGNER, 1956, known previously from Yugoslavian Macedonia and Bulgaria only, is recorded from southern and eastern Slovakia; its original description is amended and male genitalia are figured. An extreme variation of some diagnostic characters within the Slovakian populations of *Amblytylus concolor* JAKOVLEV, 1877 is noted.

During the identification of species of the genus *Amblytylus* FIEBER, 1858 from southern and eastern Slovakia I came across three species with the dorsal pubescence of mixed dark and pale hairs. This feature, currently used as a main diagnostic character, has been known to occur in two European species only: in the widely distributed *A. nasutus* (KIRSCHBAUM, 1856), and *A. jani* FIEBER, 1858 known from Italy and Spain (WÁGNER, 1959); the dorsal pubescence is completely black in the Algerian *A. binotatus* E. WAGNER, 1953, and it is supposed to be entirely pale in all the other species. The Slovakian species turned out to be *Amblytylus nasutus* (KIRSCHB.), *A. macedonicus* E. WAGNER, 1956 (originally described es pale-haired), and *A. concolor* JAKOVLEV, 1877 — a dark-haired variant of this usually pale-haired species. Some necessary amendments to the descriptions, and notes on the identification of *A. macedonicus* and *A. concolor*, and notes on the extreme variability of some diagnostic characters of the latter species are the subjects of the present paper. All specimens mentioned were collected by myself by sweeping low herbs and grass, and are preserved in coll. Štys (Dept. Syst. Zool., Prague).

My thanks are due to Dr. E. Wagner (Hamburg) for the identification of *A. macedonicus* and for providing its original description.

1. *Amblytylus nasutus* (KIRSCHBAUM, 1856) (Fig. 8)

Slovakia mer.: Chotín (sands), 29. 5. 1963, 1♀; Kamenín (salt marsh), 9. 6. 1962, 1♀; Kováčov (wood-steppe), 4. 6. 1965, 1♂; Slovakia or.: Latorica-bridge (pasture), 9. 6. 1960, 1♀; Nagy Hegy Hill at Královský Chlumec (steppe), 10. 6. 1960, 1♂, 16♀♀.

A widely distributed European species.

2. *Amblytylus macedonicus* E. WAGNER, 1956 (Figs 1—6)

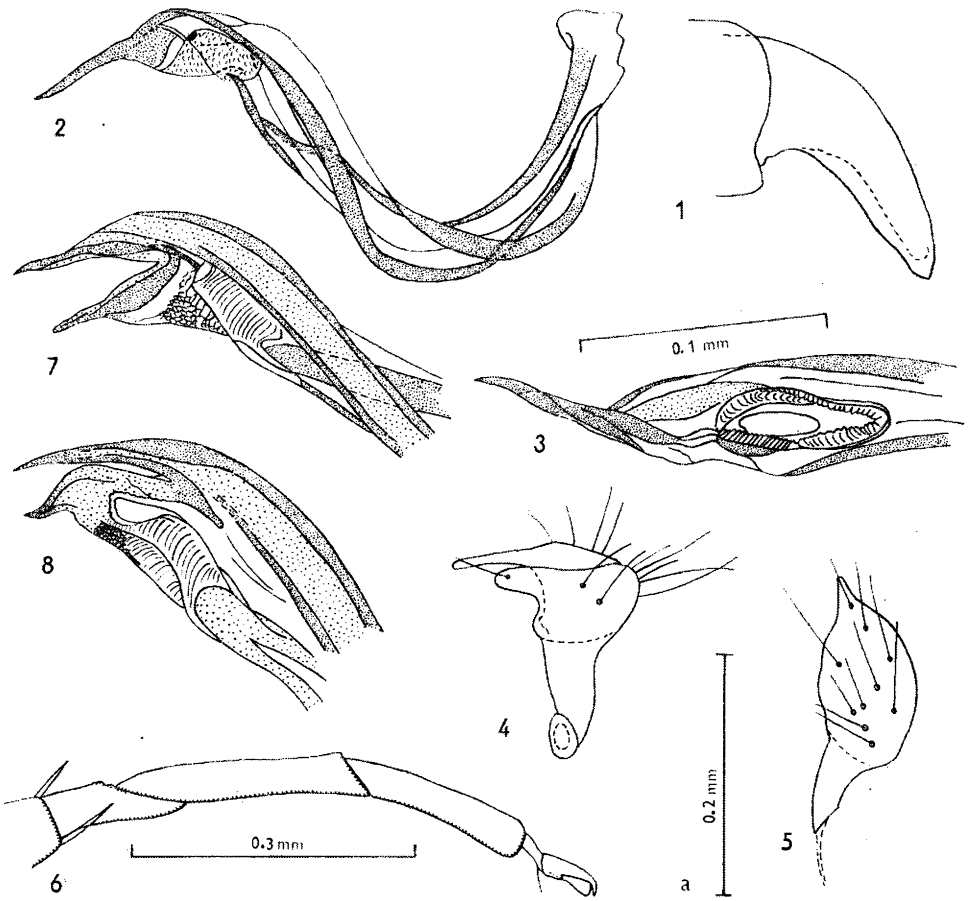
Slovakia mer.: Čenkov (sands), 29. 5. 1963, 1♂; Chotín (sands), 29. 5. 1963, 1♂; Kováčov (wood-steppe), 4. and 9. 6. 1965, 12♂♂, 10♀♀; Slovakia or.: Latorica — bridge (pasture). 6. 6. 1960, 5♀♀.

Distribution: Yugoslavian Macedonia (WAGNER, 1956), Bulgaria (JOSIFOV, 1963), Slovakia — new record.

WAGNER (1956) described this species as having light dorsal pubescence, a few black hairs sometimes occurring on the head only. All the specimens of the type series have obviously been rubbed off, since the intact individuals from Slovakia have the whole dorsal surface covered by dense semierect or adpressed black hairs intermixed with a sparser and shorter pale pubescence. In this species the black hairs fall off more easily than the pale ones, and some of my rubbed specimens then correspond to WAGNER's description. The male genitalia of Slovakian specimens do not differ from those from Macedonia, and also structural and biometrical characters fit (WAGNER's data given in parentheses): total length ♂♂ 3.3—3.7 mm (3.7—3.9), ♀♀ 3.7—4.4 mm (2.9—3.9); ocular index ♂♂ 2.20—2.46 (2.3—2.4), ♀♀ 2.58—3.40 (2.7—2.8); ratio 2nd antennal segment: maximum width of pronotum ♂♂ 0.97—1.07 (—1.0), ♀♀ 0,84—0.95 (0.9—1.0); ratio 3rd antennal segment : 2nd (0.7) ♂♂ 0,65—0.71, ♀♀ 0.59—0.72; ratio maximum width of head : maximum width of pronotum (0.7) ♂♂ 0.59—0.71, ♀♀ 0.61—0.72; ratio length of body : maximum width of pronotum ♂♂ 3.07—3.72 (3.3—3.6) ♀♀ 3.08—3.63 (2.6—3.0); labium reaching the first third of 7th ventrite to slightly surpassing the apex of abdomen (reaching the apex of abdomen or surpassing it). Hence only the males are shorter, the females longer and narrower, and the coloration of Slovakian specimens is more conspicuous : ♂♂ usually greenish white (grey-yellowish), ♀♀ usually intensely orange (light ochraceous); also the dark patterns on the membrane of Slovakian specimens seem more developed, resembling those of *Amblytylus delicatus* (PERRIS, 1857) and *A. jani* FIEB.

WAGNER (1956) distinguished *A. macedonicus* correctly from *A. concolor* JAK.; however, in most keys to European Heteroptera the former species would run under *A. nasutus* (KIRSCHB.), in WAGNER & WEBER (1964)

under *A. jani* FIEB. *Amblytylus macedonicus* differs from *A. nasutus* by a different coloration, much longer labium, black and contrasting tibial spines (black even in teneral individuals), longer and narrower head, smaller ocular index, absence of marginal pronotal ridges along the calli, and particularly by a completely different structure of the vesica (see Figs 2, 3, 8). *Amblytylus jani* (redescribed by WAGNER, 1953, 1959) differs from *A. macedonicus* by a much narrower, less curved and distally simpler vesica. The presence of a non-projecting sclerotized ventral vesical strus seems to link *A. macedonicus* with the West-Mediterranean *A. tarsalis* REUTER, 1874 (genitalia figured by WAGNER, 1964); the latter species hat



Figs 1—6. *Amblytylus macedonicus* E. WAGN. (Slovakia: Kováčov). 1 - Theca. 2 - Vesica, lateral view. 3 - Apex of vesica, ventral view. 4 - Left paramere. 5 - Right paramere. 6 - Hind tarsus. Fig. 7. *A. concolor* JAK. (Slovakia: Čenkov), apex of vesica, lateral view. Fig. 8. *A. nasutus* (KIRSCHB.) (Slovakia: Královský Chlumec env.), ditto. The scale „*a*" valid for Figs 1, 2, 4, 5, 7, 8.

an equally long labium, but is pale-haired, differs by many other somatic characters, and its secondary gonopore is situared much more proximally.

3. *Amblytylus concolor* Jakovlev, 1877 (Fig. 7)

Slovakia mer.: Čenkov (sands), 10. 6. 1962, 21♂♂, 46♀♀, and 29. and 30. 5. 1963, 47♂♂, 67♀♀; Chotín (sands), 29. 5. 1963, 10♂♂, 46♀♀.

Distribution: Pontic species, known (Stichel, 1956, Carvalho, 1958) from Czechoslovakia (S. Slovakia: Čenkov — Hoberlandt, 1963), Austria, Hungary, Rumania, Bulgaria (Josifov, 1963). Yugoslavia, Turkey (Hoberlandt, 1956), S. Russia and Turkestan. In Czechoslovakia a distinctly psammophilous species.

Among the repeatedly given (e. g. Stichel, 1966) salient characters of this species are: dorsal pubescence uniform, pale; ground colour whitish green; tibial spines brown; anterolateral margins of pronotum without ridges; labium reaching the middle of abdomen. All these features are regarded as rather stable, and are widely used in diagnosing *Amblytylus*-species, but all have been found highly variable in Slovakian populations of *A. concolor*.

a) The dorsal pubescence is only rarely uniformly pale yellowish, usually a few longer and more erect dark brown heirs are scattered on clavus and corium and abundantly occur on the cuneus, particularly in its inner part. In the extremes (found in a sample from Čenkov only) the dorsum is covered with numerous dark brown to blackish setae intermixed with pale hairs, the former being the predominant type on the corium and cuneus, the pale hairs occurring abundantly along the outer margins of these regions only.

b) Ground colour ranges from white green to grey yellowish (most frequent) to light brown.

c) The colour of tibial spines ranges from pale yellow-brown to dark brown (most frequent) to very contrasting black-brown or black.

d) The anterolateral margins of pronotum are simple in well sclerotized individuals, without a marginal ridge alongside the calli. The propleuron is, however, deformed in teneral individuals, being concavely shrunken; this results in the formation of anteromarginal pronotal ridges resembling those characteristic of *A. nasutus* (Kirschb.) and *A. brevicollis* Fieber, 1858. These three species can, of course, be readily identified by a different structure of the vesica (see Figs. 7, 8, and Wagner (1958) for *A. brevicollis*).

e) The apex of labium in the Slovakian specimens may reach anywhere from the apices of hind coxae up to the apex of abdomen. The statistical evaluation is given in Table 1. The population from Čenkov is characterized by a greater range of variation and higher mean values, individuals with a

very long labium are absent in the population from Chotín; the *t*-test yielded a significant difference between the samples of males from both localities. The very long labium in the individuals from Čenkov is usually associated with frequently occurring dorsal dark hairs.

Table 1. *Variation in the length of labium in Slovakian populations of Amblytylus concolor Jak.*

The length of labium is expressed in relative units indicating the position of its apex within the distance apex of hind coxa — apex of abdomen (x = 0.0 — apex of labium reaching apex of hind coxa, x = 1.0 — reaching apex of abdomen). The unusually high coefficient of variabilitity (C. V.) concerns this specific relation, and not the length of the whole labium.

x	♂♂ Čenkov Fx	♂♂ Chotín Fx	♀♀ Čenkov Fx	♀♀ Chotín Fx
0.0	3	—	2	1
0.1	8	2	15	7
0.2	10	3	21	10
0.3	10	1	22	5
0.4	8	2	12	5
0.5	6	2	10	1
0.6	7	—	8	4
0.7	6	—	7	—
0.8	4	—	5	—
0.9	2	—	—	—
1.0	1	—	1	—
N	65	10	103	33
$x_{min} — x_{max}$	0.0—1.0	0.1—0.5	0.0—1.0	0.1—0.6
$\bar{x}$	0.41 ± 0.03	0.29 ± 0.02	0.36 ± 0.02	0.28 ± 0.03
S. D.	0.25	0.15	0.21	0.16
C. V.	60	52	59	57
t	2.09		1.44	
p	< 0.05, significant		> 0.1, non-significant	

The situation described above does not only invalidate many somatic characters used for the identification of *A. concolor*, leaving only the structure of male genitalia as a reliable criterion, but also raises a question of the taxonomic weight of these features in other species of the genus. It is possible that the unexpectedly wide range of variation was ascertained simply because many specimens were examined, and that it corresponds to the normal distribution of character states of these feautures in other populations of *A. concolor*, and perhaps in other related species as well. It is, however, more probable that both Slovakian populations are exceptional in this respect, since they are obviously peripheral isolates*) with a limited gene exchange with other populations of the species. A genetic

*) Chotín and Čenkov are situated some 25 km apart, not far from the northern bank of Danube, and belong to a few remaining sand-dune habitats in the intensely cultivated southern Slovakia.

isolation is suggested also by ascertained phenetic differences between Čenkov and Chotín populations. An accumulation of unusual genotypes in isolates due to the genetic drift is a general rule, though this never results in an overall extension of the variation range of continuously variable features, as it is in the case of the populations studied. Since no information about the variation of other populations of *A. concolor* are available, any more detailed discussion of the described case would be highly speculative.

There is, however, no doubt that the examined samples are taxonomically homogeneous. The genitalia of the extreme variants of males were checked and found identical. The structure od vesica (Fig. 7) corresponds to WAGNER's (1956) illustration, but seems to differ from that illustrated by KERŽNER & JAČEVSKIJ (1964), and based presumably on a specimen from S. Russia; the latter authors show the upper terminal process of vesica considerably shorter than the lower one and almost parallel to it (subspecific differences?).

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Author's address: RNDr. PAVEL ŠTYS CSc.
Katedra systematické zoologie UK,
Viničná 7, Praha 2,
Czechoslovakia