

A C T A Z O O L O G I C A
C R A C O V I E N S I A

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Nr 2

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Dwa nowe gatunki z rodzaju *Charimachilis* WYG.
(*Thysanura*, *Machilidae*)

Два новых вида из рода *Charimachilis* WYG.
(*Thysanura*, *Machilidae*)

Two new species of the genus *Charimachilis* WYG.
(*Thysanura*, *Machilidae*)

(Pl. VIII—X)

Among the *Collembola* collected by Mr. SEMENKIEWICZ, in 1920, in environs of Kiev I have found in a proof two specimens of a zoogeographically interesting genus *Charimachilis* WYG.

The first species belonging to this genus was described by SILVESTRI, in 1908, from Corfu as *Praemachilis orientalis* SILV. Some years afterwards I have found a related species in many young and adult specimens in material of *Apterygota* collected in 1925 in Malta by Conte A. CARUANO GATTO. Other works and obligations, then the outbreak of the war and resulting difficulties have not permitted me to describe this species at the time.

In the meanwhile WYGODZINSKY has found, in 1939, in material collected in Palestine a species agreeing in some details of the body with that described by SILVESTRI, in 1908. He has erected, however, for both these species a new genus

Charimachilis WYG., and described the specimen from Palestine as *Charimachilis palaestinensis* WYG.

A zoogeographically very interesting event was the finding by Prof. H. JANETSCHEK, in 1954, of a related species of the genus *Charimachilis* WYG. in only one specimen on the Maier-spitze in the Stubai-er Alps in Tirol, at 2799 m alt. The author has called this specimen *Charimachilis relictæ* JANETSCH. as he considers that this species represents a relic of the Pleistocene glacial period remaining in the generations on high peaks protruding in that time over the lower ranges of Alps wholly covered with snow and glaciers.

The occurrence of the representatives of the genus *Charimachilis* WYG. in Italy, very abundant in Malta, further in Balkan-peninsula (Bulgaria, Greece), in Palestine and environs of Kiev is not in contradiction with the supposition that one species may be actually in the Alps as a relic of the Pleistocene period, since most species of *Machilidae*, above all the land-forms do not belong to the migratory or easily spreading insects. The places of the occurrence of the representatives of the genus *Charimachilis* WYG. situated very far from each other, show, that the habitation area of this genus was once probably quite wide, at any rate extending from the Alps to the Dniepr-river and southwards up to Malta, Greece and Palestine. It was also probably an element of the east-mediterranean fauna. The habitation area of the genus *Charimachilis* WYG. is at present disjuncted and on small areas situated nowadays far from each other live forms already modified in some body-marks, but showing distinct signs of the common relationship.

The similarity of modified forms of this genus is so great that they can be regarded also as not separate species, but only as varieties of one species.

Here are described two of these forms *Charimachilis ukrainensis* n. sp. from Kiev and *Charimachilis melitensis* n. sp. from Malta.

***Charimachilis ukrainensis* n. sp.**

Plate VIII, fig. 1—6, plate IX, fig. 1—4

Body length 11 mm.

The pattern on the eyes and that composed of the scales

on the body is not preserved since the specimens were kept for a long time in alcohol. Also the hypodermal pigment is absent.

Breadth of oculi a little greater than the length (about as 17:14); the ratio of the contact-line of the eyes to the length of one oculus is 0,4. Ocelli brownish, as broad as the length of one eye.

Antennae damaged; the part that remained is 3 mm long. Scapus and filum covered with setae and scales. In the remained part of filum the chains are composed of 8—9 joints. Each of these terminal joints is furnished with 1—2 whorls of setae and 1—2 short straight sensory rods; rosette-like sensillae are absent.

Maxillary palp covered with scales and short setae. The relation of the lengths of joints is as 5:5,5:6:5,5:8,5:6:7; the last joint is distinctly longer than the preceding one, remarkably tapering towards the sharply pointed end. The hyalin spines are arranged dorsally on the VI joint 1, 1, 4, further 14 in two longitudinal rows on VII joint and 15 on the last joint. The apical spine is long.

The apical joint of labial palp is weakly club-like broadened and only a little longer than the third joint; at the upper edge it is provided with 13 sensory cones.

Mandible with well developed molar plate and apically with four teeth.

The second and third pair of the legs provided with stylets. The legs are clothed with scales and setae, among which on the ventral edge of the joints appear spines and strong bristles („Stachelborsten“), but the fine long hairs are absent. On the foreleg the spines, 3 in number, are only on the basal joint of the tarsus. On the second pair of the legs there is one spine on the femur, one on the tibia and four on the basal joint of the tarsus. On the third pair of legs the one spine is on the femur, six on the tibia, three on the basal joint of tarsus and three on the second joint of tarsus.

All abdominal segments provided with one only pair of vesicles each. Sternites well developed triangular, sharp angled (50°—70°). Lateral spines, 1—2 in number, appear only on the coxites of the VIII segment, and of IX segment, namely 1 spine

on the outer edge and 6—7 spines on the inner edge of the coxite. Segments II—IX with stylets covered with spines and moderately long setae; at the tip they are provided with a bristle which on segments II—VII is half as long as the stylet. The ratio of the lengths of the stylets to the lengths of the coxites is on segments

II—VII 0,62—0,68

VIII 0,9

IX 0,75

The length of the coxite of the VIII segment to that of the IX segment is as 8,5:17.

Ovipositor does not reach the basis of the stylets of the IX segment, and is wholly covered by the coxites of this segment. Gonapophyses of the VIII segment seem to be swollen subapically, and consist of 15 joints; the joints are furnished with setae some of which on the median joints are remarkably long. Three or four of the terminal joints are provided basally on the outer edge with a strong spine each, and the end-joint has both its outer edges spine-like elongated. The apical bristle of this joint is placed in a shallow deepening. The gonapophyses of the IX segment consist of 17 joints. The gonapophyses are approximately cylindrical, only their last joint is modified in the form of a strong spine showing on its inner edge an indication to the subdivision into secondary joints. The strong bristle standing laterally on this last spine-like joint is longer than this joint and the place of its insertion is covered with some minute cones. The median joints of these gonapophyses are also furnished with some remarkably long hairs.

Filum terminale has the end broken off; the remaining part is 6,5 mm long. Each cercus is 3 mm long and ends with a sharply pointed spine guarded by scales and four setae.

Locality in which the specimens were found: Ukrainian SSR. — Kiev, on the bank of the Dniepr-river, 8 VIII 1920 ... 2 sp., leg. SEMENKIEWICZ.

The species described here agrees with *Charimachilis dentata* WYG. from Greece in many details of the structure of the body, but differs in the shape of the last joint of gonapophy-

ses of the IX segment, smaller number of joints in gonapophyses of the VIII segment, different ratio of the lengths of the abdominal stylets to the lengths of the coxites; and other features.

Charimachilis melitensis n. sp.

Plate VIII, fig. 7, plate X, fig. 1—5

Body length 10 mm.

The pattern of the eyes and the body is not preserved.

The breadth of oculi is a little greater than their length (about as 14:12); the length of the contact-line of the eyes to the length of one oculus is 0,58. Ocelli brownish coloured, sole-like, as broad as the length of one eye.

Antennae, only a little damaged at the end, are up to 8 mm long, and as the last joints in the chains are very narrow and long, the undamaged antennae seem not to be remarkably longer. The scapus and filum are covered with scales and rather long setae. Behind the 40 proximal joints appear distinctly delimited chains composed of 8—11 joints. Each of the terminal joints is furnished with 1—2 long setae and one rather long sensory rod.

Maxillary palps covered densely with short common setae and scales; the fine hairs and rosette-like sensillae are absent. The relative lengths of the joints are as 4,5:6,5:5,5:5,5:2:8:6,5:7,5. The last joint is distinctly longer than the preceding one and tapering gradually towards the sharply pointed tip. Dorsally on the VI joint there are 1, 1, 3 spines, on VII joint 11 arranged in two longitudinal rows, and on VIII joint 15 dorsal spines and one long one at the end of the joint.

The third and fourth joint of labial palps are equally long; the fourth joint is weakly club-like broadened, about half as broad as long (as 2,2:4), and provided at the upper edge with about 20 sensory cones.

Mandible with well developed molar plate and apically with four teeth.

The second and third pair of legs provided with stylets. The legs are covered with scales and setae of the common

shape, moreover on the tibia and tarsus with stronger bristles (Stachelborsten). The spines are wanting.

All abdominal segments with one pair of vesicles each. Sternites well developed in form of the triangles of $80-120^\circ$ at the tip. The lateral spines on the coxites of adult specimens are absent; in the young individuals appear two spines on the inner edge of the coxite of IX segment. The stylets are covered with scales and moderately long setae; the apical bristle on the II—VII segment is half as long as the stylet or a little longer. The ratio of the lengths of the stylets to the lengths of the coxites is on the segments

II—VII	0,65—0,7
VIII	1,0
IX	0,6

Ovipositor covered by the coxites of the IX segment, does not to reach the basis of the stylets. Gonapophyses of the VIII segment, club-like swollen submedially consist in adult specimens of 13 joints. The median joints are furnished with some remarkably long hairs, and each of the 3—4 terminal joints besides the setae and sensory rods also with a distinct spine on the outer edge. The last joint has its outer margin at the tip only weakly emarginated, and is armed with a long bristle. In the young specimens the gonapophyses consist of 11 joints and the terminal joints are not armed with spines. Gonapophyses of the IX segment consist of 11, rarely 12 joints, of which the median ones are provided with some long hairs. The end-joint is modified in the shape of a strong, well chitinized spine, and provided laterally with a long bristle; the inclination to the subdivision of this joint is not marked.

Filum terminale is 8 mm long and ends at the tip with a strong spine with two tips. Cerci are 3 mm long and also provided at the end with a spine with two tips. In young specimens this spine is on the filum and cerci simple.

Localities in which the specimens were found:

Malta. — Wied Babu, frequent under stones, 14 I 1925 ...
4 sp.;

- Wied Dalan, frequent under and on stones, exposed or not to the sun, 24 X 1925 ... 8 sp.;
- Irdum id-delli, under stones, 12 IV 1925 ... 1 sp.;
- Iddeli, il Ghadira, Melleha, under stones, 19 V 1925 many young sp.;
- Marsascala, Zorkor, Misida, Iddeli, Zenka, Musta, Wied il Kleigha, 29 IV 1925, many young sp.

The specimens described here from Malta differ from the Ukrainian ones, by the absense of the subdivision of the last joint of the gonapophyses of the IX segment, in the shape of the apical spine of the cerci, by right-angled sternites, the absense of the spines on the coxites and on the legs, and other features.

Both described forms belong to that group of species of the genus *Charimachilis* WYG., which have long hairs on the median joints of gonapophyses and distinct spines on the 3—4 terminal joints of gonapophyses of the VIII segment. Of these species there are known besides the ones described here three others, namely *Charimachilis dentata* WYG. from Greece, *Charimachilis relictæ* JANETSCH. from Stubaiier Alps in Tirol and *Charimachilis armata* STACH from Bulgaria.

KEY TO THE SPECIES OF THE GENUS *CHARIMACHILIS* WYG.
KNOWN AT PRESENT¹

1. — The joints of the ovipositor clothed with short setae only; posterior edge of the last joint of the gonapophyses of VIII segment rounded; the apical bristle of this joint short.

¹ This record was finished in June 1957. In the meantime, before this record can be published, Prof. H. JANETSCHKE has described exactly in his paper „Über Felsenspringer aus Kreta und den Balkanländern“ (Acta Zool. Crac. 2, 1957) the specimens of the genus *Charimachilis* from Yugoslavia, Greece and Crete, all of which he has related to the species *Charimachilis relictæ*, established by him in 1954 from Tirol, as new subspecies *Ch. relictæ meridionalis* and *Ch. relictæ insularis*.

***Charimachilis orientalis* (SILV.) (= *Praemachilis orientalis* SILVESTRI, 1908)**

Corfù, Italy (Lecce)

- 1'. — Some of the joints of the ovipositor furnished with some long hairs 2
2. — Terminal joints of gonapophyses of the VIII segment without spines on the outer edge. The last joint of the gonapophyses of the VIII segment at the outer edge with two spine-like processes; apical bristle of this joint short; last joint of the gonapophyses of the IX segment elongated in a strongly chitinated spine, armed laterally with short bristle.

***Charimachilis palaestinensis* WYGODZINSKY, 1939.**

Palestine

- 2'. — Three or four terminal joints of gonapophyses of the VIII segment with a spine on the outer edge each . 3
3. — Low edge of the last joint of gonapophyses of the VIII segment with two distinct spine-like processes on the outer side; gonapophyses of the VIII segment with 15—20 joints, those of the IX segment with 17—18 joints; spines on ventral edge of the legs present . . 4
- 3'. — Low edge of the last joint of gonapophyses of the VIII segment with weakly developed spine-like processes or without such; gonapophyses of the VIII segment consist of 13 joints, those of the IX segment of 11 joints; the spines on ventral edge of the legs absent 6
4. — Gonapophyses of the VIII segment with 20 joints, of the IX segment with 18 ones.

***Charimachilis dentata* WYGODZINSKY, 1941**

Greece (Leonidion)

- 4'. — Gonapophyses of the VIII and IX segments with smaller number of joints 5

5. — Gonapophyses of the VIII segment with 15 joints; the last joint of the IX segment with inclination to the subdivision; the spine at the end of cercus with one tip.

***Charimachilis ukrainensis* n. sp.**

Kiev

- 5'. — Gonapophyses of the VIII segment with 18 joints; last joint of the IX segment without inclination to the subdivision; the spine at the end of the cercus with two tips.

***Charimachilis armata* STACH, 1957**

Bulgaria

6. — Low edge of the last joint of gonapophyses of the VIII segment without spine-like processes; sternites sharply angled.

***Charimachilis relict*a JANETSCHEK, 1954**

Tirol (Stubai Alps)

- 6'. — Low edge of the last joint of gonapophyses of the VIII segment with weakly developed blunt rounded processes; sternites right-angled.

***Chrimachilis melitensis* n. sp.**

Malta

LITERATURE

- JANETSCHEK H. 1954. Ein neues inneralpines Nunatakrelikt aus einer für die Alpen neuen Gattung (Ins., *Thysanura*). Sitz.-Ber. d. Österr. Akad. der Wissensch., Math.-nat. Kl., Abt. I, 163, Wien, 541—548.

- JANETSCHKE H. 1956. Das Problem der inneralpinen Eiszeitüberdauerung durch Tiere (Ein Beitrag zur Geschichte der Nivalfauna). Österr. Zoolog. Zeitschr., 6, Wien, 421—506.
- SILVESTRI F. 1908. Materiali parlo studio dei Tisanuri VIII—XI. Boll. Labor. Zool. gen. e agr. d. R. Sc. Sup. Agric. di Portici, 2, 359—396.
- STACH J. 1958. The Machilidae (*Thysanura*) of Bulgaria. Acta Zool. Crac., 3, Kraków, 1—33.
- WYGODZINSKY P. W. 1939. Beitrag zur Kenntnis der Thysanuren Palaestinas. Bull. Soc. Fouad Ier d'Entom. 23, Caire, 73—85.
- WYGODZINSKY P. W. 1941. Zur Kenntnis einiger europäischen Dipluren und Thysanuren. Verh. Naturf. Gesellsch. in Basel, 52, Basel, 63—100.

STRESZCZENIE

Autor opisuje dwa nowe gatunki z rodzaju *Charimachilis* WYG., mianowicie *Charimachilis ukrainensis* n. sp. z Kijowa i *Charimachilis melitensis* n. sp. z Malty, zaznacza granice obszaru zajętego przez poznane dotychczas gatunki tego rodzaju i podaje klucz do oznaczania tych gatunków.

30 June 1957

Kraków, Branch of the Institute of Zoology
of the Polish Academy of Sciences

РЕЗЮМЕ

Автор описывает два новые вида из рода *Charimachilis* WYG., а именно *Charimachilis ukrainensis* n. sp. из Киева и *Charimachilis melitensis* n. sp. с острова Мальты, одозначает границы территорий занятой известными до сих пор видами этого рода и подает определитель к их обозначению.

PLATES

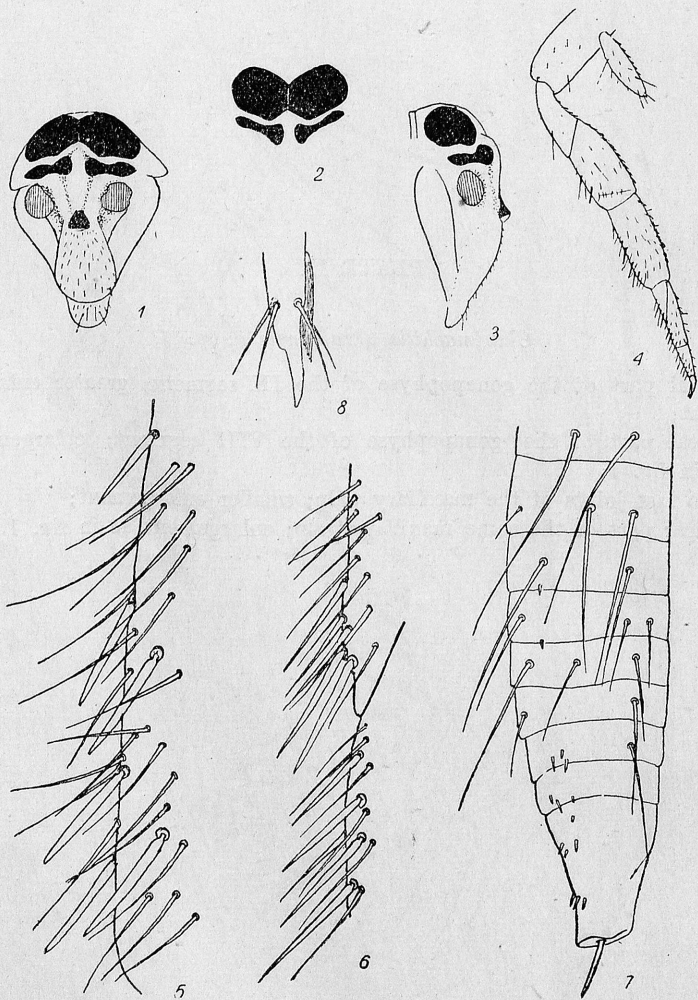
PLATE VIII

Charimachilis ukrainensis n. sp.

1. The head of the animal, front view;
2. Oculi and ocelli, upper view; enlargement as in fig. 1;
3. The head of the animal, lateral view; enlargement as in fig. 1;
4. Third leg; enlargement as in fig. 1;
5. Arrangement of the setae and spines on tibia of the same leg; greater enlargement;
6. Arrangement of the setae and spines on basal and second joint of tarsus; enlargement as in fig. 5;

Charimachilis melitensis n. sp.

7. Gonapophyse of the VIII segment of a young specimen; enlargement as in fig. 5.

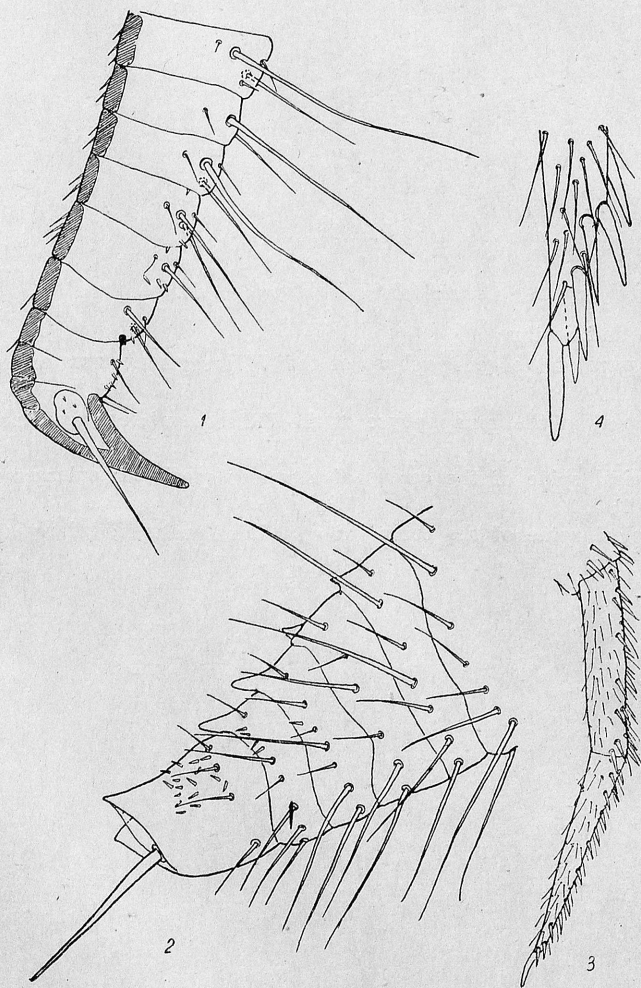


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PLATE IX

Charimachilis ukrainensis n. sp.

1. Distal part of the gonapophyse of the IX segment; greater enlargement;
2. Distal part of the gonapophyse of the VIII segment; enlargement as in fig. 1;
3. Two last joints of the maxillary palp; smaller enlargement;
4. Apical part of the same maxillary palp; enlargement as in fig. 1.

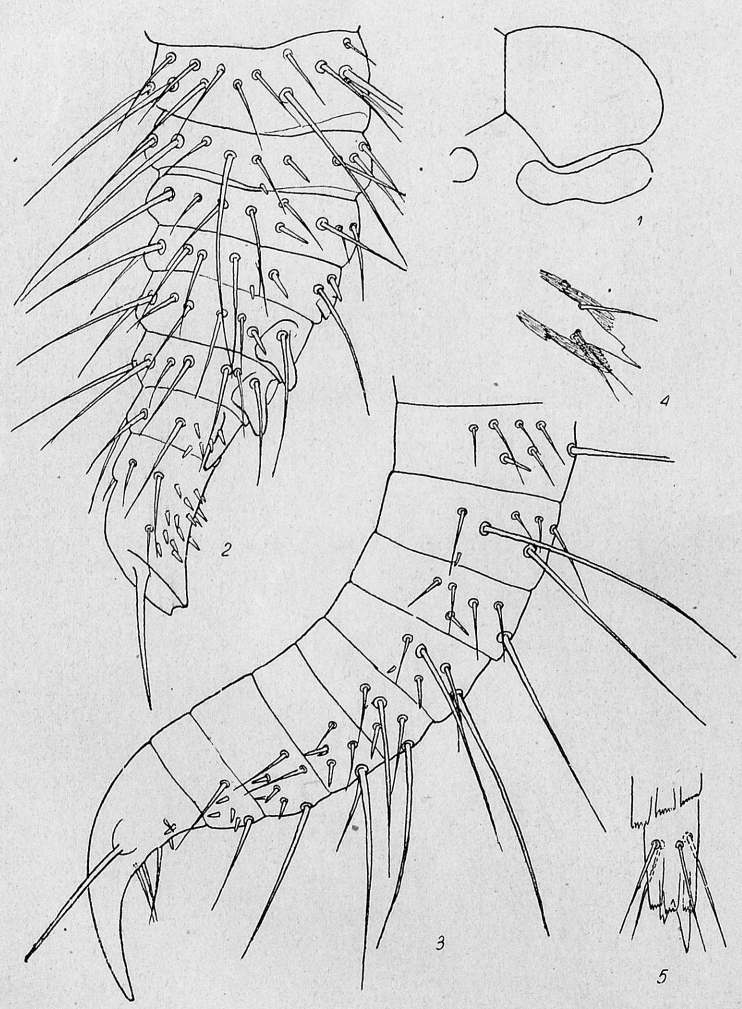


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PLATE X

Charimachilis melitensis n. sp.

1. Oculus and ocellus;
2. Distal part of the gonapophyse of the VIII segment; greater enlargement;
3. Distal part of the gonapophyse of the IX segment; enlargement as in fig. 2;
4. The apical spine of the cercus of a young specimen; enlargement as in fig. 2;
5. The apical spine of the cercus of an adult specimen; enlargement as in fig. 2.



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