

PŘÍSPĚVEK K POZNÁNÍ RODU PHOLIDOPTERA WESM.
CONTRIBUTION TO THE KNOWLEDGE OF THE GENUS
PHOLIDOPTERA WESM.

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RAMME uveřejnil v Mitt. Zool. Mus. Berlin 1951, p. p. 191—224 super-revisi a nové systematické rozdělení rodu *Pholidoptera* WESM. s. lat., jímž rozdělil na základě morfologických znaků tento heterogenní rod na 5 rodů: *Eupholidoptera* RME., *Apholidoptera* RME., *Uvarovistia* RME., *Parapholidoptera* RME. a *Pholidoptera* WESM. s. str. Každý z těchto rodů má podle tvaru epiphalů samčího kopulačního orgánu i na základě ostatních taxonomických znaků a areálů zeměpisného rozšíření plné oprávnění. Ramme však opomenul stanovit pro jednotlivé nové rody genotypy. Jak však vysvítá z Rammeho práce, jsou za genotypy pokládány druhy uvedené v práci na prvním místě. Tedy pro rod *Eupholidoptera* RME. genotypus *chabrieri* (CHARP.), pro rod *Apholidoptera* RME. genotypus *kurda* (UV.), pro rod *Uvarovistia* RME. genotypus *zebra* UV., pro rod *Parapholidoptera* RME. genotypus *castaneoviridis* (BR.) U rodu *Pholidoptera* WESM. s. str. musí platit za genotyp druh *cinerea* (L.) jakožto druh, na nějž se vztahuje WESMAELŮV popis rodu. Správně jest v této práci oceněn význam kopulačního orgánu samců, t. j. tvar epiphalů pro systematiku rodů, druhů i geografických ras.

Na základě bohatého materiálu v entomologických sbírkách Národního musea, který pochází jednak z Coll. N. Kheil a Coll. Nickerl, jednak ze sběrných cest entomologického oddělení z oblasti karpatské, alpské a Balkánského poloostrova, doplňuji tu RAMMEHO práci popisy dalších nových forem a druhů rodu *Pholidoptera* WESM. s. str. a uvádím některé nové údaje zeměpisného rozšíření málo známých druhů a forem.

RAMME published in the Mitt. Zool. Mus. Berlin 1951, pp. 191—224 a super-revision and new taxonomic division of the genus *Pholidoptera* WESM. s. lat., by which he divided on the basis of morphological characters this heterogenous genus into the following 5 genera: *Eupholidoptera* RME., *Apholidoptera* RME., *Uvarovistia* RME., *Parapholidoptera* RME., and *Pho-*

lidoptera WESM. s. str. Each of these genera is fully justified according to the shape of the epiphals of the male copulation organ and on the basis of the other taxonomic characters and of the areas of geographical distribution. RAMME omitted, however, to establish the genotypes for the new genera. As appears, however, from RAMME's paper the species heading the lists in the paper are regarded as the genotypes. Thus for the genus *Eupholidoptera* RME. the genotype *chabrieri* (CHARP.), for the genus *Apholidoptera* RME. the genotype *kurda* (UV.), for the genus *Uvarovistia* RME. the genotype *zebra* UV., for the genus *Parapholidoptera* RME. the genotype *castaneoviridis* (BR.). In the genus *Pholidoptera* WESM. s. str. we have to regard as genotype the species *cinerea* (L.) as it is the species to which refers WESMAEL's description of the genus. The paper appreciates correctly the importance of the male copulation organ, i. e. the shape of the epiphales, for the taxonomy of the genera, species and geographical races.

On the basis of the rich material in the entomological collections of the National Museum, which come partly from the Coll. N. Kheil and Coll. Nickerl and partly from the collecting trips of the Entomological Division, from the regions of the Carpathians, the Alps and the Balkan Peninsula, I supplement here RAMME's paper by the description of further new forms and species of the genus *Pholidoptera* WESM. s. str. and give some new data on the geographical distribution of little known species and forms.

Pholidoptera dalmatica (KR.)

KRAUSE H. 1878 Orth. Fauna Istriens p. 63, Pl. IV, fig. 1.

ZEUNER (l. c. 1931, p. 427) divided the species *Ph. dalmatica* into two geographical races: *Ph. dalmatica dalmatica* (KR.) and *Ph. dalmatica maritima* ZEUNER. The former is a smaller form characterised by the more cylindrical pronotus, the shorter, unicoloured posterior femora, the shorter cerci in ♂, and the shorter, whitish to ivory yellow elytra with a black reticulation. This race inhabits the coastal region of the northern and middle Adriatic Sea from Monte Maggiore to the northern spurs of the Velebit. The lectotypes established by Zeuner derive from 2 ♂♂ Buccari, 1 ♀ Grobniko.

The latter form, *Ph. dalmatica maritima* ZEUNER, is larger, has more strongly marked lateral edges of the pronotum, longer posterior femora, on the outer side more or less blackish brown lines or with a longitudinal blackish brown stripe. It inhabits regions along the Dalmatian coast, the islands of Hvar and Korčula, and it reaches also inland into Hercegovina, where smaller specimens of this race occur.

In addition to these two geographical subspecies ZEUNER distinguished still a third form which he designated provisionally as "bosnische Rasse" and to which he placed smaller specimens deriving mostly from the mountainous inland.

RAMME (1951 l. c., pp. 216—223) on the basis of the study of the epiphals of all three forms came to the conclusion that *Ph. dalmatica* (KR.)

and *Ph. maritima* (ZEUNER) are independent species, to which he added as a further new species *Ph. brachynota* RME., which he ascertained in the material designated by ZEUNER as "bosnische Rasse".

On the basis of the material of the Entomological Division of the National Museum ZEUNER's original conception seems more correct to me. Though it is true that *Ph. dalmatica* (KR.) and *Ph. maritima* (ZEUNER) are in typical specimens distinguished from each other by the characters listed above, yet the characters in the differences of the epiphals, which RAMME regarded as specific, are in both these forms rather variable. To this comes in the Museum material a series of specimens of another new form the Čvrstnica planina in Herzegovina (VII 1927 Dr. O. Štěpánek and Dr. Tábořský lgt.), which according to their outer features cannot be identified with any of the above-mentioned forms, and in which the shape of the epiphals is so variable that it corresponds in 3 ♂♂ to the type of this organ in *Ph. maritima* ZEUNER, in 2 ♂♂ to the type in *dalmatica* (KR.), and in 1 ♂ to the type in *brachynota* RME. Thus the subtle differences in the epiphals of these forms cannot be regarded as specific characters, even if in some of them one or the other type of epiphals predominates in certain localities. According to the exterior characters the geographical distribution, and the biotop in which the different races occur we can assume that they are forms which differentiated through geographico-ecological variability. On the basis of the geographical principle in taxonomy it is thus more correct to combine these geographical forms in one species *geographica*.

Survey of the Distinguishing Characters of the Different Geographical Races of the Species

Pholidoptera dalmatica (KR.)

- 1 (4) Posterior femora long, in ♂ 22—27,5 mm, in ♀ 23—31 mm.
- 2 (3) Larger. Long. corp. 24—35 mm. Cerci in ♂ longer, 5—7 mm. With a longer, finer tooth lengthened into a longer tip bent backwards. Pronotum longer, 9,5—11,5 mm. Posterior femora longer, in ♂ 24,5—27,5 mm, in ♀ 27—31 mm. Elytra longer, 6,7—9 mm. Ovipositor 26—28 mm. Epiphalus mostly with 2, more rarely with 3 teeth in the apical part. *Ph. dalmatica maritima* ZEUNER
Area geographica: Southern Dalmatia, Dalmatian islands.
- 3 (2) Smaller. Long. corp. 20—26 mm. Cerci ♂ shorter, 4,5—5,5 mm, with a short robust tooth lengthened in an only very short tip bent backwards. Pronotum shorter, 8—9 mm. Posterior femora shorter, in ♂ 22—23 mm, in ♀ 23—25 mm. Elytra shorter, 4,8 to 5,8 mm. Ovipositor 21,5—23,6 mm. Epiphalus at the end with 2, 3, or also 4 teeth *Ph. dalmatica čvrstnicensis* m. nov.
Area geographica: Herzegovina, Čvrstnica planina (loc. class.).

- 4 (1) Posterior femora short. In ♂ 18—21 mm; in ♀ 20,7—21,7 mm.
- 5 (6) Larger. Long. corp. 24—30 mm. Pronotum longer, 9—11,2 mm. Posterior femora in ♂ and ♀ on the outer side unicoloured. Elytra at most $\frac{3}{4}$ of the length of the pronotum. Epiphalus usually with 3 teeth *Ph. dalmatica dalmatica* (KR.)
Area geographica: coastal regions of the northern and middle Adriatic Sea from Monte Maggiore to the northern spurs of the Velebit.
- 6 (5) Smaller. Long. corp. 18—24 mm. Pronotum shorter, 7—8,5 mm. Posterior femora on the outer side in ♂ with a more or less distinct longitudinal black band, in ♀ unicoloured or with a dark spot at the base. Elytra at least $\frac{4}{5}$ of the length of the pronotum. Epiphalus usually with 4 teeth . . . *Ph. dalmatica brachynota* RME.
Area geographica: Croatia, Bosnia, Herzegovina, Dalmatia — mostly in mountainous areas.

Pholidoptera dalmatica maritima ZEUNER

Pholidoptera dalmatica maritima ZEUNER ((partim) Mitt. Zool. Mus. Berlin 1931, Bd. 17, p. 430.

Pholidoptera maritima RAMME l. c. 1951, Bd. 27, p. 216, 220, 222, 316, 317.

This largest geographical race was described in detail by Zeuner and Ramme. After the records of the above-mentioned authors and after the Museum material from Fort Šanik (Coll. Kheil) and the vicinity of Dubrovnik its measurements are: long. corp. ♂ 24—30 mm; ♀ 28—35 mm; long. pron. ♂ 9,3—12 mm; ♀ 10—12,5 mm; elytra: ♂ 6,7—9 mm; cerci: ♂ 5—7 mm; fem. post.: ♂ 24,5—28 mm; ♀ 28—31 mm; tib. post.: ♂ 23—26,5 mm; ♀ 27,5—30 mm; ovipos. 26—30 mm. From the large specimens of the race *dalmatica* (KR.) it differs by the very strikingly long posterior legs, the longer cerci ♂, the longer ovipositor, and the longer elytra more intensively coloured yellowish brown and without black reticulation. The posterior femora are decorated on the outer side by a dark brown to black longitudinal band; more rarely occur specimens in which the black band is reduced in ♀ to only a small spot at the base as in normal specimens of the race *dalmatica* (KR.). In most specimens the sides of the pronotum project more distinctly than in *dalmatica*; but in one ♀ from Domanoviče (Herzegovina) the pronotum is configured almost as in the race *dalmatica*, and not even the median carina on the metazone is distinct on it, which in the race *maritima* is distinctly though weakly marked. There are here therefore evident transitions to the race *dalmatica* (KR.). A small specimen forming a transition to the mountain race *čtvrstnicensis* m. I know from Travnik in Bosnia.

The geographical distribution of this form lies in the southern part of Dalmatia and of the Dalmatian islands and extends here and there also fairly far into the interior. According to RAMME it inhabits mostly low-lying regions and is very agile and mobile. Thus it differs also ecologically from the short-femored, less mobile race *dalmatica* (KR.).

Pholidoptera dalmatica čvrstnicensis n. nov.

Pholidoptera dalmatica "Bosnische Rasse" ZEUNER l. c. 1931, p. 430 (partim).

Smaller race from the Čvrstnica Planina in Herzegovina, very closely related to the preceding subspecies, to which it attaches itself also geographically; but it differs from it by its smaller size. The body measurements are: long. corp. ♂ 20—24 mm; ♀ 23—26 mm; long. pron. ♂ 8—9 mm; ♀ 8—8,8 mm; fem. post. ♂ 22—23 mm; ♀ 23—25 mm; tib. post. ♂ 21 to 22 mm; ♀ 22—24 mm; elytra: ♂ 4,8—5,8 mm; cerci ♂: 4,5—5,5 mm; oviposit. 21,5—23,6 mm.

Pronotum with similarly indicated lateral edges as in *maritima*, but shorter and flatter, metazona shorter, posteriorly only slightly convex, with a more or less distinct median carina. Posterior femora on the outer side with a longitudinal brown or black band or only with one dark or by several contrasting dark lines indicated spot at the base. The coloration varies equally in ♂ and ♀. Cerci ♂ relatively long, of similar configuration as in *maritima*, but shorter, with a very characteristic, robust, short tooth (much shorter than in *maritima* and *dalmatica*) ending in an only very short, small tip bent backwards. Erytra of similar configuration as in *maritima*, yellowish brown, without black reticulation. Epiphali very variable, with 2, 3, or also 4 teeth at the end. In the specimens with 2 teeth these are either as in *maritima* in almost the same line or they are more turned to the outer side similarly as in the races *dalmatica* and *brachynota*, of which the epiphali with 3 or 4 teeth at the end are still more reminiscent. For the rest the epiphali are smaller and more gracile, with shorter arms than in the race *maritima*. From the races *dalmatica* and *brachynota* this new form differs very strikingly by its much longer legs, especially the posterior ones, from *dalmatica* by the unicoloured erytra without black reticulation, from *brachynota* by the much longer pronotum.

Typical specimens of this new form in the entomological collections of the National Museum come from the Čvrstnica Planina in the Herzegovina. Some of the specimens designated by Zeuner as „Bosnische Rasse“ probably also belong to it in so far as they do not belong to the ssp. *brachynota* RME.

Holotype ♂, *allotype* ♀, *paratypes* 5 ♂♂, 3 ♀♀. Čvrstnica Planina in Herzegovina VII 1927, Dr. Štěpánek and Dr. Táborský lgt. In Coll. Mus. Nat. Pragae.

Pholidoptera dalmatica dalmatica (KR.)

KRAUSE 1878 Orthopt. Fauna Istriens, p. 63, Tab. IV, Fig. 1. — ZEUNER l. c. 1931, p. 430. — RAMME l. c. 1951, pp. 216—220, 222, 316, 317.

Istrian and North Dalmatian race attaining a considerable size. Long. corp. ♂ 24—25 mm; ♀ 25,5—30 mm; long. pron. ♂ 9,7—10,8 mm; elytr. ♂ 5,4—6 mm; cerci ♂ 3,5—4,2 mm; fem. post. ♂ 18,5—19,8 mm; ♀ 20,7—21,5 mm; tib. post. ♂ 17,3—19,3 mm; ♀ 19,1—21 mm; ovipos. 20—23,5 mm. Well described by RAMME (l. c.), easily distinguishable from the 2 preceding forms by the much shorter posterior femora. These are usually more light coloured, without any longitudinal black band on the outer side, unicoloured or with only a small black spot at the base. Pronotum

of a more cylindrical shape with less marked lateral edges. Elytra shorter, more light coloured with a contrasting black reticulation. Epiphali usually with 3 small teeth curved outwards at the end, more rarely and usually only on one side with 4 teeth. The shape of the epiphali is quite similar also in some specimens of the race *čvrstnicensis* m.

According to RAMME the distribution of this race extends from Monte Maggiore to the northern spurs of the Velebit and reaches also into the higher regions of the interior. The Museum specimens labelled only „Dalmatia“ derive presumably from Sušak.

Pholidoptera dalmatica brachynota RME.

RAMME 1951 l. c. pp. 219—220, 222. — *Pholidoptera dalmatica* “Bosnische Rasse” ZEUNER (partim) l. c. 1931, u. 430.

This race adjoins in the mountain regions in the north the distribution of the race *dalmatica* (KR.), farther to the southeast the distribution of the race *maritima*, and in the Herzegovina the area of the race *čvrstnicensis*; it combines certain characters of all the above three forms. The measurements are long. corp. ♂ 18—23 mm; ♀ 22—24 mm; long. pron. ♂ 7—8,2 mm; ♀ 8,3—8,5 mm; elytra: 5—6,7 mm; cerci: 4—4,7 mm; fem. post. ♂ 18—21 mm; ♀ 21—21,7 mm; tib. post. ♂ 17,5—20 mm; ♀ 20—21 mm; ovipos. 21—22 mm. By the relatively short hindlegs it approaches the race *dalmatica*, from which it differs, however, by its smaller size and the shorter pronotum of similar configuration as in the race *maritima*, i. e. flatter with more marked lateral edges and with a more distinct posterior carina; and by its longer elytra. From the race *maritima* it is easily distinguishable by the much smaller size, the shorter hindlegs, the shorter pronotum and the shorter cerci in ♂. This form resembles most the race *čvrstnicensis*, from which it differs, however, by its shorter pronotum, the shorter hindlegs and the shorter elytra. The epiphali have at the end mostly 4 minute teeth turned outwards, which is only rarely the case in the race *čvrstnicensis*.

Ramme recorded Senj in Croatia as loc. class., further the Velebit and some localities in Bosnia and Herzegovina, e. g. Tisovica (Prenj Planina). It is not excluded that this race was formed by the mixing of a mountain population of the race *dalmatica* of the more northern region with the mountain form of the race *maritima* (*čvrstnicensis* m.) formed in the southern region of the distribution of the species.

Pholidoptera macedonica RME.

RAMME 1928 D. Ent. Z., p. 303; 1951 Mitt. Zool. Mus. Berlin Bd. 27, pp. 99—101. — ZEUNER 1931 l. c. p. 430. (*Ph. dalmatica* ssp.) — RAMME 1939 l. c. (*Ph. aptera Karnyi* EBNER?).

This species, originally described by RAMME after 1 ♂ from the Plađuša Planina in Macedonia, later reported by RAMME from Vodna near Skoplje, is represented in the Museum material by 1 ♂ from Kajmakčalan

(Komárek lgt.) on the frontier of Yugoslavia and Greece. It is evidently a specimen of a small mountain form. Its measurements are

♂ from Kajmakčalan:		compared with the measurements given by RAMME for ♂
long. corp.	19.5 mm	20.7—21.3 mm
long. pron.	7.2 mm	8 — 8.6 mm
elytra	4.6 mm	4.3— 4.6 mm
fem. post.	22 mm	23.5—25 mm
tib. post.	21 mm	22.3—24 mm

Specifically it belongs clearly to *Pholidoptera macedonica* RME. according to the characteristic shape of the epiphali, which corresponds to RAMME's description and figuring. Also in the other characters and in the coloration it agrees with Ramme's description.

Pholidoptera rhodopensis m. n. spec.

Species from the affinity of the species *macedonica* RME., from which it is, however, distinguished by the specifically different shape of the epiphali and by the longer, almost completely straight, broad ovipositor.

Species of medium size. Long. corp. ♂ 18,5 mm; ♀ 20 mm; long. pron. ♂ 7,8 mm; ♀ 8,8 mm; elytra ♂ 6 mm; fem. post. ♂ 22 mm; ♀ 24 mm; tib. post. ♂ 20,5 mm; ♀ 23 mm; oviposit. 22,5 mm. Head with a relatively narrow fastigium which is in ♂ barely as broad, in ♀ a little broader than the basal antennal article. Head in ♂ anteriorly with a black, lyre-shaped drawing, in ♀ the whole head is light yellowish brown, without any black drawing. Pronotum above flat, posteriorly slightly convex, with a distinct longitudinal carina in the middle on the metazona. Edges of the pronotum in ♀ evenly rounded, in ♂ more distinctly marked. The lateral lobes in ♂ with a broad light margin, which is sharply delimited in the posterior part against a lateral black spot, strongly shortened anteriorly, so that anteriorly the light margin passes broadly into the anterior brownish coloured part of the pronotum. In ♀ the coloration is similar and only the lateral black spot is still more reduced. The elytra extend in ♂ beyond the fourth abdominal tergite, are coriaceous, ochre coloured, in the basal part darker brown. In ♀ the elytra are developed only as small lobes projecting on the sides of the pronotum. They, too, are light ochraceous, finely coriaceous. The posterior femora are yellowish brown, above at the base with a blackish spot, on the outer side with a broad, shinily black longitudinal band, and on the inner side with several transversal black lines. In ♀ of similar coloration, but the black spot and band are smaller, and the inner side of the femora is unicoloured. Cerci in ♂ in the basal part broader, otherwise on the whole slender, in the first fourth with a normal tooth of a similar configuration as in *Ph. macedonica*. Subgenital plate in ♂ shallowly triangularly indented. In ♀ the subgenital plate is simple, without lateral processes, similarly as in *Ph. macedonica* RME. and *aptera* Fabr.

Ovipositor almost straight, 22.5 mm. long, very broad, at the base more than 2.5 mm., in the middle about 2 mm. wide.

Holotype ♂ Kosteneč Bulgaria Rhodope VII 1935 Dr. K. Táborský lgt. *Allotype* ♀ detto. Another specimen, a full-grown larva ♂ of the same coloration as the adult imago, with distinct lobes of the elytra projecting from under the pronotum.

The shape of the epiphali is a very characteristic feature of this species. Fundamentally the epiphali are developed in a manner similar to that in the species *macedonica*, but both arms diverge still less and are at the end terminated by 7 very minute teeth arranged almost in one row.

From the geographical species *Ph. aptera* FABR. this new species is specifically distinguished by the shape of the epiphali, the much stronger, broader and straighter ovipositor, and the lighter coloration, by which it resembles far more the forms of the geographical species *dalmatica*. But it is distinguished from all these forms by the entirely different shape of the epiphali and by the simple subgenital plate in ♀.

It is obviously a species having a common phylletic origin with *Pholidoptera macedonica* RME., and which differentiated in geographical isolation in the Rhodope Mts., where it is probably an endemic species, just as *Ph. macedonica* RME. is an endemite in the West Macedonian mountain region.

***Pholidoptera aptera* FABR.**

FABRICIUS 1794 (*Locusta aptera*) Ent. Syst. II, p. 45.
FISCHER Orth. Europ. 1853, pp. 262—263.

In the material of the entomological collections it is possible to distinguish 5 geographical forms according to the detailed characters on the epiphali and according to the differences in the proportions of the body, in the drawing of the pronotum, in the shape of the subgenital plate of ♂, and according to the length and curvature of the ovipositor; each of these forms inhabits a definite area of distribution. They are: *Pholidoptera aptera aptera* FABR., in the region of the Alps, *Ph. aptera slovacica* m. nov. of the West Carpathian region, *Ph. aptera bohémica* m. nov. of Central Bohemia, *Ph. aptera karnyi* EBNER of Bosnia, Dalmatia and Istria, *Ph. aptera bulgarica* m. nov. of Eastern Bulgaria and Bulgarian Macedonia.

Survey of the Distinguishing Characters of the Different Geographical Races of the Species *Pholidoptera aptera* FABR.

- 1 (4) Lateral yellow border of the pronotum anteriorly pointedly narrowed and contrastingly delimited (especially in ♂).
- 2 (3) On an average larger form from the Alpine region. Epiphali slightly arcuately curved, their arms broad, little narrowed towards the tip *Pholidoptera aptera aptera* FABR.
- 3 (2) On an average smaller form from the West Carpathian region. Epiphali more strongly arcuately curved, arms broader, more narrowed towards the tip . . *Pholidoptera aptera slovacica* m. nov.

- 4 (1) Lateral yellow border of the pronotum anteriorly unnarrowed passing diffusely into the anterior lobe of the pronotum.
- 5 (6) Subgenital plate ♂ shallowly roundedly indented; pronotum shorter. In ♂ 7—7.5 mm., in ♀ 7.4—8.1 mm. Ovipositor curved in sabre-shape, shorter. Coloration lighter, little contrasted. Posterior femora and tibiae shorter. Epiphali with the arms only insignificantly narrowed towards the tip. Bohemia
. *Pholidoptera aptera bohemica* m. nov.
- 6 (5) Subgenital plate in ♂ angularly indented, pronotum longer. In ♂ 7.2—9 mm., in ♀ 7.3—9.4 mm. Ovipositor longer, almost straight, or only slightly bent. Posterior femora and tibiae longer.
- 7 (8) Subgenital plate in ♂ more shallowly angularly indented. Elytra longer, less contrastingly coloured. Posterior femora and tibiae shorter. Epiphali less arcuately curved. — Bosnia, Dalmatia, Istria, Bulgaria ? *Pholidoptera aptera karnyi* EBNER.
- 8 (7) Subgenital plate in ♂ more deeply and almost acuteangularly indented. Elytra shorter, very contrastingly coloured. Posterior femora and tibiae longer. Epiphali with the arms strongly arcuately diverging. Eastern Bulgaria, Bulgarian Macedonia
. *Pholidoptera aptera bulgarica* m. nov.

***Pholidoptera aptera aptera* FABR.**

FABRICIUS (*Locusta aptera*) 1794 Ent. Syst. II, p. 45. — Typus: Italia.

FISCHER Orthopt. europ. 1853, pp. 232—233.

FLIEBER (*Pterolepis lugubris*) Syn. europ. Orthopt., Lotos III, 1854, p. 168 (Sep. pp. 44—45).

RAMME 1951. Mitt. zool. Mus. Berlin, Bd. 27, pp. 99—101.

Alpine race inhabiting, as RAMME (l. c.) reports, the whole region of the Alps. It has the epiphali with relatively broad arms only slightly narrowed towards the tip and relatively little arcuately curved.

Proportions of the body: long corp. ♂ 20—23 mm; ♀ 22—25 mm; long. pron. ♂ 8—8.2 mm; ♀ 8—9 mm; long. elytr. ♂ 6—6.3 mm; fem. post. ♂ 21.5—23 mm; ♀ 22—24 mm; tib. post. ♂ 20.2—22 mm; ♀ 21—23 mm; ovipositor 19—21 mm.

Subgenital plate in ♂ relatively rather deeply triangularly indented. Ovipositor in length rather variable, not too much but always distinctly curved. Pronotum above slightly vaulted, posteriorly relatively broad, metazona in relation to the prozona relatively short, median rib on the metazona slightly indicated or almost diffuse. The coloration specially characteristic for this race is the yellow lateral border of the pronotum, anteriorly pointedly narrowed and in front contrastingly delimited. This character is mostly preserved in both sexes, more rarely occur ♀ with a lighter coloured pronotum, in which this border passes in front broadly and more or less diffusely, into the brown coloration of the pronotum (1 ♀ Bozen). The upper side of the pronotum without any black drawing is in the middle at the base with a small dot-like black spot, which is mostly lacking in ♀.

Elytra in ♂ medium long, coriaceous, brown ochraceous, at the base not strikingly darkened. In ♀ likewise brown ochraceous. Total coloration brownish to blackish gray, fairly contrasting. The proof specimens in the Museum collections are: Eisenkappel Kärnten, Ital. Alps, Bozen.

Pholidoptera aptera slovaca m. nov.

BRUNNER—WATTENWYL 1882 Orthopt. europ., p. 342 (partim).

OBENBERGER 1926, Rovnokřídly hmyz republ. Českoslov. p. (partim).

Geographical form from the southern margin of the West Carpathians, which attaches itself geographically and in the morphological characters and especially in the coloration of the pronotum to the Alpine race. Epiphali of similar configuration as in the Alpine race, but their arms are finer and distinctly narrowed towards the tips and more arcuately bent. The terminal largest tooth is longer and more elongated. The other, smaller, teeth are similarly variable as in the Alpine race, but are mostly finer. Measurements of the body: long. corp. ♂ 17—20.5 mm; ♀ 17—23 mm; long. pron. ♂ 7—7.9 mm, ♀ 7.5—8.2 mm; elytra ♂ 5—6 mm; fem. post. ♂ 21—21.5 mm; ♀ 23—24.5 mm; tib. post. ♂ 20—20.4 mm; ♀ 22—23.5 mm; ovipositor 20—21 mm.

Compared with the Alpine race this Carpathian race is on an average smaller, with shorter elytra and relatively somewhat shorter pronotum which for the rest has a similar configuration as in *aptera aptera* FABR.; the median length rib is almost always distinct, the lateral black spot is shinningly black, the yellow lateral border is similarly as in the Alpine race anteriorly pointedly narrowed and contrastingly delimited, and this applies to both sexes. Also the sides of the meso- and metathorax are intensively shining black coloured, and this black coloration extends in ♂ as a broad band to the whole abdomen. In the lighter coloured ♀ this broad black band exists at least on the anterior abdominal segments and is indicated on the following segments in the form of black, contrasting spots so that the total coloration is much darker than in the Alpine race. A black drawing is often indicated on the upper side of the pronotum in ♂. The black dot in the middle of the base of the pronotum is always developed in both sexes. The elytra are more finely coriaceous, more darkly brown ochraceous, with a lighter hue in the posterior third. The subgenital plate in ♂ is somewhat more deeply triangularly indented. Ovipositor of similar shape and curving as in the Alpine race. Loc. class.: Zadielská dolina, Slovakia mer.

Holotype ♂ Zadielská dolina VII 1951 Mařan lgt. *Allotype* ♀ ditto. *Paratypes* 4 ♂, 4 ♀ ditto. Other specimens ♂♀ Voznice on the Hron (5. VII. 1952 Komárek lgt.) 1 ♀; Inovec.

Pholidoptera aptera bohemica m. nov.

OBENBERGER 1926, l. c. (*Ph. aptera*) partim.

The northernmost race, living obviously as a relic of the Riss-Wurm Interglacial in the region of Central Bohemia. In the shape of the epiphali it attaches itself to the Alpine race *aptera aptera*. The arms of the epiphali

are before the end only slightly narrowed and are slightly more arcuately diverging than in the Alpine race. Also the teeth at the upper side of the arms are similar to those in the Alpine race; only the number of tiny teeth is here usually greater than in the latter (3—4 instead of 2—3). The subgenital plate in ♂ is only shallowly roundedly indented. Measurements of the body: long. corp. ♂ 18.5—24.5 mm; ♀ 22.5—24.5 mm; long. pron. ♂ 7—7.5 mm; ♀ 7.4—8.1 mm; elytra ♂ 5.6—7 mm; fem. post. ♂ 20.5—22 mm; ♀ 22—23 mm; tib. post. ♂ 19.5—21 mm; ♀ 21—22 mm; ovipositor 17.5—18 mm.

As the measurements show, this new race is distinguished from the Alpine race by its relatively short pronotum, the shorter legs, and especially by the shorter, more strongly bent ovipositor. The pronotum is posteriorly usually more broadened than in the other races of this species, the median rib on the metazone is often almost entirely indistinct. The lateral dark spot of the pronotum is brownish black, the yellow lateral border is not pointedly bent anteriorly as in the preceding forms, but is equally wide and ends diffusely at the anterior lobe of the pronotum (♂) or connects broadly with the light coloration of the anterior side of the pronotum (♀). A black dot in the middle of the base of the pronotum is lacking in both sexes. The sides of the meso- and metathorax are usually only in their part brownish black coloured (♂); the dark bands on the sides of the abdomen are brownish black, little contrasting. In ♀ the coloration is still much lighter, the dark bands on the sides of the abdomen are often completely lacking. Thus this race has the lightest coloration. Also the elytra are lighter coloured, dirty straw coloured, the delimitation against the yellowish brown disc of the elytra is more contrasting than in the preceding races, but not so contrasting as in the following two races of the Balkan peninsula.

Holotype ♂ Nová Huť Bohemia centr. coll. Nickerl; *allotype* ♀ ditto. *Paratypes* 1 ♂ Klíčava ♀ Vůznice. Other specimens: Nová Huť, Litoměřice.

Pholidoptera aptera karnyi EBNER.

EBNER 1908 Verh. zool.-bot. Ges. p. 334.

RAMME 1951 l. c. p. 99—101.

This form was described by Ebner after 1 ♀ from Čajnica in Bosnia. It is therefore right to correlate especially the Bosnian, Dalmatian and Istrian races with this form. The epiphali are in the Dalmatian specimens (Gravosa, Fort Šanik) of similar type as in *aptera aptera*, but their arms are more slender, more arcuately curved, and the teeth at the end finer, therefore more resembling the epiphali in the race *slovaca*. The subgenital plate in ♂ is not too deeply indented. Measurements of the body: long. corp. ♂ 19.5—24 mm; ♀ 21.5—23.5 mm; long. pron. ♂ 7.3—8.3 mm; ♀ 7.3—9.4 mm; elytra 5.3—7 mm; fem. post. ♂ 18.5—23 mm; ♀ 21.8—23.8 mm; tib. post. ♂ 18.7—22 mm; ♀ 20—23.6 mm; ovipositor 17.3—21.5 mm.

The pronotum has in this form a similar configuration as in the typical *aptera aptera*, the longitudinal carina on the metazone is more or less distinctly indicated; the lateral dark spot is posteriorly brownish black, anteriorly lighter. The yellow border of the pronotum ends in front dif-

fusely. The elytra are similarly coloured as in the typical *aptera aptera*, but posteriorly always a little lighter, a coloration which contrasts distinctly with the dark coloration of the elytra. Loc. class: Čajnica, Bosnia. In the Museum collections are specimens from Gravosa (Dalmatia) and from Fort Šanik.

RAMME placed to this form also specimens from northern, central and eastern Bulgaria, which presumably form a transition to another well characterisable race from the southern most part of Bulgaria.

Pholidoptera aptera bulgarica m. nov.

Ph. aptera karnyi RAMME 1951, pp. 99—101, partim?

Southernmost race from the region of southern Bulgarian Macedonia and from the Strandža Planina in eastern Bulgaria. Epiphali with the arms strongly divergent, narrowed towards the tip, with a long and strongly elongated apical tooth and, with 2—4 further tiny teeth. Arms at the base far from each other, more than in the other geographical forms. Subgenital plate in ♂ deeply triangularly indented. Measurements of the body: long. corp. ♂ 20—22.5 mm; ♀ 22.5—25 mm; long. pron. ♂ 7.2—9 mm; ♀ 8—9 mm; elytra 4.8—5.2 mm; fem. post. ♂ 24—25 mm; ♀ 25—26 mm, tib. post. ♂ 22.5—23 mm; ♀ 24—25 mm; ovipositor 19—21 mm.

It will be seen from the measurements that this race is characterised by the longest legs, by which it is distinguished from the race *karnya*, and by the shortest elytra. The pronotum is mostly narrower than in the other forms, with a more elongated metazone in ♂, and in both sexes often with a black contrasting drawing. The basal black dot on the pronotum is in both sexes always distinct. The black lateral spot of the pronotum is intensive and shiny, posteriorly pointedly lengthened towards the upper lateral margin of the pronotum. In ♀ the drawing is similar, but in front the coloration is lighter. The yellow border of the pronotum is similarly as in the race *karnyi* in front indistinctly delimited and passes especially in ♀ diffusely into the anterior part of the lighter coloured lobes of the pronotum. The head is in front also mostly black or at least with an intensively black contrast drawing. Meso- and metasternum on the side in ♂ entirely black, in ♀, at least in the upper part. Dark band on the abdomen in ♂ intensively black, in ♀ indicated at least by black spots contrasting with the dorsal part of the abdomen, which is light yellowish brown. Elytra in ♂ very contrastingly coloured with dark brown disc and light yellowish coloured margins. The short elytra in ♀ are also straw yellow coloured. Ovipositor fairly variable in length and curvature.

Holotype ♂ *allotype* ♀ Zeitinburun, Bulg. or. mer. VII. 1934 Dr. Táboorský lgt. *Paratypes* 4 ♂♂ and 1 ♀ ditto. Other specimens: 1 ♂ Kalovo Bulg. or. VII. 1936 Dr. Táboorský lgt.: 1 ♀ Bosna Strandža Planina Dr. Táboorský lgt. 1 ♂ Gara Pirin Kresnensko defilé Bulg. Mac. VI. 1929 Mařan lgt. 1 ♂, 2 ♀♀ Kresnensko defilé VI. 1935 Dr. Táboorský lgt.

Pholidoptera transsylvanica FISCH.

FISCHER 1852 (*Thamnotrizon transsylvanicus*) Orthopt. europ., p. 264, Tab. XIII, Fig. 14.

BRUNNER-WATTENWYL 1882 Europ. Orthopt., pp. 340—341.

RAMME 1951 Mitt. Zool. Mus. Berlin, pp. 72, 221.

The specimens of this species in the entomological collections of the National Museum from the northern Carpathians, from the localities: Voročkovo, Kuzy, Pasika, Osoj in the Carpathian Ukraine, and from eastern Slovakia: from Stučice (Czechoslovak-Soviet frontier) and Vihorlat have much more robust epiphali with much wider arms, provided at the end with larger teeth than the specimens from the Transylvanian Carpathians (Predeal). The measurements of the specimens from the Carpathian Ukraine and from Stučice are larger than those of the specimens from the Transylvania Alps; the specimens from the Vihorlat (6. IX. 1952 Moucha lgt.) are smaller, but their epiphali are just as robust as in the specimens from the localities mentioned above. Whether we have here in the region of the northern Carpathians a defined geographical race will have to be ascertained by a comparison of a larger material from Transylvania and Mehadia.