

## Contribution to the synonymy of *Blaps lethifera* MARSHAM, 1802 (Coleoptera, Tenebrionidae)

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### Taxonomy, variability

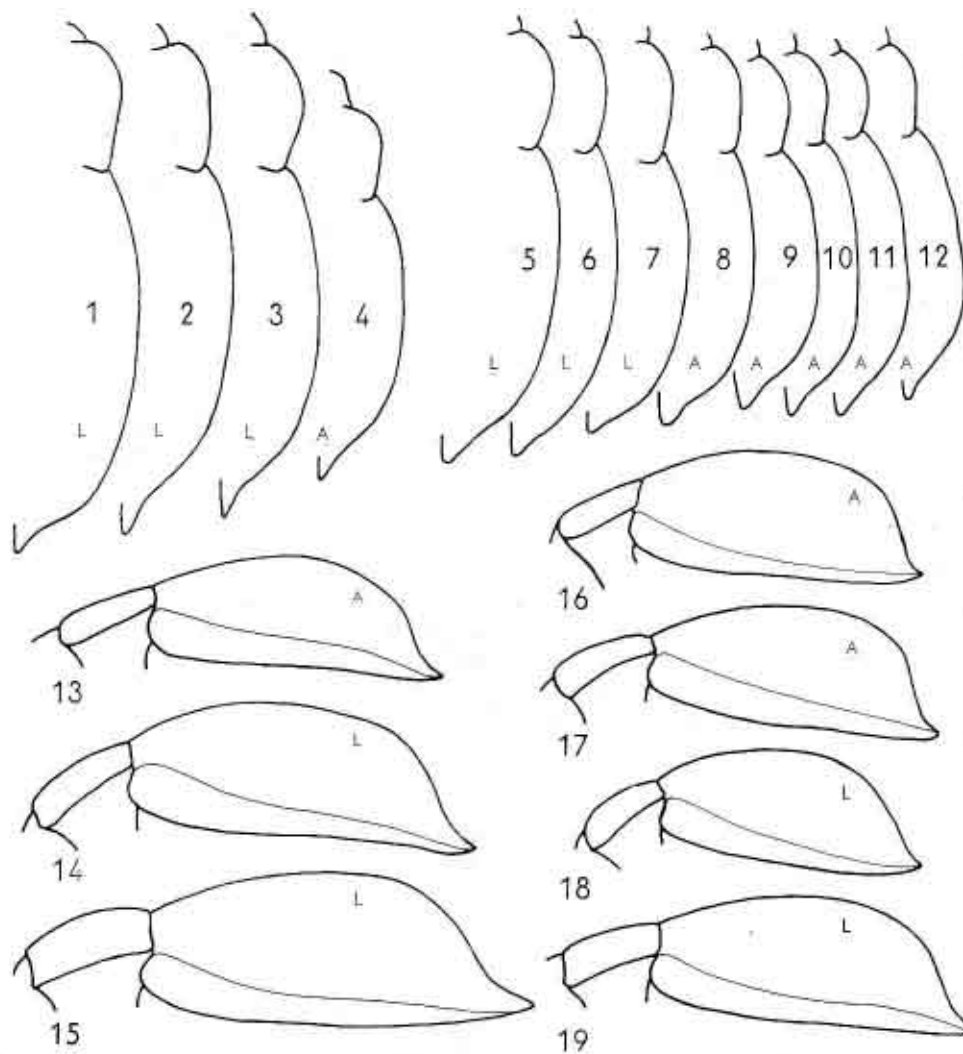
**Abstract.** *Blaps abdita* PICKA, 1978—9 is synonymized with *B. lethifera* MARSHAM, 1802 on the basis of a study of variability and the taxonomical review of *B. lethifera* and its synonymous species, viz. *B. reflexicollis* MILLER, 1858 and *B. milleri* SEIDLITZ, 1893. The synonymization of *B. milleri* stated by Kaszab (1957) is confirmed.

The wide variability and the extensive area of distribution of *Blaps lethifera* MARSHAM, 1802 were the reasons for some authors to describe the extremely developed specimens as independent species. The systematic position of *B. lethifera* became complicated and the opinions on this species varied in the past.

The wide synonymy and position of *B. lethifera* were solved by SEIDLITZ (1893) and by KASZAB (1957). PICKA (1978, 1979) rehabilitated two old synonyms of *B. lethifera*, viz. *Blaps reflexicollis* SOLIER, 1848 and *Blaps milleri* SEIDLITZ, 1893, as independent species and described a new species *Blaps abdita* PICKA, 1978—9 from South Moravia and South Slovakia. The present paper concerns the variability of *B. lethifera*, *B. abdita*, *B. milleri* (sensu PICKA, 1978, 1979) and *B. reflexicollis* (sensu PICKA, 1978, 1979) and solves their status.

### HISTORY

With the description of *B. abdita* PICKA revoked the problem of small specimens of *B. lethifera*, the history of which began with MILLER (1858). Miller received, from R. Türk, a number of small specimens of the genus *Blaps* collected in the vicinity of Neusiedlersee and identified them, incorrectly, as *Blaps reflexicollis* SOLIER, 1848. The same author identified a number of specimens, received by R. Sacher from Pest and determined as *Blaps pannonica* FRIVALDSKY, 1848 (= *halophila* FISCHER, 1820—2), as *B. reflexicollis*. The occurrence of *B. reflexicollis* in Austria and MILLER's own characteristic of *B. reflexicollis* were published in the paper on the genus *Blaps* near Vienna (MILLER, 1858). In his paper MILLER accented the high degree of similarity between *B. reflexicollis* and *B. lethifera*. *B. reflexicollis* differs according to MILLER (1858) from *B. lethifera* only by the quadrate pronotum and by elytrae being a little more convex than those of *B. lethifera*. The body length is equal to the body length of the shortest specimens of *B. lethifera*. MILLER (1858) did not give any concrete dimensions. MILLER's conception of *B. reflexicollis* differs entirely from the original one by SOLIER (1848), who



Figs. 1-12. The lateral side of body of *Blaps abdita* (A) and *B. lethifera* (L): 1-4 males; 5-12 females. *B. abdita*: holotype (4), allotype (8) and paratype (9). Figs. 13-19. The dorsal part of pronotum and elytrae in *B. abdita* (types - A) and in *B. lethifera* (L), 13-15 males; 16-19 females.

understood *B. reflexicollis* to be 20-27 mm long beetles with 4.-7. article of antennae longer than wide and with parallelsided pronotum. REDTENBACHER (1874) based his key of Austrian species of the genus *Blaps* on MILLER's paper. *B. reflexicollis* only is characterised by body length of 20 to 26 mm as by SOLIER (1848). Sporadic data about the occurrence of *B. reflexicollis* in Austria and in Hungaria are given by KUTHY (1896) and by BRANCSIK (1906) and these data are cited by more recent authors until today. These data are evidently based on the false determination carried out by REDTENBACHER (1874), because this was the only identification handbook treating

*B. reflexicollis* and it was widely used for the identification of beetles in this territory in the period 1874–1900.

SEIDLITZ (1893) was aware of the fact that MILLER (1858) understood *B. reflexicollis* to include small specimens. Therefore he gives *B. reflexicollis* as a species distributed in South Russia and having the body length of 20 to 25 mm, according to its original description of SOLIER (1848). On the base of old MILLER's description SEIDLITZ described a new species, viz. *B. milleri*. This species is characterized by the body length of 15–20 mm, by approximately quadratic pronotum, by more convex elytrae and by a little longer mucro than in *B. lethifera*. Similarly as MILLER (1858) he accentuated the very high degree of similarity between *B. milleri* and *B. lethifera*. Concerning the species status of the new taxon SEIDLITZ (1893) writes: "MILLER beschrieb die Art zuerst und hielt sie für *B. reflexicollis* SOLIER, doch hat SOLIER eine grössere Art von 21–24 mm Länge vor sich gehabt. Da der Name *reflexicollis* der Solierischen Art verbleibt, ist für die Miller'sche ein neuer Name einzuführen . . . . Immerhin stehen sich die beiden Arten so nahe, dass vielleicht noch irgendwo Übergangsformen zwischen ihnen am Leben sind. Dann hätte man die *Bl. Milleri* als Varietät und *lethifera* als Stammart zu betrachten, da letztere den weiteren Verbreitungsbezirk hat." As a synonym of *B. milleri* is given *B. reflexicollis* MILLER, 1858. This, however, is a mistake, since MILLER (1858) understood *B. reflexicollis* to be a quite different species than did SOLIER and he gave his own characteristics of *B. reflexicollis* only, but he did not use any new name. *B. milleri* was accepted by more European authors (REITTER, 1911; FLEISCHER, 1927; ROUBAL, 1936; HORION, 1951; MADER, 1951) as an independent species. KASZAB (1957) synonymized *B. iermilii* with *B. lethifera*.

The new specie *B. abdita* was described in two papers (PICKA 1978, 1979). The description in first paper (PICKA, 1978) is rather laconic and shows many formal unperfections. The description in second paper (PICKA, 1979), formally correct and more detailed, is published as description of new taxon, though *B. abdita* was described one year ago. According to PICKA (1978, 1979) *B. abdita* is characterized by the following characters: the elytrae are more convex and in the hind part more sloped down; the body length is given 18–20 mm in the first paper, but 20–21 in the second paper; the pronotum is convex in the first paper, but flat in the second one; the mucro is short in both sexes; the paramerae of aedeagus are fused, they have a suture in whole length of the fused part, the basis of parameres is straight. The phallobasis has a triangular excision occupying the fifth of the basal tegment length.

#### Material examined

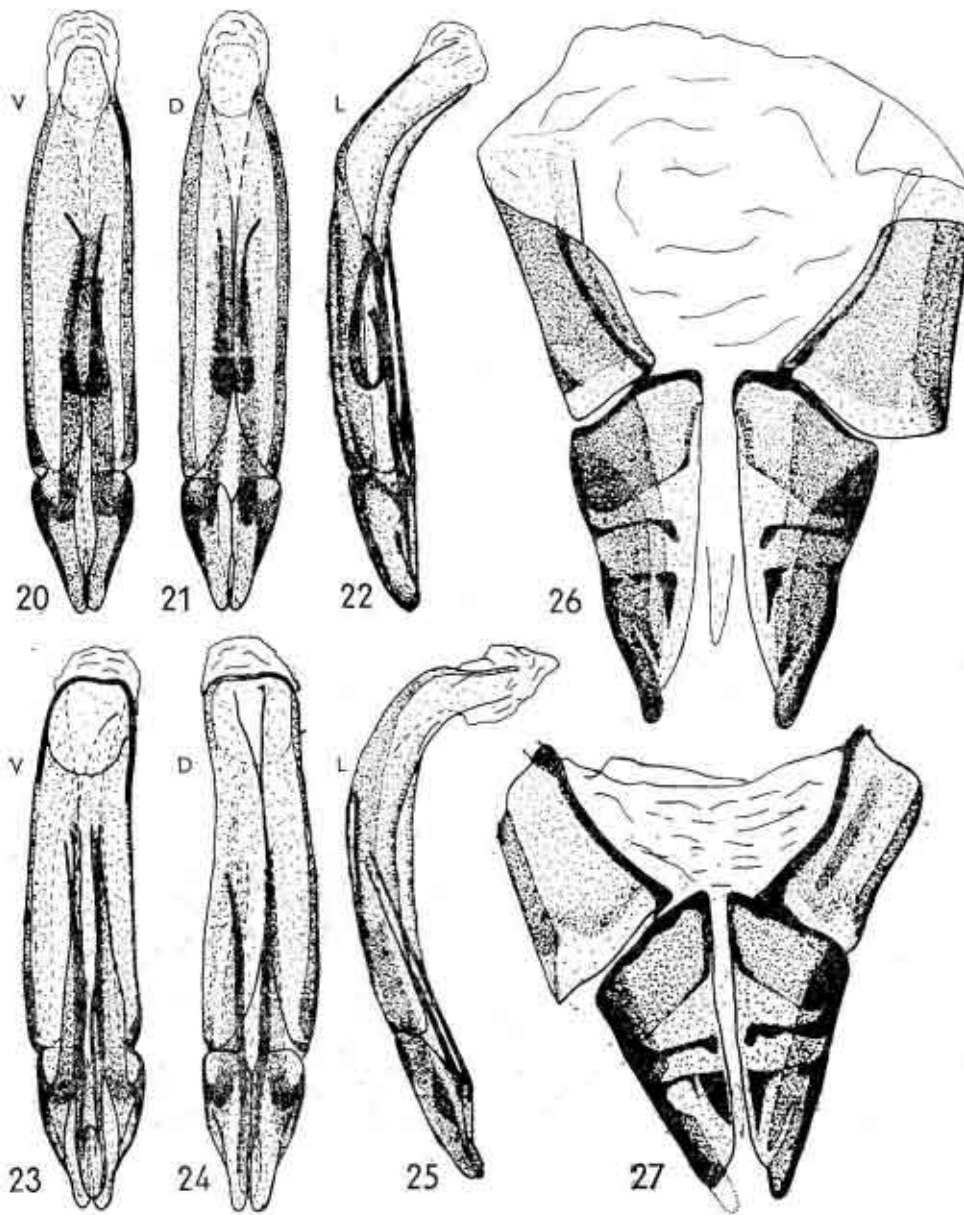
Type specimens: *B. abdita*: holotype, allotype and paratype, coll. Nat. Mus. Praha.

*B. lethifera*: 399 ex., mostly from middle Europe and Balkan, det. N. Skopin, 57 ex. from Hungary, det. Kaszab, 44 ex. from Slovakia, det. Kaszab, 17 ex. from Roumania and Bulgaria, det. author, coll. Nat. Mus. Praha, Hung. Nat. Mus. Budapest, Slov. Nat. Mus. Bratislava, and author.

*B. abdita*: 3 ex., from South Moravia and South Slovakia, det. J. Picka, coll. J. Gottwald, Praha.

*B. reflexicollis*: 3 ex., from South Moravia and South Slovakia, coll. J. Gottwald, Praha, det. J. Picka.

*B. milleri*: 3 ex., from South Moravia and South Slovakia, coll. J. Gottwald, Praha, det. J. Picka.



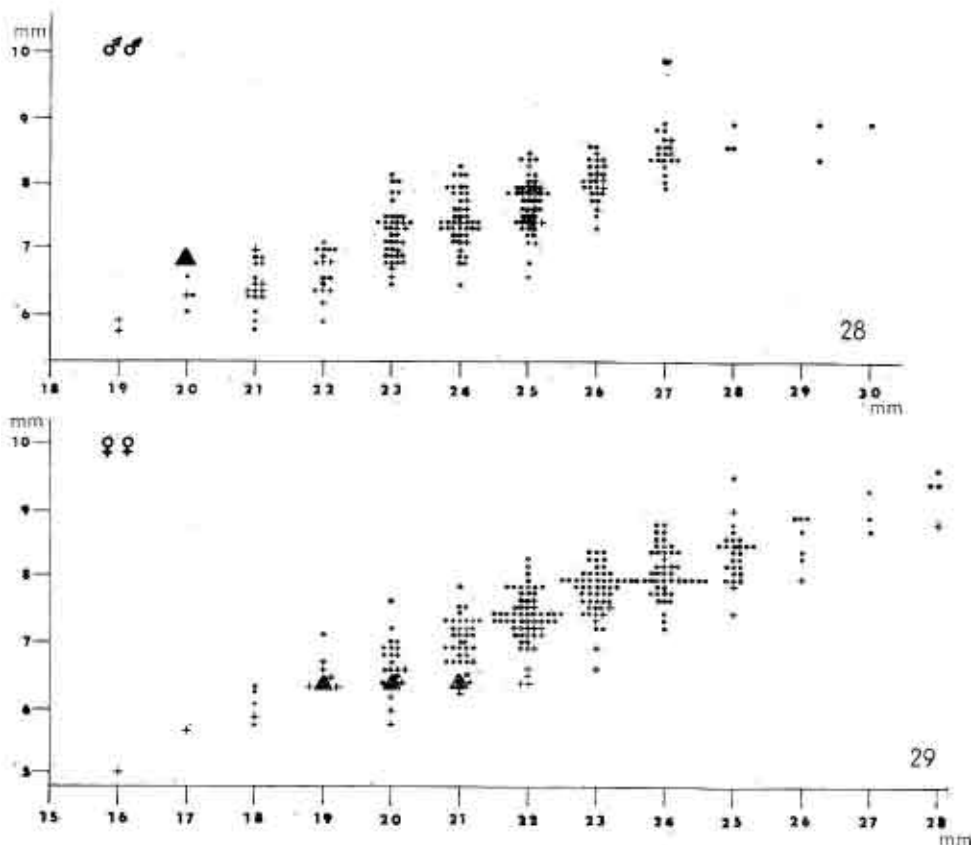
Figs. 20—25. Aedeagus of *Blaps abdita* and of *B. lethifera* in ventral (V), dorsal (D) and lateral (L) views. Figs. 26—27. 8th and 9th abdominal segment of female of *B. lethifera* (26) and *B. abdita* (27). *B. abdita*, holotype (20—22), allotype (27).

#### RESULTS AND DISCUSSION

During a revision of the type material of *B. abdita* I found that all characters given in both descriptions (PICKA 1978, 1979) as differences between *B. abdita* and *B. lethifera* did not correspond with the types. The convexity

of elytrae in *B. abdita* is spherical (PICKA, 1978: Fig. 8; PICKA, 1979: Fig. 2), the elytrae of types are, however, only weakly convex in the first two thirds (Figs. 13–19). The angle between pronotum and elytrae, in lateral view, is  $135^\circ$  (PICKA, 1978: Fig. 8; PICKA, 1979: Fig. 2) but in the types it is about  $150\text{--}160^\circ$  as in *B. lethifera* (Figs. 13–19). It is evident in longer specimens of *B. lethifera* that the convexity of elytrae is weaker in first two thirds of length than in shorter specimens (Figs. 13–19).

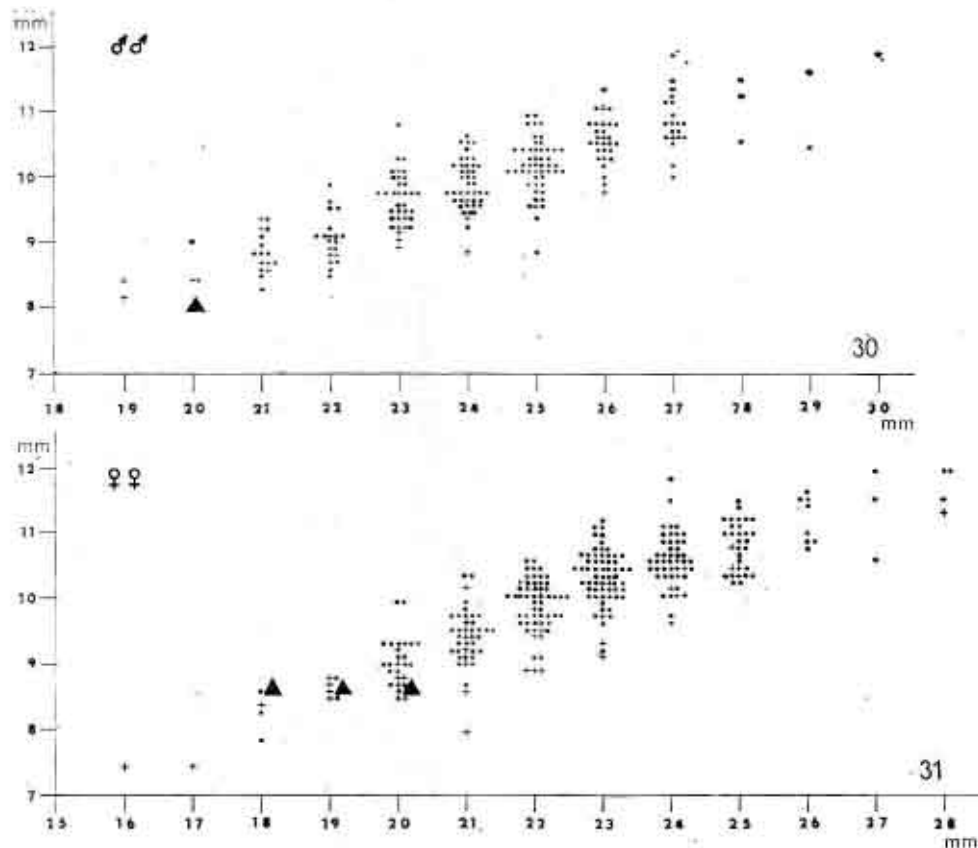
The pronotum of all specimens examined is flat in lateral view, corresponding with the second description (PICKA, 1979), but contradicting the first one (PICKA, 1978) and the pictures in both descriptions. The lateral side of body and the length of mucro are of the same form in *B. abdita* and in *B. lethifera* (Figs. 1–12). The females of both species are usually thicker and more convex than males. The body length of *B. abdita* is posited within the variation range of *B. lethifera*. All specimens examined are found to be distributed near the lower border of the variation range of *B. lethifera* (Figs. 28–31, 35). The suture between two fused parts of parameres in holotype is as long as in *B. lethifera* (Figs. 20–27), the basis of each of parameres is



Figs. 28–29. Dispersion diagram of body length (abscissa) and pronotum width (ordinate): 28 – males of *Blaps abdita* and *B. lethifera*, 29 – females of *B. abdita* and *B. lethifera*. ▲ types of *B. abdita*, + Pannonian populations of *B. lethifera*, ● other material of *B. lethifera*.

rounded out, not straight as shown by PICKA (1978, 1979). The middle groove on the phalobasis occupies the whole length of tegment, it is not short as given for *B. abdita* by PICKA (1978, 1979). The general form of the aedeagus is the same in both species (Figs. 20–27). The degree and form of sclerotization of 8. and 9. abdominal segments in females are the same in the allotype of *B. abdita* and in *B. lethifera* (Figs. 26, 27). Small differences are observed in sclerotization of two transversal bands on dorsal part of 9. abdominal segment. But the asymmetric sclerotization of the bands demonstrates the insignificance of such differences.

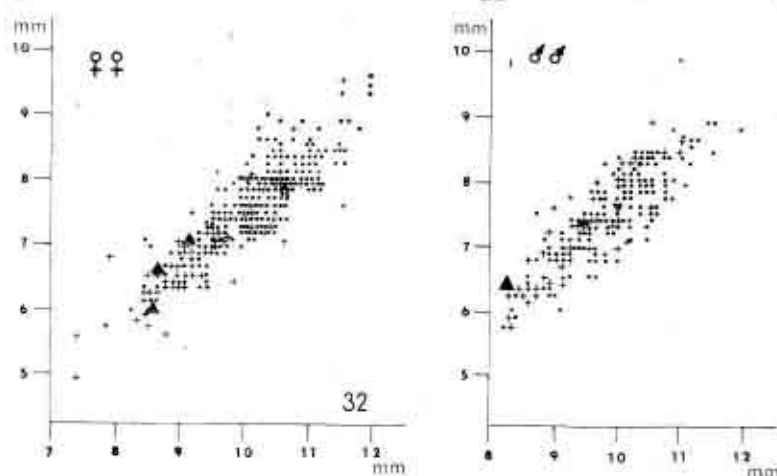
The analysis of body length, pronotum width, pronotum length and of elytrae width (Figs. 28–35) demonstrates the linear dependency between values studied. All specimens of *B. abdita* studied are distributed within the frame of *B. lethifera* or within its Pannonian populations. They concentrate mostly in the range of lower values, similarly as the specimens from the Carpathian Basin, but they do not form a homogenous group of qualitative characters as shown by their various positions in the individual diagrams



Figs. 30–31. Dispersion diagram of body length (abscissa) and elytrae width (ordinate). 30 — males of *Blaps abdita* and *B. lethifera*, 31 — females of *B. abdita* and *B. lethifera*. Symbols as in Fig. 28.



(Figs. 28—35). As matter to fact, there exist no difference between the types of *B. abdita* and *B. lethifera* and the differences given by PICKA (1978, 1979) exist actually in his two descriptions. It is consequently possible to conclude, that *B. abdita* is synonymous with *B. lethifera*. The dispersal of the dimensions studied appears to be extensiver in females, especially in small females, than in males. This fact would suggest that the extremely small



Figs. 32—33. Dispersion diagram of pronotum width (ordinate) and elytrae width (abscissa). 32 — females of *Blaps abdita* and *B. lethifera*, 33 — males of *B. abdita* and *B. lethifera*. Symbols as in Fig. 28.

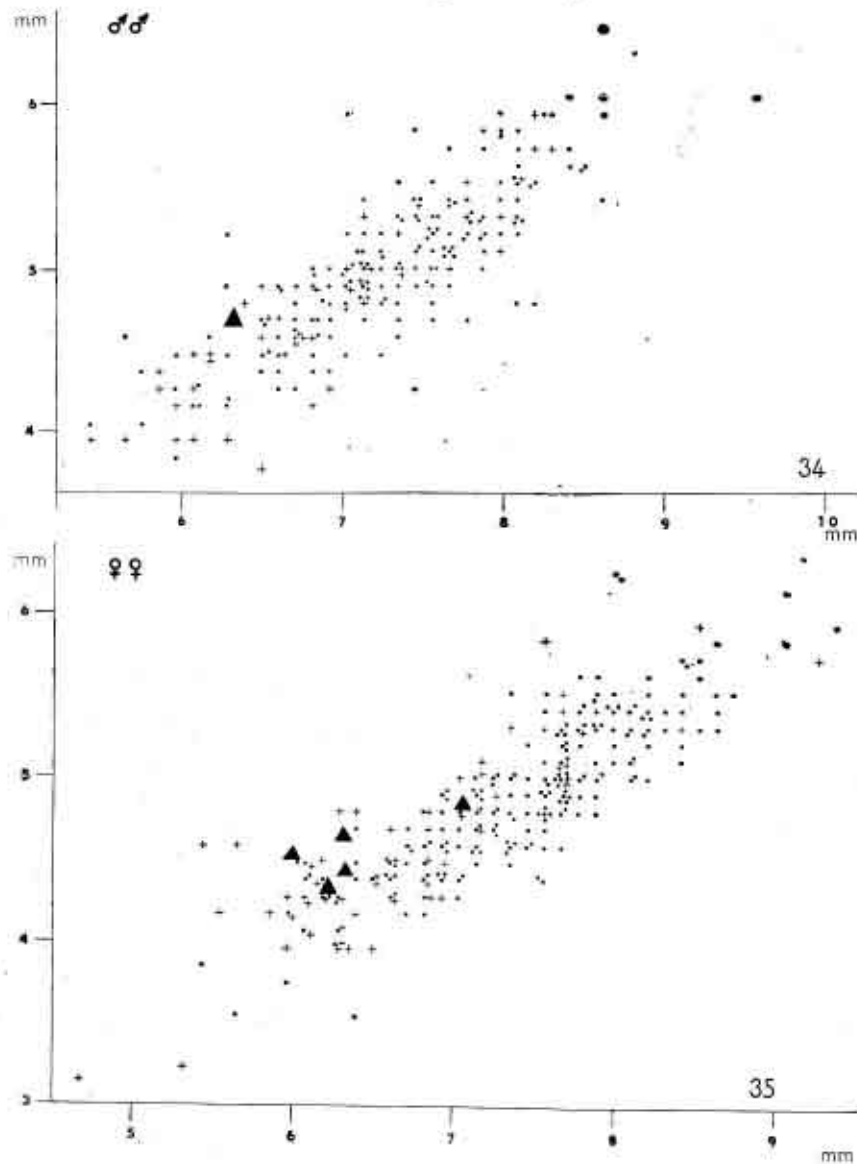
females posited at the lower level of the dimensional distribution could be identified as a different taxon. Irrespective of the above fact such females do not, however, represent any sort of a homogenous group within *B. lethifera* so that, indeed we have to include them into the frame of the variability of one species. This is also shown by the fact that the majority of *B. abdita* examined were females.

From the descriptions of *B. abdita*, *B. milleri* and *B. reflexicollis* (sensu MILLER, 1858) we may conclude that as *B. abdita* smaller specimens of the same species were described as those described by MILLER (1858) and SEIDLITZ (1893). The interpretation of *B. reflexicollis* and *B. milleri* as given by PICKA (1978, 1979) shows a striking discrepancy when compared with their original conceptions in the literature.

PICKA (1978, 1979) considers *B. reflexicollis* to include 20—26 mm long beetles with very flat elytrae and with very little declining hind part of elytrae and with long mucro. The sides of pronotum are convex in their whole length. The middle groove of phalobasis is wide and it reaches the half of length of the basal tegment. The basis of the parameres is straight. *B. reflexicollis* (sensu PICKA) is distributed in middle Europe and is more sporadic as *B. lethifera*. In the literature *B. reflexicollis* is characterized with parallel sided pronotum and with 4.—7. articles of antennae much longer as wide. *B. reflexicollis* is distributed in South Russia and, on the base of false determinations, the data about its occurrency are given from Hungary and Slovakia. The material of *B. reflexicollis* (coll. Gottwald, det. Picka)

examined has no characters given above. All specimens belong to *B. lethifera*. *B. reflexicollis* same (sensu SOLIER, 1848) was found synonymous with *Blaps halophila* FISCHER, 1822 by KASZAB (1957).

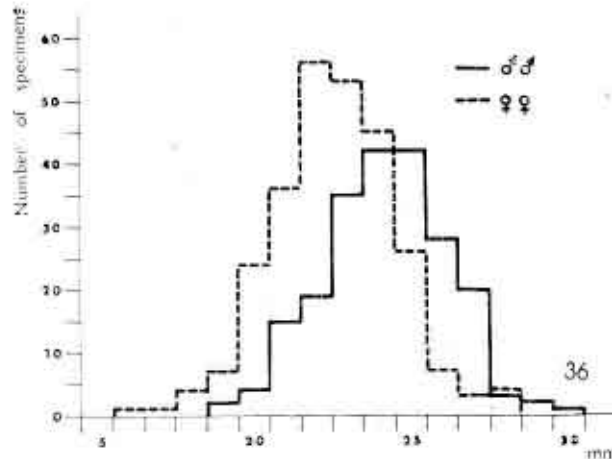
PICKA considers *B. milleri* to include 21–35 mm (!!!) long beetles with parallel sided pronotum. The disc of elytrae is flat and their hind part is steep declining. The narrow middle groove of phalobasis reaches the half



Figs. 34–35. Dispersion diagram of pronotum length (ordinate) and pronotum width (abscissa) 34 – males of *Blaps abdita* and *B. lethifera*, 35 – females of *B. abdita* and *B. lethifera*. Symbols as in Fig. 28.



of the length of phalobasis. The basis of the parameres is straight. The penis overlaps the apex of parameres frontally. According to PICKA (1978, 1979) *B. milleri* is distributed in South-eastern Europe. In the literature *B. milleri* is characterized with quadratic pronotum and with elytrae a little more convex than in *B. lethifera*. According to MADER (1951) the maximum of the ratio between pronotum length and pronotum width in *B. milleri* is 1.5; in *B. lethifera* about 2.0. The area of distribution of *B. milleri* has to be



Figs. 36. Distribution histogram of body length of males and females of all *Blaps lethifera* material.

Carpathian Basin. The material of *B. milleri* (coll. Gottwald, det. Picka) has no characters given by PICKA (1978, 1979). The overlapping of penis by *B. milleri* is an artefact or it is purely accidental, so than differences of length and form in groove on phalobasis are evidently based on mistakes in drawing. All specimens belong to *B. lethifera*. The ratio of pronotum length and of pronotum width in *B. lethifera* and *B. milleri* established on material examined fluctuates between 1.3–1.7. We may conclude that for the description extreme specimens were used and the body dimensions were described subjectively, as in original descriptions, as in identification keys. It confirms the synonymy of *B. milleri* with *B. lethifera* carried out by KASZAB (1957).

The conception of a single widely distributed species — *B. lethifera* — is supported also by Figs. 28–36 in which there are separately demonstrated the biometric characters of the Moravian, Slovakian and Hungarian populations of *B. lethifera* and, on the other hand, the characters of other populations from different parts of Europe. It is evident that all specimens originating from the Carpathian Basin are found within the frame of *B. lethifera*. Also Diagram 9 shows that the lengths of all specimens studied have a normal distribution. If specimen of three different species were concerned, the histogram showing the distribution of lengths would be characterized by more than one peak.

The existence of three closely related species *B. reflexicollis* (sensu PICKA, 1978–9), *B. milleri* and *B. abdita* is not reliable from the biological point of view. According to PICKA (1978, 1979) the distribution of these three species

is restricted exclusively to the Carpathian Basin. But *B. milleri* and *B. abdita* were described from localities distant up to 100–120 km each from other. The sympatric speciation would be, under circumstances, a prerequisite for the existence of three very closely related and bionomically similar species on such a small territory. But such a prerequisite does obviously not exist in this case. The time between the last glatiation and recent is too short for a speciation of three different species originating from one common species — *B. lethifera* — surviving in a wide area of distribution until the recent time. The allopatric speciation on the territory of Carpathian Basin can be practically excluded in such a case.

#### CONCLUSIONS

The present discussion and a critical comparison of the material studied with the history of *B. lethifera* could evidence that *B. lethifera*, a rather widely distributed west-palaeartic species, is characterized by a certain size of variability, mainly in the body size, which in the past and recently caused that a considerable number of synonyms was described. The aim of this paper was to show that the populations inhabiting especially the south of Moravia, Slovakia and the greatest part of the basin of the Danube represent definitely one taxon which is to be treated as:

*Blaps lethifera* MARSHAMM, 1802

syn.: *Blaps similis* LATREILLE, 1804  
*Blaps fatidica* STURM, 1807  
*Blaps obtusa* GYLLENHALL, 1813  
*Blaps subquadrata* BRULLÉ, 1832  
*Blaps plicaticollis* MÉNETRIÉS, 1836  
*Blaps reflexicollis* MILLER, 1858 — SOLIER, 1848  
*Blaps reflexicollis* SOLIER, 1848 (sensu REDTENBACHER, 1874 et sensu auctorum)  
*Blaps milleri* SEIDLITZ, 1893  
*Blaps abdita* PICKA, 1978–1979 — syn. n.

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**Примечания к синониму *Blaps lethifera* Marsham, 1802 (Coleoptera, Tenebrionidae)**

**ТАКСОНОМИЯ, ИЗМЕНЧИВОСТЬ**

Резюме. Вид *Blaps abdita* Picka, 1978—9 сведен в синонимы вида *B. lethifera* Marsham, 1802 на основании изучения изменчивости а таксономического обзора *B. lethifera* и его синонимов, т. е. *B. reflexicollis* Miller, 1858 и *B. milleri* Seidlitz, 1893. Была подтверждена синонимизация *B. milleri*, установленная Касабом.

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**REVIEW**

Pecina P. & Počepická A.: **Kapesní atlas chráněných a ohrožených živočichů** (Taschenatlas der geschützten und gefährdeten Tiere) 224 Seiten, 72 farbige Tafeln und 12 Photographien, Praha 1979.

Das in tschechischer Sprache geschriebene Buch ist für die breite Öffentlichkeit bestimmt, um diese mit jenen Tierarten bekannt zu machen, welche gemäss den gültigen Gesetzen in der Tschechoslowakei geschützt sind und andererseits mit Arten, welche durch Veränderungen in dicht besiedelten Gegenden gefährdet sind. Der erste Teil behandelt ein Kapitel über ökologische Beziehungen in der Natur, wobei gut ausgewählte Abbildungen die zweckmässig gewählten Informationen über die Landschaft ergänzen. Im Kapitel „Aktiver Tierschutz“ wird die Problematik des Naturschutzes in der Tschechoslowakei unter Beifügung des Textes der Bekanntmachung und des Verzeichnisses der geschützten Tierarten in Böhmen und Mähren behandelt. Den

grössten Teil des Textes bildet die Beschreibung der gefährdeten Arten: Weichtiere (17 Arten), Krebstiere (3 Arten), Spinnentiere (4 Arten), Blattfüssler (5 Arten). Grosse Aufmerksamkeit widmete der Autor dabei den Insekten, von denen 94 geschützte und gefährdete Arten behandelt werden. Das Buch schliesst mit der Aufzählung von 37 geschützten und gefährdeten Vertretern von Fischen, Lurche und Kriechtieren. Der kurzgefasste klare Text wird durch 72 farbige Abbildungen ergänzt, die mit grosser Sorgfalt und Genauigkeit von der Malerin Alena Počepická angefertigt wurden. Geschützte Vogelarten und Säugetiere sollen Gegenstand eines weiteren Bandes sein.

Wertvoll an diesem Buch ist die originelle Verarbeitung des Stoffes, wobei der Autor an ökologische Prinzipien anknüpft und sich weniger mit Beschreibungen sondern mehr mit der Lebensweise der einzelnen Arten befasst.

A. Pfeffer