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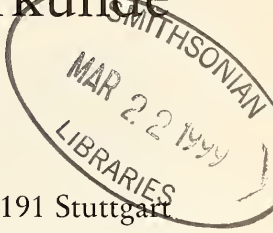
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## Revision of the Genus *Bruchidius*. Part I: The *B. seminarius* Group (Coleoptera: Bruchidae)

By Klaus-Werner Anton, Emmendingen

With 12 figures and 1 table

### Summary

The present paper deals with results of studies of the *Bruchidius seminarius* group. Important morphological characters and general distribution of the actually known 12 species are presented (Tab. 1, Figs. 1–12). *Bruchidius borowieci* n.sp. is described. *B. fulvescens* (Baudi) and *B. taorminensis* (Blanchard) are valid species. *B. riedeli* Borowiec is a **new synonym** of *B. fulvescens* (Baudi). *B. zampettii* Borowiec is a **new synonym** of *B. anobioides* (Baudi). *B. femoralis* (Gyllenhal) has shown to be a **new synonym** of *B. seminarius* (Linnaeus).

### Zusammenfassung

Die vorliegende Arbeit befaßt sich mit Ergebnissen von Untersuchungen der *Bruchidius seminarius*-Gruppe. Wichtige morphologische Merkmale und die generelle Verbreitung der aktuell bekannten 12 Arten werden dargestellt (Tab. 1, Abb. 1–12). *Bruchidius borowieci* n.sp. wird beschrieben. *B. fulvescens* (Baudi) und *B. taorminensis* (Blanchard) sind valide Arten. *B. riedeli* Borowiec ist ein **neues Synonym** von *B. fulvescens* (Baudi), *B. zampettii* Borowiec ist ein **neues Synonym** von *B. anobioides* (Baudi). *B. femoralis* (Gyllenhal) erweist sich als **neues Synonym** von *B. seminarius* (Linnaeus).

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## 1. Introduction

The *Bruchidius seminarius* group contains bruchid species with very similar characteristics which often cause difficulties in differentiation. BOROWIEC (1985) gives descriptions, redescriptions and figures of male genitalia and records 10 species with the following combination of characters: body oval; antenna short in both sexes without sexual dimorphism; elytral base with or without tubercle; hind tibia strongly broadened, mucro distinctly longer than coronal denticles; male genitalia: median lobe short with ventral valve triangular, internal sac subbasally with distinct sclerites, lateral lobes simple without keel at their base. ALDRIDGE & POPE (1986), BOROWIEC (1987), BOROWIEC & ANTON (1993), and DECELLE & LODOS (1989) give further information on the *B. seminarius* group.

*Bruchidius apicipennis* (Heyden), mentioned in BOROWIEC (1985) as a member of the *B. seminarius* group, shows a different combination of characters and belongs to the *B. apicipennis* group.

The present paper adds further details to the knowledge of this group. Additional diagnostic characters are a distinct spot of denser and longer hairs at the basal middle of the male abdominal sternite one in 7 species (Tab. 1). This character is similarly developed in all species of the *B. albosparsus* group.

A general picture of the important characters and the global distribution of the species of the *B. seminarius* group is given in Tab. 1 and Figs. 1–12. In the following part a new species is described: *Bruchidius borowieci*. Further on, additional synonymies and less known species are treated concerning types and misidentifications. A redescription of *B. taorminensis* is given. Finally, an identification key for all species of the *B. seminarius* group is presented, based on external morphological and colour characters.

## 2. Material and abbreviations

About 2500 specimens including types from 34 institutional and private collections have been studied. A part of them are used throughout the text with following abbreviations.

<i>CAPT</i>	Collection of A. P. J. A. TEUNISSEN (Vlijmen, The Netherlands);
<i>CCM</i>	Collection of C. MAUS (Freiburg, Germany);
<i>CGG</i>	Collection of G. GILLERFORS (Varberg, Sweden);
<i>CHH</i>	Collection of H. HEBAUER (Rain, Germany);
<i>CIR</i>	Collection of I. RYDH (Olofström, Sweden);
<i>CKWA</i>	Collection of the author;
<i>CRB</i>	Collection of R. BEENEN (Nieuwegien, The Netherlands);
<i>CWV</i>	Collection of W. VELDKAMP (Eibergen, The Netherlands);
<i>DEIC</i>	Deutsches Entomologisches Institut (Eberswalde, Germany);
<i>HNHM</i>	Hungarian Natural History Museum (Budapest, Hungary);
<i>MHNG</i>	Muséum d'Histoire Naturelle (Genève, Switzerland);
<i>MNHN</i>	Muséum National d'Histoire Naturelle (Paris, France);
<i>MRSN</i>	Museo Regionale di Scienze Naturali (Torino, Italy);
<i>MZLU</i>	Museum of Zoology, Lund University (Lund, Sweden);
<i>NIHS</i>	Naturhistoriska Riksmuseet (Stockholm, Sweden);
<i>NMPC</i>	National Museum of Natural History (Praha, Czech Republic);
<i>SMNS</i>	Staatliches Museum für Naturkunde (Stuttgart, Germany);
<i>ZMHB</i>	Museum für Naturkunde, Humboldt-Universität (Berlin, Germany);
<i>ZMPA</i>	Museum of the Institute of Zoology, Polish Academy of Science (Warszawa, Poland).

### 3. Acknowledgements

I wish to express my cordial thanks to Prof. LECH BOROWIEC (Wrocław, Poland) for helpful discussion, information, and making some type and other material available. Thanks are also due to all the curators of the institutions and the private persons mentioned above for the loan of types and material.

### 4. Treated species

#### 4.1. *Bruchidius anobioides* (Baudi) (Tab. 1, Fig. 6)

1886 *Mylabris anobioides* Baudi, Nat. Sicil., 6 (4–5): 72.

1989 *Bruchidius anobioides* (Baudi) in DECELLE & LODOS, Bull. Anns Soc.r.belge Ent., 125: 179.

1985 *Bruchidius zampettii* Borowiec, Pol. Pismo ent., 55: 774–776; n. syn.

1989 *B. zampettii* sensu DECELLE & LODOS, Bull. Anns Soc.r.belge Ent., 125: 199.

1993 *B. zampettii* sensu BOROWIEC & ANTON, Ann. Upp. Siles. Mus., Ent., 4: 134–135.

Type material examined:

Lectotype *Mylabris anobioides*: ♂ (MRSN), Cypro, des. M. F. ZAMPETTI.

Holotype *Bruchidius zampettii*: ♂ (ZMPA), Lebanon, Nahr el Kelb near Beirut, 11. V. 1961, leg. RIEDEL.

Paratype *Bruchidius zampettii*: ♀ (ZMPA), Turkey, 3 km N of Side, Manavgat – Antalya Highway, 27. V. 1979, leg. MALKIN.

Remarks: The examination of the types revealed that *B. zampettii* is a **junior synonym** of *B. anobioides*. See also remarks on *B. fulvescens* (chapter 4.4.).

#### 4.2. *Bruchidius bituberculatus* Schilsky (Tab. 1, Fig. 9)

1905 *Bruchidius pusillus* var. *bituberculatus* Schilsky, in KÜSTER, Käf. Eur., 41: no. 90.

1985 *B. bituberculatus* Schilsky in BOROWIEC, Pol. Pismo ent., 55: 773–774.

Type material examined:

Lectotype: ♂ (ZMHB), Syria, herewith designated.

Paralectotypes: 2 ♂♂ (ZMHB), Syria; 1 ♂ (ZMHB), Graecia, herewith designated.

#### 4.3. *Bruchidius borowieci* n.sp. (Tab. 1, Fig. 11)

Holotype: ♂ (SMNS), Jordan, Arda Road, 700 m, 14. VI. 1957, leg. KLAPPERICH; genitalia slide no. 240895I.

Paratypes: ♂ (CKWA), ♀ (SMNS), dates as holotype. – ♀ (SMNS), dates as holotype but 5. IV. 1957. – ♂ (SMNS), Jordan, Wadi Shaib, 17. X. 1956. – ♂ (SMNS); Jordan, Amman, 800 m, 8. IV. 1956. – ♂ (SMNS), ♀ (CKWA), same dates but 30. V. 1957. – ♂ (SMNS), Jordan, Amman, 1. VI. 1968. – ♂ (SMNS), same dates but Fuhes, 1000 m, 14. X. 1956. – ♂ (SMNS), ♀ (CKWA); same dates but 23. VI. 1957. – ♂ (SMNS), Jordan, Romana, Zerkatal, 21. X. 1957. – 3 ♂♂ (SMNS, CKWA), Jordan, Tulkarem, 8. VII. 1956; all leg. KLAPPERICH. – ♂ (CKWA), Turkey, Seyhan near Pozanti, 2100 m, 24. V. 1990, leg. WARCHALOWSKI. – ♀ (CKWA), Turkey, Corum, SW of Gümüş, 25. V. 1989, leg. RIEDEL. – ♂ (CKWA), Greece, Pelepones, Nemea, 13. VI. 1986, leg. HEBAUER. – ♂ (CKWA), Spain, Cataluna, Barcelona, Caldetas, 28.–29. IV. 1985, leg. SIEDE. – ♂ (CKWA), Spain, Mallorca, Sierra del Norte, Valldemosa, 10. III. 1994, leg. WESIĄK. – 2 ♂♂ (MHNG, CKWA), Algeria, Gde Kabylie, Djebel Bou-Berak, 350 m, 19. V. 1988, leg. BESUCHET, LÖBL & BURCKHARDT. – ♀ (SMNS), Italy, Sicilia, Pacchino, 4. IV. 1942.

Etymology: This species is dedicated to Prof. LECH BOROWIEC (Wrocław, Poland), who revised the *B. seminarius* group.

Description: Length 1.4–2.0 mm (from pronotal apex to elytral apex), width 0.8–1.0 mm (greatest width of combined elytra). Body shape oblong-oval. Cuticle colour black; antennal segments 1–5 (sometimes 6 and 7), fore and mid leg except basal part of femur yellowish-red, fore and mid tarsi apically completely darkened. Pubescence moderately dense, elytron with striking grey-whitish hairs forming two mostly distinct irregular transverse bands, one each subbasally and subapically. – Head of moderate length, with shining median keel. Antenna extending to humeral callus; antennal segments 1–4 cylindrical, 5 subserrate, 6–10 serrate, 5–10 becoming steadily broader, 5 about as broad as long, 6–10 square. – Pronotum about 1.2 times wider than long; sides convex in apical half, nearly parallel in basal half; disc densely double punctured. – Elytra about 1.3 times longer than their combined width, stria 4 basally with flat to sharp, minute tubercle (rarely absent); intervals with irregular row of flat punctures. – Hind femur with small preapical spine on inner margin. Hind tibia with lateral carina well developed; mucro twice as long as coronal denticle at extension of lateral carina.

Male: Pygidium uniformly pubescent. Basal middle of sternite 1 with spot of denser and longer hairs; sternite 5 emarginate. Genitalia: ventral valve of median lobe triangular, weakly curved in ventral direction; internal sac with 5–8 subbasal, short, denticle-like sclerites, their oval base at least as wide as length of their pins (Fig. 11).

Female: Pygidium with large, polished, nearly hairless area. Sternite 5 not emarginate.

Host plant: Unknown.

Remarks: Externally this species is very similar to *B. pusillus*. *B. pusillus* presents a moderate pattern of standard type with greyish, yellowish and brownish hairs on elytra, as well as less pubescent, brilliant area on female pygidium. Characters of male genitalia separate both species distinctly with regard to ventral valve (in *B. pusillus* more elongate, with an acute apex) and concerning denticles (*B. pusillus* shows them in larger quantity and with circular base). See also Table 1. – Two Algerian paratypes and one paratype from Sicily were erroneously recorded as *B. bituberculatus*, two paratypes from Greece and Spain as *B. pusillus* in BOROWIEC & ANTON (1993).

#### 4.4. *Bruchidius fulvescens* (Baudi) (Tab. 1, Fig. 7)

1886 *Mylabris rufisura* var. *fulvescens* Baudi, Nat. Sicil., 6 (4–5): 68.

1962 *Bruchidius rufisurus* a. *fulvescens* Baudi in LUCA, Mem. Soc. Hist. Nat., N.S., 7: 36; as synonym of *B. rufisurus* (Allard).

1985 *B. anobioides* sensu DECELLE & LODOS, Bull. Anns Soc. r. belge Ent., 125: 179.

1993 *B. anobioides* sensu BOROWIEC & ANTON, Ann. Upp. Siles. Mus., Ent., 4: 102.

Type material examined:

Type *Mylabris rufisura* var. *fulvescens*: ♂ (MRSN), Syria, Kaifa, REITTER, des. K.-W. ANTON. Holotype *Bruchidius riedeli*: ♂ (ZMPA), Lebanon, Nahr el Kelb near Beirut, 11. V. 1961, leg. RIEDEL n. syn.

Remarks: DECELLE & LODOS (1989) and BOROWIEC & ANTON (1993) identified this species as *B. anobioides*, after comparison with specimens deposited in the PIC collection (MNHN). Thus the conclusion was reached that *B. riedeli* is a junior synonym of *B. anobioides* (BOROWIEC & ANTON 1993). However, recent studies of



the types of *M. rufisura* var. *fulvescens* and *B. riedeli* yielded the following results: *fulvescens* gets the rank of a valid species, specimens of *B. anobioides* of the PTC collection are true *B. fulvescens*, *B. riedeli* is now a **new synonym** of *B. fulvescens*.

#### 4.5. *Bruchidius pusillus* (Germar) (Tab. 1, Fig. 8)

1824 *Bruchus pusillus* Germar, Insect. spec. nov.: 181.

1905 *Bruchidius pusillus* (Germar) in SCHILSKY, in: KÜSTER, Käf. Eur., 41: no. 90.

1868 *Bruchus Stierlini* Allard, Ann. Soc. Ent. Belg., 11: 117.

1905 *Bruchidius pusillus* var. *stierlini* (Allard) in SCHILSKY, in: KÜSTER, Käf. Eur., 41: no. 90.

1993 *B. bituberculatus* sensu BOROWIEC & ANTON, Polskie Pismo ent., 55: 106; partim.

Type material examined:

Holotype *Bruchus pusillus*: ♂ (DEIC), Dalmatia, coll. KRAATZ.

Type *Bruchus Stierlini*: ♀ (MNHN), Sicilia, ex Museo E. ALLARD 1899, coll. OBERTHUR-DES-BROCHERS.

Remarks: SCHILSKY (1905) cited *B. stierlini* for the first time as a synonym of *B. pusillus*. He recorded also *B. seminarius*, now a valid species (BOROWIEC 1985, 1987), as a synonym of *B. pusillus*. An examination of the types confirmed SCHILSKY's opinion. – Two specimens from Sicily (Messines) recorded by BOROWIEC & ANTON (1993) as *B. bituberculatus* are misidentifications of true *B. pusillus*.

#### 4.6. *Bruchidius seminarius* (Linnaeus) (Tab. 1, Fig. 5)

1767 *Bruchus seminarius* Linnaeus, Syst. nat., I (II): 605.

1905 *Bruchidius pusillus* var. *seminarius* sensu SCHILSKY, in: KÜSTER, Käf. Eur., 41: no. 90.

1833 *Bruchus femoralis* Gyllenhal, in: SCHOENHERR, Gen. Curc., I: 51; n. syn.

1913 *B. varius* var. *femoralis* sensu PTC, in: JUNK & SCHENKLIN, Col. Cat., 55: 55.

1957 *Bruchidius varius* var. *femoralis* sensu LUKJANOVITCH & TER-MINASSIAN, in: Fauna SSSR, 24 (1): 162.

Type material examined:

Neotype *Bruchus seminarius*: ♂ (ZMPA), Dalmatia, Romolac near Dubrovnik, 26. VIII. 1959, leg. RIEDEL, des. L. BOROWIEC.

Type *Bruchus femoralis*: ♂ (NHRS), Dalmatia, DEJEAN, coll. SCHOENHERR.

Remarks: Hitherto treated as a variation of *B. varius*, the examination of the type of *B. femoralis* showed it to be a **junior synonym** of *B. seminarius*. – *B. femoralis* is also listed as a valid species by LUKJANOVITCH & TER-MINASSIAN (1957). However, the figure of male antenna in this publication proves it to be a species of the *B. varius* group.

#### 4.7. *Bruchidius suratus* (Motschulsky) (Tab. 1, Fig. 12)

1874 *Bruchus suratus* Motschulsky, Bull. Soc. Imp. Nat. Moscou, 46: 233.

1989 *Bruchidius suratus* (Motschulsky) in DECELLE & LODOS, Bull. Annl. Soc. r. belge Ent., 125: 195–196.

1984 *Bruchidius seminarius* sensu ZAMPETTI, Fragm. Ent., 17 (2): 402.

? 1985 *Bruchidius loebli* Borowiec, Pol. Pismo ent., 55: 777.

Type material examined:

Holotype *Bruchidius loebli*: ♀ (MHNG), Iran, Fars, Dasht-e-Arjan, 1650 m, 29°40'N/51°59'E, 1. VI. 1974, leg. SENGLER.

Additional material: ♂ (CIR), Turkey, Antalya, S Elmali, 1200 m, 21.–28. V. 1991; – ♀ (NMPC), Iran, 7 km NW Shul, 2100 m, 17. VI. 1973, Exp. Nat. Mus. Praha.

Remarks: The type(s) of *B. suratus* is (are) still unavailable. The original description includes a comparison with *B. seminarius*. Supposed that both species are closely related, *B. suratus* is a member of *B. seminarius* group. *B. suratus* differs from the remaining species of this group in a scarcely spotted, predominant dark pubescence and nearly completely black cuticle (see Tab. 1). These characters agree with the description of *B. loebli*. The study of the type of *B. loebli* confirms the suspicion of DECELLE & LODOS (1989), who noted a possible synonymy with *B. suratus*. Only few specimens of *B. suratus* are known (DECELLE & LODOS 1989, BOROWIEC & ANTON 1993, ANTON et alii 1997).

#### 4.8. *Bruchidius taorminensis* (Blanchard) (Tab. 1, Fig. 10)

1844 *Bruchus taorminensis* Blanchard, Ann. Soc. Ent. Fr., 2 (2): 83.

1962 *Bruchidius taorminensis* Blanchard in LUCA, Mem. Soc. Hist. Nat., N.S. 7: 37; as synonym of *B. seminarius* (L.).

1993 *B. bituberculatus* sensu BOROWIEC & ANTON, Pol. Pismo ent., 55: 106; partim.

1994 *B. seminarius* sensu DECELLE, Bull. Anns Soc.rbelge Ent., 130: 132; partim.

Type material examined:

Type: ♂ (MNHN), Taormine, Juillet, coll. BLANCHARD.

Material: ♂ (CKWA), Algeria, Amouchas, 2. VI. 1986, leg. WARCHALOWSKI. – ♂ (MHNG), Algeria, Gde Kabylie, L'Arbatache sur El Kseur, 300–400 m, 18. V. 1988, leg. BESUCHET, LÖBL & BURCKHARDT. – ♂ (CKWA), Algeria, Oran, Sidi near Abbès, leg. PLASON. – ♂ (CKWA), Algeria, Setif, 6. V. 1986, leg. WARCHALOWSKI. – ♂ (CKWA), Algeria, Ziarna, 13. VI. 1986, leg. WARCHALOWSKI. – ♂ (CKWA), Dalmatia, Vinjerac, 2. VII. 1981, leg. HEBAUER. – 1 ♂ 3 ♀ (MHNG, CKWA), France, Bouche du Rhône, La Couronne. – ♂ (CKWA), France, NW Orange, Barjac, 1.–5. VI. 1993, leg. MAUS. – ♀ (CRB), Italy, Sardegna, Sassari, Alghero, V. 1990, leg. BEENEN. – ♂ (MHNG), Italy, Sicilia, Ficuzza, VII. 1938, coll. CURTI. – ♂ (CKWA), Italy, Sicilia, Messina, 15. VII. 1942. – ♂ (CKWA), Italy, Toscana, Orbetello, V. 1988, leg. WERNER. – ♀ (CWV), Portugal, Algarve, Albufeira, 25. III. 1993, leg. VELDKAMP. – ♀ (CAPT), Portugal, Algarve, Messines, 19. V. 1985, leg. TEUNISSEN. – 4 ♂ ♂, 1 ♀ (CHH, CKWA), Spain, Alicante, Alcoy, 11. V. 1992, leg. HEBAUER. – ♂ (CKWA), Spain, Andalucia, Malaga, Hanzoina near Coin, 24. III. 1987, leg. SIEDE. – ♀ (CKWA), Spain, Cabrilla, Yunguerra, 1400 m, 18. V. 1988, leg. WARCHALOWSKI. – ♀ (CAPT), Spain, Cadiz, Tarifa, IV. 1991, leg. POOT. – ♂ (CKWA), Spain, Cataluna, Barcelona, Caldetas, 28.–29. IV. 1985, leg. SIEDE. – 4 ♂ ♂ (CKWA), Spain, Granada, Sierra Almenara, Castillo de Tebas, 2. V. 1985, leg. SIEDE. – ♂ (CGG), Spain, Gran Canaria, Portales, 17. XI. 1988, leg. GILLERFORS. – ♂ (CKWA), Spain, Malaga, Cortes d. l. Frontera, 21. V. 1988, leg. WARCHALOWSKI. – ♀ (CKWA), Spain, Malaga, Loya, 21. V. 1993, leg. HEBAUER. – 3 ♂ ♂ (CHH, CKWA), Spain, Malaga, Sierra Almijara, 15. V. 1992. – 2 ♂ ♂ (CHH), Spain, Malaga, Osuna, Arroyo del Peinado, 22. V. 1993, leg. HEBAUER. – ♂ (CKWA), Spain, Mallorca, Alcudia, S Albufera, 12. VI. 1995, leg. MAUS. – 5 ♂ ♂ (CKWA), Spain, Mallorca, Inca–Sensles, 26. IV. 1992, leg. SIEDE. – ♂ (CCM), Spain, Mallorca, Peguera, 4.–17. VI. 1995, leg. MAUS. – ♂ (CCM), same data but Carla Fornells, 13. VI. 1995, leg. MAUS. – 4 ♂ ♂, 1 ♀ (CKWA), Spain, Mallorca, Pollensa, 10. VI. 1990, leg. DÖBERL. – ♀ (CKWA), Spain, Mallorca, Porto di Alcudia, Puig de St. Marti, 25. IV. 1992, leg. SIEDE. – ♂ (CKWA), Spain, Mallorca, Ses Salines, Bany de St. Joan, 26. IV. 1992, leg. SIEDE. – 1 ♂, 2 ♀ ♀ (CKWA), Spain, Tenerife, Barranco de Erques, 850 m, 27. III.–3. IV. 1995, leg. ANTON. – ♀ (CKWA), Spain, Tenerife, Las Mercedes, 6. IV. 1995, leg. ANTON. – ♂ (MZLU), Spain, Tenerife, Las Mercedes, 22. XII. 1982, leg. TÖRNVALL. – 2 ♂ ♂, 5 ♀ ♀ (CKWA), Spain, Tenerife, SE Pedro Alvarez, 550 m, 25. III.–2. IV. 1995, leg. ANTON. – ♀ (CKWA), Spain, Sierra Nevada, Ugijar, 14. V. 1992, leg. HEBAUER. – 2 ♂ ♂ 1 ♀ (CKWA), Spain, Valencia, Jativa, 1. V. 1985, leg. SIEDE. – 3 ♂ ♂, 3 ♀ ♀ (CKWA), Tunisia, env. Hammamet, 14. IV.–3. V. 1988, leg. HEMMANN. – ♀ (HNHM), Tunis, (1) 904, leg. UJHELYI. – ♂ (MZLU), Tunisia, 4 km E Ain Sebaa, 23 km E Tabarka, 9. IV. 1994, leg. DANIELSSON. – ♂ (MZLU), Tunisia, 25 km S Kairouan, 11. IV. 1994, leg. DANIELSSON.

Redescription: Length: 1.8–2.6 mm, width: 1.0–1.5 mm. Body shape oval. Cuticle colour black; antennal segments 1–5, fore and mid leg except femoral base yellowish-red; fore and mid tarsi apically somewhat darkened; remaining antennal segments, apex of hind femur and hind tibia indistinct reddish transparent. Pubescence moderately dense, elytron variegated with predominant greyish and yellowish hairs. – Head of moderate length, with smooth, shining keel. Antenna extending to humeral callus of elytra; antennal segments 1–4 cylindrical, 5 subserrate, 6–10 serrate, 5–10 becoming steadily broader, 5 nearly as wide as long, 6–10 square. – Pronotum about 1.3 times as wide as long; sides becoming steadily more convex from base to apex; disc densely double punctured. – Elytra about 1.2 times longer than their combined width, without basal tubercles; intervals with irregular row of flat punctures. – Hind femur with minute preapical spine on inner ventral margin. Hind tibia with lateral carina well developed; mucro twice longer than coronal denticle at extension of lateral carina.

Male: Pygidium uniformly pubescent. Basal middle of sternite one with spot of denser and longer hairs; sternite 5 emarginate. Genitalia: ventral valve of median lobe triangular, weakly curved in ventral direction; internal sac with 3–7 subbasal, long denticle-like sclerites; pin of sclerites distinctly longer than width of their base.

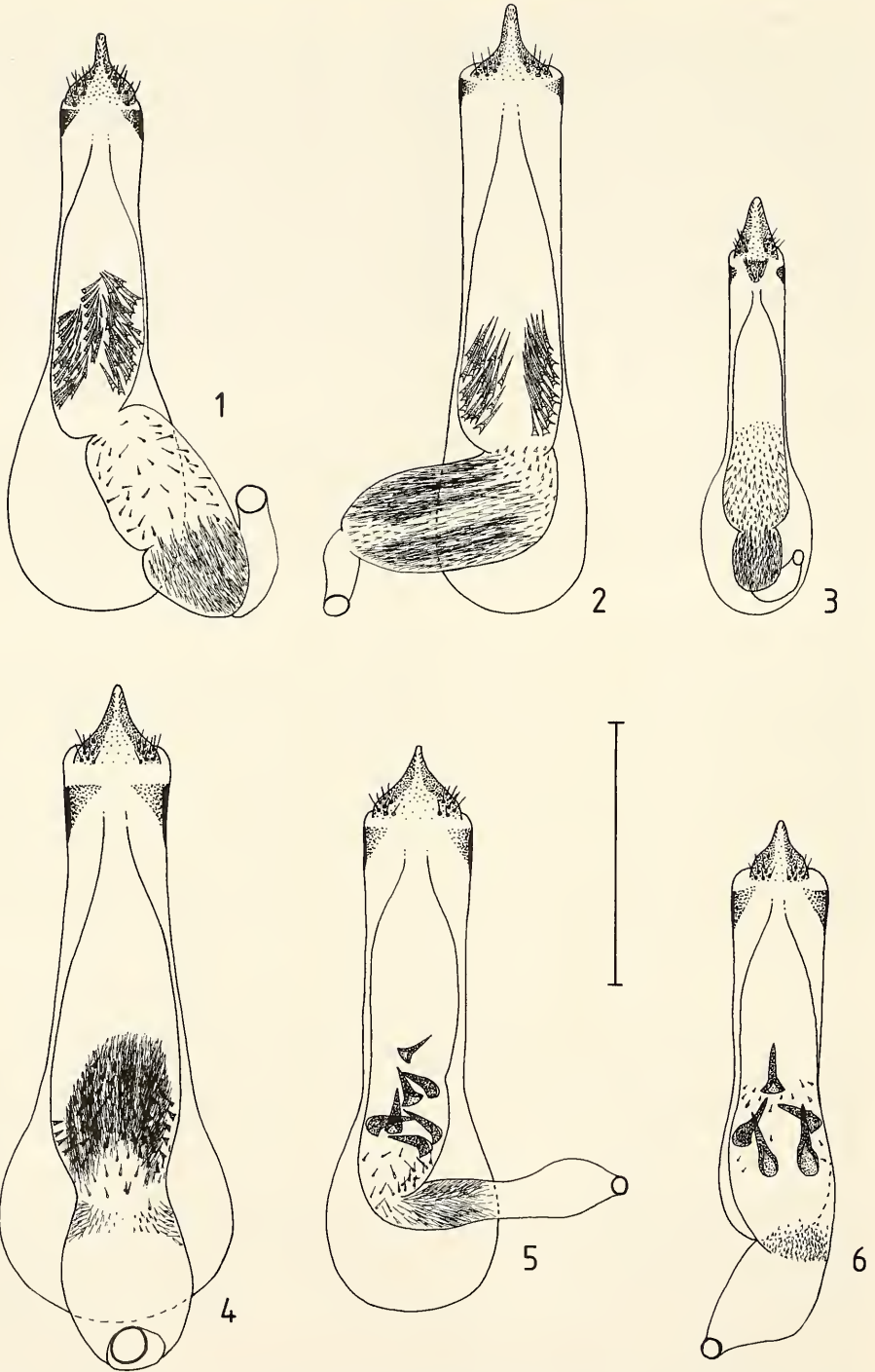
Female: Pygidium with large, polished, nearly hairless area. Sternite 5 not emarginate.

Host plant: Unknown.

Remarks: PIC (1913) recorded *B. taorminensis* as a synonym of *B. seminarius*. This was followed by LUCA (1962), who listed this species correctly within the genus *Bruchidius*. Re-examination revealed, that *B. taorminensis* is a valid species. Concerning affinities see Tab. 1 and remarks about *B. borowieci*. *B. taorminensis* is a Western vicariant of *B. bituberculatus*. Their differentiation becomes somewhat delicate respective to male genitalia, when the number of denticle-like sclerites of the internal sac attains 6 or 7. However, in *B. taorminensis* the median lobe is slender, the ventral valve is always less sclerotized and slimmer than in *B. bituberculatus*. Externally, both species are easily to distinguish in any case by presence (*B. bituberculatus*) or absence (*B. taorminensis*) of the tubercle at the elytral base.

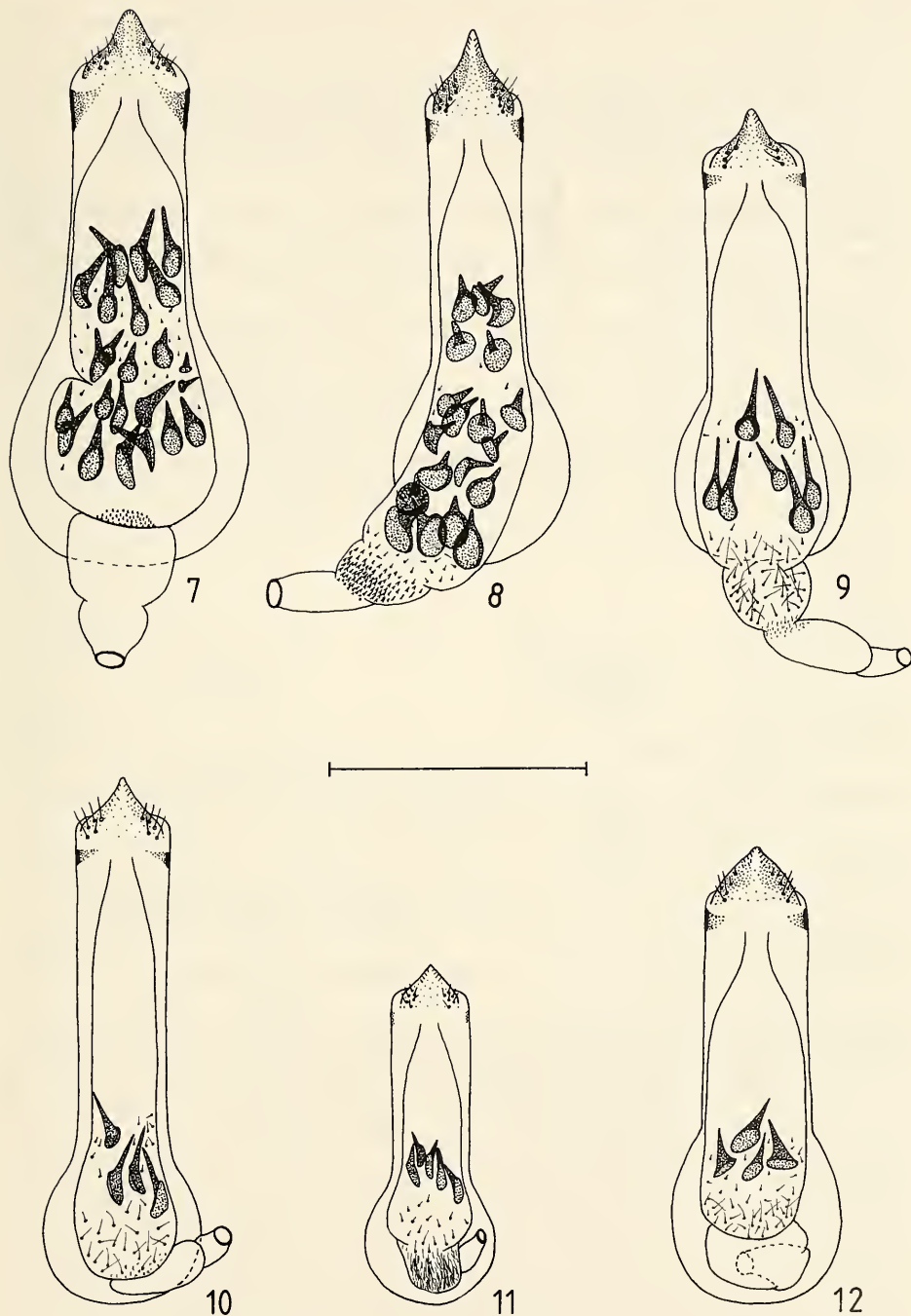
### 5. Identification key (*Bruchidius seminarius* group)

- 1 Elytral stria 4 basally with distinct simple hooked tubercle, rarely hidden by pubescence (dorso-lateral view!). Male abdominal sternite 1 with distinct spot of denser and longer hairs at basal mid ..... 2
- Elytral stria 4 basally with indistinct or without tubercle. Male sternite 1 with or without spot of denser and longer hairs ..... 3
- 2 Elytral pubescence strictly uniform, greyish to pale olive-yellowish. Female pygidial pubescence uniform, without hairless area. Cuticle colour varying: black with antennal segments 1–4 (5), fore and mid leg except tarsi and femoral base yellowish-red, to completely yellowish-red or red-brown. 1.5–2.2 mm. Eastern Mediterranean from Greece to Turkey and Israel ..... (see chapter 4.1.) *anobioides*
- Elytral pubescence variegated, greyish, yellowish and brownish; sometimes with predominant greyish hairs. Female pygidium with polished, nearly hairless area. Cuticle colour black; antennal segments 1–4 (5), fore and mid leg except femoral base yellowish-red; often fore and mid tarsi darkened; rarely femoral apex and hind tibia partially reddish (specimens from Jordan to Iran). 1.7–2.5 mm. Eastern Mediterranean from Croatia to Iran and Israel ..... (4.2.) *bituberculatus*



Figs. 1-6. Median lobe of species of the *Bruchidius seminarius* group. - 1. *B. villosus*; - 2. *B. lividimanus*; - 3. *B. mulsanti*; - 4. *B. rufisurus*; - 5. *B. seminarius*; - 6. *B. anobioides*. - Scale = 0.5 mm.





Figs. 7–12. Median lobe of species of the *Bruchidius seminarius* group. – 7. *B. fulvescens*; – 8. *B. pusillus*; – 9. *B. bituberculatus*; – 10. *B. taorminensis*; – 11. *B. borowieci* n.sp.; – 12. *B. suratus*. – Scale = 0.5 mm.

Tab. 1. Morphological characters and distributions of the species of the *Bruchidius seminarius* group.

	<i>villosus</i> (Fabricius, 1792)	<i>lividimanus</i> (Gyllenhal, 1833)	<i>mulsanti</i> (Brisout, 1863)	<i>rufisurus</i> (Allard, 1883)	<i>seminarius</i> (Linnaeus, 1767)	<i>anobioides</i> (Baudi, 1886)
Hair spot on male sternite 1:	absent	absent	absent	absent	absent	present
Ventral valve:						
● shape	subtriangular	subtriangular	triangular	subtriangular	subtriangular	subtriangular
● apex	acuminate	acuminate	elongate	acute	acute	acute
● curvature (lateral view)	strongly	strongly	weakly	strongly	weakly	strongly
Sclerites:						
● form	spines	spines	needles	needles + spines	moderate denticles	moderate denticles
● number	numerous	numerous	numerous	numerous	3-7	3-7
Disc of female pygidium:	dead, uniform pubescent	dead, uniform pubescent	dead, uniform pubescent	dead, longitudinal spotted	dead, uniform	dead uniform
Cuticle colour:						
● elytron	black	black	black	black	black	red to black
● antennal base, fore + mid leg	red	red	red	red	red	red
● hind leg	black	partially red to completely black	black	black	partially red to completely black	red to black
Elytron:						
● tubercle	absent	absent	absent	absent	absent to very indistinct	distinct
● pubescence	uniform	variegated to nearly uniform	more or less variegated	longitudinal spotted	variegated	uniform
● shape (lateral view)	flatted	flatted	strongly convex	moderately convex	moderately convex	moderately convex
Body shape: (lateral view)	short-oval	short-oval	short-oval	oblonge-oval	moderately oval	moderately oval
Distribution:	Europe, Turkey, Crimea	southern-central Europe, Circum-mediterranean	northern Mediterranean to Central Asia	eastern Mediterranean	Central Europe, Circum-mediterranean	eastern Mediterranean

Tab. 1. (continued).

	<i>fulvescens</i> (Baudi, 1886)	<i>pusillus</i> (Germar, 1824)	<i>borowieci</i> n.sp.	<i>bituberculatus</i> Schilsky, 1905	<i>taorminensis</i> (Blanchard, 1844)	<i>suratus</i> (Motschulsky, 1874)
Hair spot on male sternite 1:	present	present	present	present	present	present
Ventral valve:						
● shape	subtriangular	subtriangular	triangular	triangular	triangular	nearly triangular
● apex	acute	acute	acute	acute	acute	acute
● curvature (lateral view)	strongly	weakly	weakly	weakly	weakly	weakly
Sclerites:						
● form	moderate denticles	short denticles	short denticles	oblonge denticles	oblonge denticles	moderate denticles
● number	16–26	14–25	5–8	6–15	3–7	2–6
Disc of female pygidium:	brilliant, less pubescent	brilliant, less pubescent	polished, nearly hairless	polished, nearly hairless	polished, nearly hairless	polished nearly hairless
Cuticle colour:						
● elytron	red to black	black	black	black	black	black
● antennal base, fore + mid leg	red	red	red	red	red	more or less black
● hind leg	red to black	black	black	black, rarely partially black	nearly black	black
Elytron:						
● tubercle	absent	absent to indistinct	indistinct, rarely absent	distinct	absent	absent
● pubescence	uniform	variegated	transverse banded	more or less variegated	more or less variegated	scarcely spotted
● shape (lateral view)	moderately convex	moderately convex	moderately convex	moderately convex	moderately convex	moderately convex
Body shape (lateral view):	moderately oval	oblonge oval	oblonge oval	moderately oval	moderately oval	moderately oval
Distribution:	eastern Mediterranean	southern-central Europe, northern Mediterranean	southern Mediterranean	eastern Mediterranean	western Mediterranean	eastern Mediterranean

- 3 Body shape short-oval (dorsal view!); body length at most 1.4 times as long as combined width of elytra. Male sternite 1 without spot of denser hairs. Female pygidial pubescence uniform. Elytral stria 4 basally without tubercle ..... 4
- Body shape moderate to oblong-oval; body length at least 1.5 times as long as combined elytral width. Male sternite 1 with or without spot of denser hairs. Female pygidium uniform pubescent or with less pubescent, brilliant area or with polished, hairless area. Elytral stria 4 basally with or without indistinct tubercle ..... 6
- 4 Dorsal side of body strikingly flattened (lateral view!) ..... 5
- Dorsal side of body strikingly convex. Elytral pubescence variegated. Cuticle colour black; antennal segments 1–5, fore and mid leg except tarsi and femoral base yellowish-red. 1.3–1.9 mm. Northern Mediterranean from Spain and S France to Jordan and Tadjikistan ..... *mulsanti*
- 5 Elytral pubescence usually variegated; rarely rather uniform, greyish to yellowish-brown. Cuticle colour black; antenna and legs varying: at least antennal segments 1–6, fore and mid legs except femoral base reddish, at most antenna and all legs nearly completely reddish. 1.7–2.6 mm. Circummediterranean; Central Europe: S Germany, Austria, Czecho-Slovakia ..... *lividimanus*
- Elytral pubescence uniform, greyish. Cuticle colour black; antennal segments 1–4 (5) ventrally yellowish-red, dorsally reddish with segment 1 darkened; often extreme tibial and femoral apex of fore and mid legs dark reddish 1.7–3.0 mm. Europe: from Great Britain to Spain, Greece and Crimea; Turkey ..... *villosus*
- 6 Pygidium oblique, most part visible (dorsal view!). Elytral pubescence variegated, greyish and pale to straw yellowish; elytra and pygidium with distinct elongated spots of denser hairs. Female pygidium without brilliant or polished area. Male sternite 1 without spot of denser hairs. Elytral stria 4 basally without tubercle. Cuticle colour black; antennal segments 1–4, fore and mid legs except femoral base yellowish-red. 1.6–3.5 mm. Eastern Mediterranean from Greece to Turkey and Israel ..... *rufisurus*
- Pygidium vertical, last part visible ..... 7
- 7 Cuticle colour black; often antennal segments 1–3, fore and mid tibia apically reddish. Pubescence generally dark brown; elytral pubescence scarcely greyish spotted. Female pygidium with nearly hairless, polished area. Elytral stria 4 basally without tubercle. Male sternite 1 with spot of denser hairs at basal mid. 1.9–2.5 mm. Eastern Mediterranean: Turkey, Iran, Israel ..... (4.7.) *suratus*
- At least fore and mid tibia nearly completely, and always antennal segments 1–4 yellowish-red. Elytral pubescence uniformly greyish to yellowish, or variegated, rarely with striking irregular transverse bands ..... 8
- 8 Body shape oblong-oval (dorsal view!); body length about 1.7 times as long as combined width of elytra. Elytral sides parallel. Male sternite 1 with spot of denser hairs ..... 9
- Body shape moderate oval; body length at most 1.6 times as long as combined width of elytra. Elytral sides more convex. Other combination of tarsi and elytral pubescence. Male sternite 1 with or without spot of denser hairs ..... 10
- 9 Elytral pubescence variegated. Cuticle colour black; antennal segments 1–4, fore and mid legs except tarsi and femoral base yellowish-red. Female pygidium with brilliant, less pubescent area. Male sternite 1 with spot of denser hairs at basal mid. Elytral stria 4 basally without (specimens from western Mediterranean) or with indistinct flat to sharp tubercle (specimens from eastern Mediterranean) 1.6–2.3 mm. Northern Mediterranean from E Spain and S France to Iran and Israel; S Central Europe: SE Austria, Hungary, Czecho-Slovakia ..... (4.5.) *pusillus*
- Elytral pubescence with striking greyish hairs forming two transverse, irregular bands, one each subbasally and subapically. Cuticle colour black; antennal segments 1–(4)5, 6(7), fore and mid legs except basal half of femur yellowish-red; fore and mid tarsi apically or completely darkened. Elytral stria 4 basally with indistinct flat to rarely sharp tubercle, rarely without tubercle. 1.4–2.0 mm. Southern Mediterranean: Algeria, Spain (including Mallorca), Italy (Sicily), Greece, Turkey, Jordan ..... (4.6.) *borowieci* n.sp.



- 10 Elytral pubescence uniform, greyish to pale yellowish. Female pygidium with brilliant, less pubescent area. Male sternite 1 with spot of denser hairs at basal mid. Elytral stria 4 basally without tubercle. Cuticle colour varying: black with antennal segments 1–4, fore and mid legs except tarsi and femoral base yellowish-red, to completely red with yellowish antenna and legs. Eastern Mediterranean from Crete to Turkey, Iraq, Jordan, Israel . . . . .  
 . . . . . (4.4.) *fulvescens*  
 – Elytral pubescence variegated . . . . . 11
- 11 Elytral pubescence similar to *B. pusillus*, but paler. Female pygidial pubescence uniform, without polished area. Male sternite 1 without spot of denser hairs. Elytral stria 4 basally without (specimens from western Mediterranean) or with very indistinct, flat tubercle (specimens from eastern Mediterranean). Cuticle colour black; antenna and legs varying: antennal segments 1–4, fore and mid legs except femoral base yellowish-red (often in Central Europe), to antenna completely and legs nearly completely yellowish-red (Mediterranean). 1.5–2.6 mm. Central Europe, Circummediterranean, eastwards to Iran . . . . .  
 . . . . . (4.6.) *seminarius*  
 – Elytral pubescence with predominant greyish and yellowish hairs. Female pygidium with polished, nearly hairless area. Male sternite 1 with spot of denser hairs at basal mid. Elytral stria 4 basally always without tubercle. Cuticle colour black; antennal segments 1–5 (6, 7), fore and mid legs except femoral base yellowish-red; fore and mid tarsi apically somewhat darkened; remaining antennal segments and hind tibia not exactly black, but indistinct reddish transparent; very rarely antenna nearly completely yellowish-red. 1.8–2.6 mm. Western Mediterranean from Canary Islands to Tunisia, to S France and Dalmatia . . . . .  
 . . . . . (4.8.) *taorminensis*.

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