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Comments on some systematic and nomenclatural questions in Aphodiinae with descriptions of new genera and on Italian taxa
(Coleoptera Aphodiidae)

Abstract - Systematic, nomenclatural and distributional problems of Aphodiinae, primarily in the Italian fauna, are considered. Four new genera are described: *Nobiellus* **n. gen.**, *Bodiloides* **n. gen.**, *Planolinellus* **n. gen.**, *Planolinoides* **n. gen.** and three genera, *Parabodilus* Hollande & Thérond, 1999, *Rhodaphodius* Ádám, 1994 and *Bodilopsis* Ádám 1994, are restored as valid genera. Relative systematic positions are discussed, and new combinations for pertinent species are proposed. Several colour variations are described. *Aphodius* (*Liothorax*) *wilsonae*Maté & Angus, 2005 is considered **n. syn.** of *Liothorax niger* (Illiger, 1798).

Riassunto - *Note su alcuni problemi di sistematica e nomenclatura degli Aphodiinae, con particolare riguardo ai taxa della fauna italiana, e descrizione di generi nuovi.*
Problemi di sistematica, nomenclatura e distribuzione geografica inerenti agli Aphodiinae, soprattutto per i taxa della fauna italiana, sono discussi e per quanto possibile risolti. Sono descritti quattro nuovi generi: *Nobiellus* **n. gen.**, *Bodiloides* **n. gen.**, *Planolinellus* **n. gen.** e *Planolinoides* **n. gen.** mentre *Parabodilus* Hollande & Thérond, 1999, *Rhodaphodius* Ádám, 1994 e *Bodilopsis* Ádám 1994, sono riconsiderati generi validi. Viene discussa la loro posizione sitematica e sono formulate nuove combinazioni per le specie pertinenti. Sono descritte diverse forme cromatiche e/o *morphae*. *Aphodius* (*Liothorax*) *wilsonae*Maté & Angus, 2005 è considerato **n. syn.** di *Liothorax niger* (Illiger, 1798).

Key words: Aphodiinae, nomenclature, taxonomy, distribution, new taxa, new combinations, new synonymies.

Successful solutions to intricate systematic and nomeclatural problems can often be found by careful study of older publications. However, a great deal of the present systematic confusion concerning taxa of the subfamily Aphodiinae seems to be a result of some contemporary authors quoting catalogues or monographs rather than the original sources.

Even though we are aware that the new names of colour variations and/or morphae do not have nomenclatural status, we are compelled to propose them for clarifying the complete set of morphological characters of each taxon and obviously for avoiding any systematic confusion.

Nomenclature - alterum entomologiae fundamentum - is a branch of zoological sciences offering exciting and stimulating information to an investigator, but it cannot be an escape from reality to theoretical fantasies.

The purpose of this study is to remove confusion in a series of cases affecting primarily the Italian taxa, at least those recorded more or less correctly from that Country.

1) Aphodiini, Didactyliini and Proctophanini

Monophyly of the superfamily Scarabaeoidea is well founded. However, the hi-

erarchical level of families, subfamilies, tribes and subtribes continues to be discussed. As far as we know, no phylogenetic analyses have addressed the relationship of the subfamily taxa in Scarabaeidae sensu auctorum, i. e. including thirteen subfamilies. Thus in our publications we consider Aphodiidae as a family of Scarabaeoidea, not Aphodiinae, subfamily of Scarabaeidae.

Pittino (1984), in his revisional work on Saudi Arabia Aphodiinae, described Didactyliina, new subtribe of Aphodiini, based, among other characters, on the metatibial apical spurs close together preventing the first tarsal segment from going between them (fig. 17). Stebnicka & Howden (1994) in the revisional work on Australian Aphodiini described, without mentioning Didactyliini, the new tribe Proctophanini, based primarily on the same character as Pittino's taxon. Dellacasa G. et al. (2001) therefore considered Proctophanini a junior synonym of Didactyliini.

However Forshage (2002) distinguished Proctophanini from Didactyliini mostly based on the character of the more or less well developed carinae on the outer face of the hind tibiae, and restored the former as valid taxon. He remarked that habitus and epipharynx fall into the two categories (figs 5-8; 9-12) and we agree with his conclusions.

KEY TO TRIBES OF APHODIINAE

1 Apical spurs of hind tibiae separated from each other so that the first tarsal segment is articulated in between them (fig. 16); aedeagus with tegmen strongly convex, in dorsal view rounded at sides, obliquely truncate basally and distinctly gibbous before base (figs 2-3); abdominal sternites generally not fused to one another; transverse carinae on outer face of hind tibiae well distinct and usually strong (fig. 13). Cosmopolitan ..... Aphodiini

1' Apical spurs of hind tibiae close toghether so that the first tarsal segment does not go between them (fig. 17); aedeagus with tegmen feebly convex, in dorsal view parallel sided, usually perpendicularly truncate basally and not or faintly gibbous before base (figs 6-7; 10-11); abdominal sternites fused to one another 2

2 Transverse carinae on outer face of hind tibiae very reduced, sometimes obsolete (fig. 14). Holarctic, Neotropical and Afrotropical region; Mexican Transition Zone ..... Didactyliini

2' Transverse carinae on outer face of hind tibiae distinct, rather strong (fig. 15). Afrotropical and Australian region; introduced in Chile and U.S.A. (California) ..... Proctophanini

The new systematic arrangement of the genera previously considered pertaining to Didactyliini is:

DIDACTYLIINI Pittino, 1984	PROCTOPHANINI Stebnicka & Howden, 1994
(type genus *Didactylia*)	(type genus *Proctophanes*)
- *Aidophus* Balthasar, 1963	- *Australaphodius* Balthasar, 1942
- *Didactylia* d'Orbigny, 1896	- *Coptochirus* Harold, 1859
- *Pseudomothon* Pittino, 1984	- *Drepanocanthus* Péringuey, 1901
- *Trigonoscelus* Petrovitz, 1963	- *Goiginus* Endrödi, 1982
	- *Harmogaster* Harold, 1861
	- *Proctophanes* Harold, 1861
	- *Pseudodrepanocanthus* Bordat, 1993
	- *Psudoxyomus* Petrovitz, 1962

2) *Paracoptochirus singularis* (Harold, 1868)

For this species, only type material is known: the holotype (male) of *singularis* from Istanbul (European Turkey) and the holotype (female) of *haemonius* Reitter, 1903 (nunc = *singularis*) from Salonicco (Greece).

Italian citations (Bertolini, 1899; Luigioni, 1929) are certainly incorrect. It would be more probable that, at least, Bertolini's citation be referred to *Ataenius horticola* Harold, 1869, at that time erroneously synonymized with the former (e. g.: Marseul, 1877: 34; *cyprius* Baudi, 1870 [nunc junior synonym of *horticola* Harold, 1869] = *singularis* Harold, 1868).

3) *Oxyomus sylvestris* ab. *foveolatus* (Moll, 1785)

Moll (1785: 173) described *Scarabaeus foveolatus* characterized by, among other characters, the elytra more or less widely reddish.

The authorship of the name *foveolatus* was attributed by most authors to Mulsant (1842), who first mentioned *foveolatus* Moll as a synonym of *Scarabaeus porcatus* Fabricius, 1775 (nunc = *Oxyomus sylvestris* Scopoli, 1763). Mulsant considered the name applicable to the colour variation with reddish elytra. Obviously the authorship of the name *foveolatus* must be attributed to Moll (1785).

4) *Megatelus contractus* (Klug, 1845) **n. comb.** [ex *Aphodius*], and *Megatelus scolytoides* (Lucas, 1846)

After examining material from different localities (e. g.: from Tunisia to Oman), we can state that the characters on which the subspecific distinction between *contractus contractus* and *contractus scolytoides* (Dellacasa G., 1977) was based, must be considered within the limits of the specific variability. The synonymy of *scolytoides* versus *contractus*, as used in most of the relevant literature, must be accepted.

The only specimens showing what might be considered relevant morphological differences from palearctic examples are those from Kenya (East Tsavo).

5) *Megatelus brahminus* (Harold, 1879) and *Megatelus scolytiformis* (Reitter, 1892)

Aphodius (Megatelus) scolytiformis (type species of *Megatelus* by Reitter, 1892, original designation) was synonymized with *brahminus* Harold, 1879 by A. Schmidt (1913: 118). Other authors (e. g.: Landin, 1974: 236) considered it a *bona species.*

The type of *scolytiformis*, indispensable to settling the problem, is not in Reitter's collection at Budapest Museum and has to be considered lost. His type locality is "Syria" that of *brahminus* is "Burma". The characters mentioned in Reitter's original description of *scolytiformis* fit nearly perfectly those of *brahminus* females (e. g.: the punctation of elytral interstices is fine and superficial in the female of *brahminus* as well as in *scolytiformis*, whereas in the male of *brahminus* it is dense and coarse).

One can suppose that Reitter described *scolytiformis* basing on a female specimen of *brahminus* with an incorrect locality label as remarked by Balthasar (1964: 28). Since, the problem concerns mostly the type locality of *scolytiformis*: "Syria" - as in Reitter's time - it can only be *Megatelus contractus.*

At present, we accept the synonymy proposed by A. Schmidt and confirmed by Balthasar, because it does not create systematic difficulty.

6) *Otophorus haemorrhoidalis* "ab. ***totoniger*** nov."

Küster (1854, v. 28, n. 25) described the variety "*ß*" of *Aphodius haemorrhoidalis* as having the elytra entirely blackish (*elytris nigris, concoloribus*). As far as we know, none of the following authors mentioned or correctly named this colour variation.

Among more than thousand specimens of *haemorrhoidalis* preserved in our collection, we found only three specimens with entirely blackish elytra. They were collected respectively in Sicily (Piano Sempria, Madonie, Palermo), in Sardinia (Palmadula dint., Nurra, Sassari), and in Turkey (Ziyarettepesi Geç., Vil. Sivas). For this extremely rare colour variation, the name "*totoniger"* is herein formulated.

7) *Teuchestes fossor* ab. *sylvaticus* (Ahrens, 1812) and ab. *brunneus* Mulsant, 1842

The true *sylvaticus*, with bright red elytra, seems to be found only in central Europe and northern Asia (from France to Transbaikalia).

Specimens of *fossor* with the elytra brownish on the disc and blackish basally, corresponding to the colour variation *brunneus*, are found rarely in the Alps.

8) *Eupleurus subterraneus* ab. *fuscipennis* Mulsant, 1842 and ab. *ruber* (DallaTorre, 1879)

In southwestern Europe as well as in northern Italy, the specimens of *subterraneus* with brownish-red elytra are the color form *fuscipennis*. From central and eastern Europe to Siberia there are specimens with the bright red elytra that are the colour variation *ruber*.

9) *Anomius crovettii* (Dellacasa G., 1983)

In spite of several collecting trips to the type locality of *Anomius crovettii* (i. e.: Calasetta, Isola di Sant'Antioco, Sardinia), the taxon, at least the male sex, was not more found.

Recently, at the Paris Museum, we had occasion to compare *crovettii* with the most of North African species of *Anomius*. Although similar to some of those species (e. g.: *segonzaci* Bedel, 1904), it proved to be a distinct species.

Even though Professor Antonello Crovetti, collector of the male type specimen and to whom the species is dedicated, confirmed to us the date and the collecting place, we suspected that it might be an accidental introduction of a North African species.

10) *Aphodius perezi* Harold, 1870 doubtful junior synonym of *Calamosternus granarius* (Linné, 1758)

Because the type of *perezi* is not in Harold's collection at the Paris Museum, the synonymy of these taxa cannot be definitely established. However, the proposal of most authors (i. e.: = *granarius*) cannot be justified. Effectively in the original latin diagnosis, Harold highlighted the primary characters in the discrimination of *perezi* from *granarius* (i. e.: *scutello basi subimpresso apice longitudinaliter subelevato*). Later, in

the observations to explain these differences, Harold again states "Das bei diesem [*granarius*] ebene und glatte Schildchen ist, bei *A. perezi* an der Basis sehr seicht eingedrükt und gegen die Spitze schwach erhaben".

Based on this character the synonymy of *perezi* versus *granarius* cannot be accepted, and it would be more realistic to consider the former perhaps a synonym of *algiricus* which is distinguished from *granarius* by the same characters. The type locality of *perezi* is Malaga (southern Spain) and the recent foundings of *algiricus* in Iberian Peninsula (Galante & Verdú, 1994; Veiga et al., 1997, sub *hyxos)* is a confirmation of this hypothesis.

11) *Calamosternus hyxos* "ab. ***simulator*** nov."

In our collection are preserved specimens of *Calamosternus hyxos* with elitra reddish with a blackish suture collected in Jerusalem (Israel). For this colour variation we propose the name "*simulator"*.

12) *Calamosternus mayeri* "ab. ***parasuturifer*** nov."

Specimens of *Calamosternus mayeri* with elytra reddish with a blackish suture collected in Sardinia (Monte Urpino, Cagliari) are preserved in our collection. For this colour variation we propose the name "*parasuturifer*", with reference to the corrisponding variation in *Calamosternus trucidatus* (Harold, 1863).

13) Aphodius niger (Panzer, 1797), *Liothorax muscorum* Ádám, 1994, *Liothorax niger* (Illiger, 1798) **n. comb.** (ex *Aphodius*), and *Aphodius* (*Liothorax*) *wilsonae* Maté & Angus, 2005.

Scarabaeus niger Panzer, 1797 is a primary homonym of *Scarabaeus niger* Giorna 1791 (junior synonyn of *Scarabaeus funestus* Poda, 1761, nunc *Oxythyrea funesta*). Thus Panzer's name cannot be considered valid, as was done by most authors for more than a century. The original description of Panzer (1797: 37, n. 1; type locality: "Brunsvigiae" [Braunschweig, Germany]) as well as the figure, indicate that the head of *Scarabaeus niger* has the frontal suture with *"….tuberculis tribus obsoletis…."* and *"…statura et magnitudo Sc. bimacul.* F. *…."* [nunc *Aphodius varians* ab. *fabricii* d'Orbigny, 1896]. Later, Panzer himself (1799?: 37, n. 4) considered his *Scarabaeus niger* as *Aphodius plagiatus* "variet."

Although Panzer's description is too short and the accompanying figure is too small to provide characters enabling an unambiguous identification, Ádám (1994) on this basis, considered Panzer's taxon identical with *Aphodius varians* Duftschmid, 1805 (its oldest available synonym) and created the name *Liothorax muscorum* for *Aphodius* [*Scarabaeus*] *niger* auctorum nec Panzer. Ádám may well be right, but because he did not designate a neotype for Panzer's name, he left the question of its true identity open to debate.

Krell et al. (2003) propose a quite different solution to that nomenclatural problem, i.e.: the suppression, for the purposes of both the principles of priority and homonymy, of the name *Scarabaeus niger* Panzer, 1797, and the adoption for this tax-

on of the name *Aphodius niger* Illiger, 1798. The suppression of Panzer's name eliminates the secondary homonymy between *Aphodius niger* (Panzer, 1797) and *Aphodius niger* Illiger, 1798.

In our opinion there are, at least, two considerations: a) Illiger (1798: 24) is proposing only a new combination for *Scarabaeus niger* Panzer, 1797, i.e.: *Aphodius niger* (Panzer, 1797); b) the description - systematic remarks? - provided by Illiger for this taxon (p. 25) allows us, at most, to suppose that he deemed it identical with *plagiatus* Linné (…"der starke fast metallische Glanz der schwarzen Farbe"...) or, at most, a form (…"ungeflekte Abänderung"…) of the latter (1801: 23).

The contention by Krell et al. (2003) that "Illiger's species…..is easily recognizable as a member of the "subgenus" *Liothorax* Motschulsky, 1859", as well as their designation as lectotype of *Aphodius niger* a specimen from Sweden belonging to "Illiger's original [sic!] material" are an overstatement.

The description of *Aphodius niger* provided by Illiger (1798: 24) makes, according to the Code, the name available from this work, and Krell et al. (2003) by designating its lectotype provide the means to establish its identity.

One may not favour this solution, but must accept that it is a solution. The Commission has ruled (Opinion 2099, 2005) that the specific name *Aphodius niger* Illiger, 1798 is conserved by the suppression of the senior secondary homonym *Aphodius niger* (Panzer, 1797), though Illiger never described the nominal species *Aphodius niger* and consequently a non-existing taxon cannot have type material and the lectotype designation has no purpose.

Maté and Agus (2005: 329) described the new species *Aphodius* (*Liothorax*) *wilsonae* from Spain. The characters used to characterize the new species are, in our opinion, nothing more than traits of intraspecific variation.

While awaiting further investigations done on additional material from more numerous localities of the extremely wide distributional area of the taxon (i.e.: Europe, Asia Minor, Central and Eastern Asia to Tibet) we formulate the **new synonymy** of *Aphodius* (*Liothorax*) *wilsonae* Maté & Angus, 2005 versus *Liothorax niger* (Illiger, 1798).

14) *Phalacronothus biguttatus* ab. *nigripennis* (Fleischer, 1933)

The colour variation of *Phalacronothus biguttatus* with the elytra entirely blackish was named *pseudodiecki* by Dellacasa G. in 1983. It was formerly described by Fleischer in 1933 with the name *nigripennis*, hence *pseudodiecki* has to be considered a "junior synonym" of the former.

15) *Phalacronothus quadrimaculatus* "ab. ***nigrolucens*** nov."

The entirely shining black specimens from southern Italy (Calabria and Puglia) and Sicily, in our opinion, were wrongly identified as *quadrimaculatus diecki* Harold, 1870, a subspecies well distinguishable by the silky shine of the upper surface and distributed in Southern Spain and western Mediterranean Africa only. We propose for this colour variation, at present known from Southern Italy and Sicily only, the new name "*nigrolucens*".

16) *Parammoecius pyrenaeus* (J. DuVal, 1859) **n. comb.** [ex *aphodius*], and *Aphodius davidi* (Hoffmann, 1954)

Hoffman (1954) described *Aphodius davidi*, distinguishing it from *pyrenaeus* as follow:

1. Elytral interestices flat and nearly smooth on disc; striae fine, subcrenulate; scutellum almost unpunctured; hind tibiae superior apical spur as long as first tarsomere; middle tibiae inferior apical spur, in males, hooked apically. France (Massif du Pelvoux, Hautes Alpes) ..... *davidi*

1'. Elytral interstices more or less distinctly convex, punctured on disc; striae deep, crenulate; scutellum strongly punctured; hind tibiae superior apical spur shorter than first tarsomere; middle tibiae inferior apical spur, in males, apically truncate. Spain (Pirineos) and France (Hautes Pyrénées) ..... *pyrenaeus*

The dichotomy seems very evident but, as already remarked by Mariani (1969: 182, 186), in the populations of the western Alps, of which we have had the chance to study series from several localities, the morphological differences between the two taxa show high variability. We are not able to establish if this variability is found both in population from Pyrénées and from Hautes Alpes because of insufficient material from critical localities.

The distribution of *pyrenaeus*, *sensu lato* (from Pyrénées to eastern Alps - Austria, Schneeberg - [the record of *pyrenaeus* from Siberia: Irkutskh (Balthasar, 1964) is probably due to a misidentification of *Agoliinus piceus,* species rather frequent in that region]), is very discontinuos and due also to the exclusively orophilous habitat (2000/3000 m), allows one to suppose the existence of relict populations with differences in morphological characters alternately dominant (*natio?*). The insignificant aedeagal differences do not justify at all, in our opinion, the upgrading to subspecific rank of these populations.

In conclusion, we deem it advisable, at least at present, to maintain the current synonymy, i. e.:

Parammoecius pyrenaeus (J. DuVal, 1859)
= *Aphodius jugicola* Harold, 1863
= *Ammoecius rugiceps* Mulsant & Rey, 1870
= *Aphodius reitterianus* Schwarz, 1897
= *Aphodius davidi* Hoffmann, 1954

Ammoecius rugiceps (*patria incognita*?) was characterized by having the apex of the elytra and legs reddish. It might be maintained as colour variation distinct from entirely blackish typical form.

17) *Nimbus affinis* (Panzer, 1823) and *Nimbus proximus* Ádám, 1994

Nimbus affinis was recorded from Maritime Alps (Alpi Marittime, Piedmont or Alpes Maritimes, France department?) by Luigioni (1929) and from Triest (Friuli - Venezia Giulia) by Horion (1958).

Ádám (1994) considering *affinis* exclusive to central and southeastern Europe, formulated its new synonymy with *Aphodius hoberlandti* Tesař, 1945 and described the

new species *Nimbus proximus* from southwestern Europe. The record of Luigioni should probably be referred to *proximus* and that of Horion probably to *affinis.*

Though we deem them both almost certainly extraneous to the Italian fauna, we supply the following key to the species discussed:

1 Lateral margins of pronotum densely elongately ciliate; pronotum and elytra smooth thus almost shiny; epistoma coarsely densely punctured on disc, punctation confuse and subrugose distally; frontal suture finely impressed; hind tibiae superior apical spur distinctly shorter than first tarsal segment. Length 6.0-7.0 mm. Central and southeastern Europe (Austria, Czech Republic, Greece?, Hungary, Slovakia, Ukraine); Italy (Friuli-Venezia Giulia: Triest)? .... *affinis*

1' Lateral margins of pronotum sparsely and almost shortly ciliate; pronotum and elytra finely microreticulate thus few shiny; epistoma finely sparsely punctured on disc, punctation coarser distally; frontal suture obsolete; hind tibiae superior apical spur near as long as first tarsal segment. Length 5.0-6.0 mm. Southwestern Europe (France, Spain, Portugal); Italy (Maritime Alps)? ..... *proximus*

Although *proximus* is found in shaded pastures in various types of dung (horse, sheep, cow, deer and rarely human) the bionomics of *affinis* is not discussed in the literature. The species has been considered mainly foleophilous (nests of *Oryctolagus cuniculus*), however it is surely coprophagous, preferring horse dung in open or half-open pastures on clayey and humid soils. Exclusively a late autumn taxon, it flies daily and seems to be very localized (e. g. in Czech Republic) though rather frequent after not severe frost (L. Mencl, *in litteris*).

18) *Aphodius pustulifer* Reitter, 1892, *Aphodius sesquivittatus* Fairmaire, 1883 and *Aphodius exclamationis* Motschulsky, 1849

Ragusa (1905: 71) recorded *Aphodius pustulifer* from Sicily (Castelbuono, Madonie, Palermo) which has caused some difficulty.

Aphodius (Volinus) pustulifer was described from "Sarepta, Beirut, Tanger, Neu-Merw" but at present is known only from central Asia (Kazakstan, Turkmenistan, Uzbekistan). Lebanon and Morocco, as mentioned in original description, seem to be very improbable.

We think that the Sicilian record was due to misidentification of a Mediterranean Africa species, very probably from Tunisia (e. g.: *sesquivittatus* or *exclamationis*). Therefore we have investigated the taxonomy and systematic position of the three involved taxa.

There is no problem in identifying *A. sesquivittatus* and *A. exclamationis*. But it is essential to trace the type of *A. pustulifer*. Unfortunately it is not in Reitter's collection at the Budapest Museum, thus we are compelled to designate a neotype from Reitter's original material.

Surprisingly enough, our studies resulted in:

- *Aphodius pustulifer* is systematically close to *A. bonnairei* Reitter, 1892 and for them both it is necessary to create the new genus *Nobiellus*;
- *Aphodius sesquivittatus* belongs to the genus *Esymus*;
- *Aphodius exclamationis* belongs to the genus *Chilothorax*.

Following we supply diagnoses, redescriptions with iconographical coverage, new combinations and identification keys for these taxa.

KEY TO GENERA HEREIN DISCUSSED

1. Pronotum with lateral margins distinctly elongately ciliate; ventral face of middle and hind femora irregularly coarsely punctured and elongately pubescent (fig. 22); metasternal plate spoon-like, with deep longitudinal groove at middle, irregularly coarsely punctured on sides, punctures with elongate posteriorly recumbent pale hairs (fig. 22); aedeagus with paramera very short, as long as one third or one fourth of tegmen (fig. 18). Black; sides of pronotum testaceous; elytra pale brown-yellowish with or without cloudy discal spot brownish. Length 3.0-5.0 mm. Palaearctic region ..... *Nobiellus* n. gen.

1' Pronotum with lateral margins glabrous; ventral face of middle and hind femora, in males, with few sparse punctures, someone of which finely haired (fig. 23); metasternal plate, in males, moderately excavate at middle, sparsely superficially punctured, glabrous (fig. 23); aedeagus with paramera as long as tegmen (fig. 19). Blackish; pronotum with anterior angles usually reddish; elytra pale brown-reddish with wide, distinctly marginate, discal spot dark brownish. Length 4.0-5.0 mm. Palaearctic region ..... *Nobius*

Genus ***Nobiellus*** nov.

TYPE SPECIES: *Aphodius bonnairei* Reitter, 1892

Species parvae, convexae, nitidae, fere glabrae. Nigrae vel brunneae, elytris flavescentibus plerumque macula discali elongata nigrescente ornatis. Capite clypeo medio leviter sinuato, lateribus rotundato, genis parum prominulis, sutura frontali obsoleta. Pronoto dupliciter sparse punctato, lateribus elongate ciliato, basi marginato. Scutello parvo, triangulari. Elytris subcrenato-striatis, interstitiis planiusculis. Meso- metafemoribusque crebre punctatis et elongate pubescentibus. Lamina metasternali fortiter excavata, longitudinaliter distincte sulcata, crebre irregulariter punctata et retrorsum pubescente. Aedeago parameris breviusculis. Metatibiis setis apicalibus longitudine irregulariter inaequalibus.

DIAGNOSIS. Small species (length 3.0-4.5 mm); elongate, convex, shiny, almost glabrous. Blackish or brownish; elytra yellowish, usually with elongate blackish spot more or less cloudy. Head with epistoma faintly gibbous or flat; clypeus feebly sinuate at middle, rounded at sides, thinly bordered, border glabrous; genae rounded, elongately ciliate, slightly protruding more than eyes; frontal suture almost obsolete, at least widely interrupted at middle, not tuberculate. Pronotum dually regularly almost sparsely punctured; sides with border elongately sparsely ciliate; hind angles obtusely rounded; base distinctly bordered. Scutellum small, triangular, punctured. Elytra elongate, more or less broadened posteriorly; striae fine, distinctly punctured, subcrenulate; interstices flat, finely and sparsely punctured, shortly near imperceptibly pubescent on preapical declivity. Fore tibiae distally tridentate and proximally feebly serrulate at outer margin; inferior carina with distinct proximal tooth; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with stout and irregularly unequal spinules. Pygidium with fine, rather dense and recumbent pubescence, mixed few straight and elongate setae; its apical margin elongately sparsely ciliate. Sexual dimorphism shown in males mainly by ventral face of middle and hind femora, somewhat widened, irregularly coarsely punctured, elongately pubescent; metasternal plate spoon-like, with deep longitudinal groove at middle, irregularly coarsely punctured on sides, punctures with

elongate posteriorly recumbent pale hairs. Aedeagus with paramera very short, as long as one third or one fourth of tegmen. Epipharynx distinctly sinuate at anterior margin; epitorma drop-shaped; corypha with apical spiculae distinctly protruding beyond the front margin; pedia densely pubescent toward epitorma and with several spinules almost short and irregularly scattered; chaetopariae rather dense and moderately elongate.

DISTRIBUTION. Palaearctic region.

REMARKS. Afrotropical and Nearctic species long considered as belonging to this genus need a thorough systematic revision, and probably have to be moved to other old or new genera. Other than the type species, i. e. *bonnairei* and, obviously, *pustulifer*, we consider the following to belong to this genus, and we propose the following new combinations:
- *Nobiellus circumductus* (Solsky, 1876) **n. comb.** (ex *Aphodius*)
- *Nobiellus inclusus* (Reitter, 1892) **n. comb.** (ex *Aphodius*)
- *Nobiellus pseudoinclusus* (Balthasar, 1963) **n. comb.** (ex *Aphodius*)

KEY TO SPECIES HEREIN DISCUSSED

1. Head with epistoma sparsely regularly punctured on disc; punctation distally somewhat denser and confused; pronotum and elytral interstices finely microreticulate thus few shiny; elytral striae wide; hind tibiae superior apical spur distinctly shorter than first tarsal segment. Blackish, elytra yellowish with juxtasutural interstice brownish and a cloudy more or less widened lateral brownish stripe, preapically broadened toward suture, rarely elytra with only juxtasutural interstice brownish. Length 3.0-4.5 mm. Southwestern Europe (southern France, southern Spain) and western Mediterranean Africa (Morocco, Algeria, Tunisia) ..... *bonnairei*

1'. Head with epistoma subgranulosely punctured on disc, punctation distally strongly and somewhat confusedly granulose; pronotum and elytra interstices smooth, thus very shiny; elytral striae fine; hind tibiae superior apical spur almost as long as first tarsal segment. Blackish; elytra yellowish with juxtasutural interstice brownish and a lateral elongate brownish stripe more or less transversely widened toward suture, sometimes with a transverse oval small preapical spot. Length 3.5-4.0 mm. Central Asia (Kazakstan, Turkmenistan, Uzbekistan) ..... *pustulifer*

Nobiellus bonnairei (Reitter, 1892) **n. comb.** (figs 24-29)
Aphodius (Melinopterus) bonnairei Reitter, 1892: 234;
Aphodius (Nobius) bonnairei; Schmidt A., 1913: 147; Dellacasa G., 1983: 359

TYPE LOCALITY: Laghouat, Algier [Algeria].

TYPE DEPOSITORY: Hungarian Natural History Museum, Budapest (?).

DESCRIPTION. Length 3.5-4.5 mm, elongate, convex, shiny, almost glabrous. Head and pronotum blackish; the latter with anterior angles and sides narrowly yellowish; elytra yellowish-brown with juxtasutural interstice and usually with a more or less widened cloudy brownish spot; legs brownish; antennal club piceous (*forma typica*; fig. 28); rarely elytra without spot ("ab. ***asfaricus*** nov."; fig. 29). Head with epistoma moderately convex, finely, regularly and rather sparsely punctured throughout, punctation distally somewhat more dense and confused; clypeus feebly sinuate at middle, rounded at sides,

thinly bordered; genae rounded, elongately ciliate, slightly protruding more than eyes; frontal suture somewhat raised laterally only; front regularly almost sparsely punctured. Pronotum moderately transverse, convex, dually regularly almost sparsely punctured; large punctures two times larger than small ones; sides thinly bordered, the border elongately sparsely ciliate; hind angles obtusely rounded; base feebly bisinuate, distinctly bordered. Scutellum regularly triangular, distinctly punctured. Elytra elongate, very feebly broadened posteriorly; striae fine, distinctly punctured, subcrenulate; interstices flat, finely and sparsely punctured, shortly near imperceptibly pubescent on preapical declivity. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: pronotum relatively more transverse and less densely punctured; ventral face of middle and, somewhat widened, hind femora irregularly coarsely punctured and elongately pubescent; metasternal plate spoon-like, with deep longitudinal groove at middle, irregularly coarsely punctured on sides, punctures with elongate posteriorly recumbent pale hairs; aedeagus figs 24-25. Female: pronotum relatively narrower frontwardly, more densely punctured; ventral face of middle and hind femora glabrous; metasternal plate glabrous, feebly excavate medially, superficially grooved, sparsely irregularly almost finely punctured.

DISTRIBUTION. Southwestern Europe (southern France, southern Spain) and western Mediterranean Africa (Morocco, Algeria, Tunisia).

Nobiellus pustulifer (Reitter, 1892) **n. comb.** (figs 30-35)

Aphodius (Volinus) pustulifer Reitter, 1892: 228; Reitter, 1901: 75; Käufel, 1914: 144 [as ab. of *circumductus* Solsky, 1876], Schmidt A., 1922: 179; Balthasar, 1964: 235;
Aphodius pustulifer ab. *malyi* Obenberger, 1914: 111; Käufel, 1914: 144 [as ab. of *circumductus* Solsky, 1876]
Aphodius (Chilothorax) pustulifer; Dellacasa M., 1988: 186

TYPE LOCALITY: Gr. Balachan Dschebeil [Gran Balkan], Turkmenistan.

TYPE DEPOSITORY: Reitter Collection. Hungarian Natural History Museum, Budapest.

DESCRIPTION. Length 3.5-4.0 mm, oval-elongate, convex, shiny, almost glabrous. Head and pronotum dark brownish, latter with sides and mainly the anterior angles pale reddish; elytra yellowish with juxtasutural interstice and a lateral elongate and more or less medially widened brownish spot as well as with a transversally oval small preapical spot, blackish; legs reddish-brown; antennal club piceous (*forma typica*; fig. 34), or elytral spots joined and widened in a longitudinal brownish bind (ab. *malyi* Obenberger, 1914; fig. 35). Head with epistoma moderately convex, subgranulately punctured on disc, punctation distally confusedly granulose; clypeus distinctly sinuate at middle, rounded at sides, finely bordered, the border glabrous and faintly upturned; genae rounded, sparsely ciliate, feebly protruding more than eyes; frontal suture finely impressed; front coarsely subregularly punctured. Pronotum transverse, moderately convex, distinctly regularly punctured throughout; sides feebly arcuate, thinly bordered, the border sparsely elongately ciliate; hind angles obtuse; base feebly bisinuate, thinly bordered. Scutellum regularly triangular; irregularly punctured on basal half. Elytra convex, elongate, later-

ally and apically minutely pubescent; striae moderately impressed, distinctly punctured, subcrenulate; interstices flat, finely punctured; punctures arranged in two nearly regular lateral belts. Fore tibiae apical spur regularly acuminate toward apex and downward curved in both sexes. Hind tibiae superior apical spur shorter than first tarsal segment; latter slightly longer than following three combined. Male: pronotum relatively more transverse; metasternal plate spoon-like, with deep longitudinal groove at middle, irregularly coarsely punctured on sides, punctures with elongate posteriorly recumbent pale hairs; aedeagus figs 31-32. Female: pronotum relatively narrower frontwardly; metasternal plate glabrous, feebly excavate, superficially grooved at middle, sparsely irregularly finely punctured.

DISTRIBUTION. Known from several central Asian Countries (Kazakstan, Turkmenistan, Uzbekistan). Beyrout (Lebanon) and mainly Tangier (Morocco) recorded by Reitter in the original description, but not mentioned by the same author in his 1901 paper, seem to be, al least, improbable records as well as that from Sicily (Castelbuono, Madonie, Palermo) (Ragusa, 1905).

TYPE MATERIAL. We herein designate **neoholotype** a male specimen, bearing the following labels:
- white, printed: GR. Balachan [Turkmenistan]/ Dschebeil/ F. Hauser 1898
- red, handwritten: *Aphodius/ pustulifer* Reitter, 1892/ neoholotypus/ M. & G. Dellacasa des. 2004

and **neoallotype** a female specimen, bearing the following labels:
- white, printed: GR. Balachan [Turkmenistan]/ Dschebeil/ F. Hauser 1898
- red, handwritten: *Aphodius/ pustulifer* Reitter, 1892/ neoallotypus/ M. & G. Dellacasa des. 2004

Both specimens are preserved in Reitter's collection at the Budapest Museum.

Esymus sesquivittatus (Fairmaire, 1883) **n. comb.** (figs 36-39)
Aphodius sesquivittatus Fairmaire, 1883: 43
Aphodius (Volinus) sesquivittatus; d'Orbigny, 1896: 230
Aphodius (Chilothorax) sesquivittatus; Dellacasa M., 1988: 198

TYPE LOCALITY: Batna [Algeria].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle, Paris.

DESCRIPTION. Length 3.5-4.0 mm, oblong, moderately convex, alutaceous, almost glabrous, only preapical declivity of elytra very shortly pubescent. Head and pronotum blackish, the latter more or less widely yellowish at sides; scutellum blackish; elytra yellowish with juxtasutural interstice and with a more or less elongate blackish stripe on seventh interstice; legs reddish-brown; antennal club piceous (*forma typica*; fig. 40), *do.*, but also with a transverse preapical semilunar spot from third to seventh interstices (ab. *fuentei* Báguena, 1930; fig. 41), or with blackish stripe on seventh interstice almost obsolete (ab. *oligopictus* Báguena, 1930, fig. 42). Head with epistoma feebly gibbous, regularly, almost coarsely punctured, punctation distally somewhat more sparse; clypeus slightly siunuate at middle, rounded at sides; genae obtusely rounded, feebly protruding more than eyes; frontal suture obsolete. Pronotum transverse, moderately convex, superficially microreticulate, doubly subregularly punctured, large punctures few larger than small ones; sides feebly arcuate, thinly bordered; hind angles obtusely rounded; base slight-

ly bisinuate, thinly bordered. Scutellum sparsely distinctly punctured. Elytra oval-elongate; striae fine, distinctly punctured, crenulate; interstices slightly convex, microreticulate, almost distinctly punctured mainly near striae, finely shortly pubescent on preapical declivity. Hind tibiae superior apical spur shorter than first tarsal segment; latter longer than following two combined. Male: pronotum broadly transverse; fore tibiae apical spur stout, outwardly curved; metasternal plate strongly alutaceous, moderately concave and with median longitudinal groove rather deep; aedeagus figs 36-37. Female: pronotum narrowed frontwardly; fore tibiae apical spur slender and straight; metasternal plate shiny, almost flat and with median longitudinal groove feebly impressed.

DISTRIBUTION. Southern Spain, Morocco, Algeria, Tunisia, Libya

REMARKS. We consider that this complex of taxonomic characters justifies the new systematic position of this taxon in the genus *Esymus*, also the aedeagus has the paramera very differently shaped. In the couplet of *Esymus merdarius*, it can be keyed as follows:

1 Elytra glabrous; superior apical spur of hind tibiae as long as first tarsomere. Blackish, frontal angles of pronotum usually testaceous; elytra orange with sutural margin blackish. Length 4.0-5.0 mm. Europe, Mediterranean Africa, centralwestern Asia, eastern to Turkmenistan *merdarius*

1' Elytra shortly but distinctly pubescent on preapical declivity; superior apical spur of hind tibiae shorter than first tarsomere. Blackish; front angles of pronotum more or less widely yellowish; elytra yellowish with sutural margin and a lateral longitudinal stripe, more or less widened preapically, blackish. Length 3.5-4.0 mm. Southern Spain, Morocco, Algeria, Tunisia, Libya ..... *sesquivittatus*

Chilothorax exclamationis (Motschulsky, 1849) **n. comb.** (figs 43-48)
Aphodius exclamationis Motschulsky, 1849: 108
Aphodius (Volinus) exclamationis; Reitter, 1892: 228; Balthasar, 1964: 241
Aphodius (Chilothorax) exclamationis; Dellacasa M., 1988: 127

TYPE LOCALITY: Carthagène [Cartagena], Spain.

TYPE DEPOSITORY: unknown to Authors.

DESCRIPTION. Length 3.5-4.5 mm, oblong, convex, shiny; almost glabrous, elytra on preapical declivity shortly sparsely pubescent. Head blackish with clypeal margin faintly reddish; pronotum black, vaguely yellowish on sides; scutellum blackish; elytra pale yellowish with suture blackish, and a longitudinal blackish stripe on seventh interstice, sometimes widened anteriorly on eight and posteriorly on sixth interstices, and with a short transverse preapical blackish spot on third, fourth and fifth interstice; legs brownish-red; antennal club piceous (*forma typica*; fig. 47), *do*., but elytra with a further antero-median subquadrate blackish spot on third and fourth interstice (ab. *capbonensis* Balthasar, 1964; fig. 48). Head with epistoma moderately convex on disc, anteriorly with feeble transverse carina, coarsely punctured, punctation distally confusedly rugose; clypeus sinuate at middle, widely rounded at sides, distinctly bordered, the border feebly upturned; genae obtusely angulate, elongately ciliate, protruding more than eyes; frontal suture tuberculate; front coarsely subregularly punctured. Pronotum transverse,

finely alutaceous, almost sparsely and irregularly doubly punctured, large punctures two or three times larger than small ones, punctation denser and coarser on sides; latter broadly arcuate, distinctly bordered, the border sparsely elongately ciliate; hind angles obstusely rounded; base faintly bisinuate, distinctly bordered. Scutellum regularly triangular, rather convex, shiny, with few large punctures basally. Elytra oval-elongate, feebly widened posteriorly; striae rather deep, strongly punctured, crenulate; interstices feebly convex, finely punctured, punctures arranged in almost regular rows near striae, on preapical declivity with short sparse yellowish hairs. Hind tibiae superior apical spur as long as first tarsal segment; latter somewhat longer than following two combined. Male: head with epistoma less coarsely punctured, frontal suture more distinctly tuberculate; pronotum not narrowed frontwardly; fore tibiae apical spur shorter, stout and downward bent; aedeagus figs 44-45. Female: head with epistoma relatively more coarsely punctured, frontal suture feebly tuberculate; pronotum narrowed frontwardly; fore tibiae apical spur slender and almost straight.

DISTRIBUTION. Southern Spain, Morocco, Algeria, Tunisia, Libya.

REMARKS. *Aphodius exclamationis* in the *melanostictus* couplet may be keyed as follows:

1 Epistoma coarsely punctured on disc, punctation distally confusedly rugose; epipleural margin ciliate at shoulder only. Blackish; elytra yellowish, usually with a blackish longitudinal stripe on seventh interstice. Length 3.5-4.5 mm. Southern Spain, Morocco, Algeria, Tunisia, Lybia ..... *exclamationis*

1' Epistoma finely superficially punctured on disc, punctation distally coarser; epipleural margin ciliate to the half of elytral length. Blackish; elytra yellowish with several balckish spots variously arranged and more or less widened, but on fifth interstice never to base. Length 5.0-7.0 mm. Central and southern Europe, Morocco, Mediterranean Africa, Asia Minor; Asia (eastern to Turkmenistan, northern to eastern Siberia: Irkutsk) ..... *melanostictus*

19) *Euorodalus coenosus* (Panzer, 1798), *Euorodalus paracoenosus* (Balthasar & Hrubant, 1960) and *Euorodalus paracoenosus* "ab. ***fallaciosus*** nov.".

The distinguishing characters between *coenosus* and *paracoenosus* are often not well defined. They would probably represent two subspecies of the same taxon with very different morphology in the populations at western and eastern limits of the distributional area. The identical scale of colour variations could confirm this hypothesis.

Concerning the colour of the typical form of *paracoenosus*, Balthasar and Hrubant (1960) stated: "...Flügeldecken...im 4 Zwishenraum mit röthlichen Apikalmakel...". Dellacasa G. (1983) named *parapellucidus*, an identical colour variation, that is obviously junior synonym of the former. Hence for blackish specimens with anterior angles of pronotum and elytra reddish, we propose the new name "*fallaciosus*".

20) New systematic arrangement of "*Bodiliform*" genus-group taxa.

As at present considered, the genus *Bodilus* is highly paraphiletic. At least three genus-group taxa can be distinguished. The diagnoses, redescriptions with iconographic coverage, new combinations and identification keys of the involved taxa are as follows:

1 Hind tibiae apically fimbriate with spinules elongate progressively or alternately unequal; frontal suture trigibbous or, at most, moderately tuberculate ..... *Bodilus*
1' Hind tibiae apically fimbriate with short and equal spiunules; frontal suture distinctly tuberculate 2
2 Epistoma anteriorly distinctly subtuberculate; aedeagus short and stout, with paramera branched and almost as long as tegmen ..... *Parabodilus*
2' Epistoma anteriorly with feeble transverse carina; aedeagus digitiform, with paramera apically acuminate, downward curved and very short, at most as long as one third of tegmen ..... *Bodiloides*

Genus *Bodilus* Mulsant & Rey, 1870

Aphodius (Bodilus fraction *Bodilus*) Mulsant & Rey, 1870: 518
Aphodius (Bodilus); Mulsant & Rey, 1871: 474; Reitter, 1892: 191
Bodilus; Paulian, 1942: 90; Ádám, 1994: 14; Dellacasa G. et al., 2001: 103

TYPE SPECIES: *Aphodius lugens* Creutzer, 1799 (subsequent designation: Reitter, 1892).

DIAGNOSIS. Medium or large size species (length 7.0-12.0 mm) more or less convex, usually shiny, glabrous or more or less widely pubescent. Pale testaceous to reddish-brown, often head and pronotum darker. Head with epistoma gibbous, puntured; clypeus feebly sinuate at middle, rounded at sides, entirely bordered, the border bristled; genae obtusely rounded, ciliate, protruding more than eyes; frontal suture distinct, mutic, trigibbous or, at most, feebly tuberculate. Pronotum transverse, sparsely, irregularly doubly punctured; sides arcuate; lateral margins and base bordered. Scutellum small, triangular, microreticulate, usually punctured toward base. Elytra more or less convex, shiny or dull; striae fine, distinctly punctured, more or less strongly crenulate; interstices flat or moderately convex, punctured, either glabrous or more or less widely pubescent. Pygidium with few elongate straight setae on disc; elongately ciliate at apical margin. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side almost imperceptibly punctured. Hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules elongate and progressively or alternately unequal. Sexual dimorphism shown in males by the more distinct gibbosities or tubercles on frontal suture, by less coarse punctation of elytral interstices, by fore tibiae apical spur stout, broadened at middle, downward curved and usually inserted on inner margin at level of the second outer tooth. Aedeagus digitiform with paramera very short, truncate or obtusely rounded apically. Epipharynx feebly sinuate at anterior margin, widely rounded at sides; epitorma drop-shaped; corypha with elongate and protruding apical spiculae; pedia densely pubescent with several spinules more or less regularly scattered; chaetopariae dense and moderately elongate.

DISTRIBUTION. Palaearctic region.

REMARKS. Other than type species of *Bodilus*, i. e. *lugens* (Creutzer, 1799)[1], several other species belong to this genus and we formulate the new combinations as follows:

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[1]) For redescription and figures of *Bodilus lugens* cfr. Dellacasa G. et al., 2001: 104

- *Bodilus barbarus* (Fairmaire, 1860) **n. comb.** (ex *Aphodius*)
- *Bodilus circumcinctus* (Schmidt W., 1840) **n. comb.** (ex *Aphodius*)
- *Bodilus longispina* (Küster, 1854) **n. comb.** (ex *Aphodius*)
- *Bodilus punctipennis* (Erichson, 1848) **n. comb.** (ex *Aphodius*)
- *Bodilus sabaeus* (Peyerimhoff, 1907) **n. comb.** (ex *Aphodius*)

Genus *Parabodilus* Hollande & Thérond, 1999 **new status**

Aphodius (Parabodilus) Hollande & Thérond, 1999: 159; Dellacasa et al., 2001: 103 (as synonym of *Bodilus*)

TYPE SPECIES: *Aphodius wollastoni* Harold, 1862 (monotypy).

DIAGNOSIS. Medium size species (length 6.0-8.0 mm), oblong, convex, nearly glabrous. Yellowish-red; pronotal disc and elytral suture dark brownish. Head with epistoma anteriorly more or less strongly subtuberculate, irregularly punctured; clypeus sinuate at middle, rounded at sides, thinly bordered, the border faintly upturned and almost elongately ciliate laterally; genae obtusely rounded, elongately ciliate, feebly protruding more than eyes; frontal suture tuberculate. Pronotum transverse, moderately convex, dually punctured; sides feebly arcuate, thickly bordered, the border elongately ciliate; hind angles obtusely rounded; base distinctly bordered. Scutellum small, elongately triangular with curved sides. Elytra oblong; striae superficially punctured, subcrenulate; interstices sparsely punctured, preapically strongly moicroreticulate thus almost dull, very shortly and sparsely pubescent. Pygidium feebly coarsely regularly punctured, punctures with rather elongate straight setae; at apical margin elongately sparsely ciliate. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side very finely and sparsely punctured. Middle and hind tibiae with distinct transverse carinae on outer face; apically fimbriate with short and equal spinules. Sexual dimorphism shown in males mainly by subtuberculiform epistomal gibbosity relatively stronger, tubercles of frontal suture more raised, pronotum broadly transverse, less densely and less coarsely punctured. Aedeagus with tegmen short and stout; paramera caractheristically branched. Epipharynx with front margin almost straight, moderately arcuate at sides; epitorma drop-shaped; corypha with elongate and protruding apical spiculae; pedia pubescent with several spinulae almost irregularly scattered; chaetopariae rather short and densely arranged.

DISTRIBUTION. Palaearctic region.

REMARKS. As herein redefined, the only species in *Parabodilus* Holland & Thérond, 1999, is the type species.

Parabodilus wollastoni (Harold, 1862) **n. comb.** (figs 49-54)

Aphodius wollastonii Harold, 1862: 397
Aphodius (Bodilus) wollastoni; Schmidt A., 1913: 166; Dellacasa G., 1983: 204
Aphodius (Parabodilus) wollastoni; Hollande & Thérond, 1999: 159

TYPE LOCALITY: "Die canarischen Inseln" [Canary Islands].

TYPE DEPOSITORY: Muséum national d'Histoire naturelle, Paris.

DESCRIPTION. Length 6.0-8.0 mm, oblong, convex, moderately shiny, nearly glabrous. Brown-reddish; sides of pronotum and elytra red-yellowish, latter with dark suture; legs reddish-brown; antennal club testaceous. Head with epistoma anteriorly with more or less strongly tuberculiform transverse gibbosity, irregularly punctured on disc, punctation confusedly rugose distally; clypeus sinuate at middle, rounded at sides; genae obtusely rounded, feebly protruding more than eyes; frontal suture moderately raised, trituberculate; front densely, almost coarsely subregularly punctured. Pronotum transverse, moderately convex, doubly punctured; large punctures umbilicate and irregularly scattered, two times larger than small ones; sides feebly arcuate; lateral margins thickly bordered, border elongately ciliate; hind angles obtusely rounded; base faintly bisinuate, distinctly bordered. Scutellum somewhat convex, distinctly punctured. Elytra moderately convex; striae fine, rather superficially punctured, subcrenulate; interstices feebly convex, microreticulate, very finely and sparsely punctured, preapically strongly microreticulate thus almost dull and with very short and sparse pale hairs. Hind tibiae superior apical spur longer than first tarsal segment; latter as long as following two combined. Male: epistoma with anterior transverse tuberculiform gibbosity relatively stronger; central tubercle of frontal suture more raised; pronotum broadly transverse, less convex and more sparsely punctured. Aedeagus figs 51-52. Female: anterior epistomal gibbosity as well as the tubercles of frontal suture relatively weaker; pronotum somewhat narrowed frontward, more convex, and more densely punctured.

DISTRIBUTION. Species, *sensu lato*, widely spread from Canary Islands and Mediterranean Africa to north-western India (Radjastan).

SUBSPECIES

iranicus (Balthasar, 1946)

Aphodius (Bodilus) iranicus Balthasar, 1946: 65
Aphodius (Bodilus) wollastoni ssp. *radjastanicus* Petrovitz, 1962: 122; Dellacasa M., 1988: 188 (as synonym of *iranicus*)
Aphodius (Bodilus) wollastoni ssp. *iranicus*; Pittino, 1984: 295

TYPE LOCALITY: "Beludschistan, Persia" [Baluchistan, Iran].

TYPE DEPOSITORY: Balthasar Collection, Národni Muzeum, Praha.

DESCRIPTION. Distinct from the nominotypical subspecies by the punctation of upper side relatively finer and by elytral declivity more strongly microreticulate and more distinctly pubescent. Also the parameral apex is somewhat different (figs 53-54).

DISTRIBUTION. Radjastan (northwestern India), Pakistan, Iran, Iraq, Arabian Peninsula, Syria, Lebanon.

Genus ***Bodiloides*** **nov.**

Species parvae vel mediae, convexae, nitidae, glabrae vel fere glabrae. Fulvo-testaceae, capite pronotoque plerumque infuscatis. Capite clypeo medio leviter sinuato, lateribus rotundato, genis prominulis, sutura frontali tuberculata. Pronoto inaequaliter distincte punctato, basi marginato.

Scutello parvo, triangulari. Elytris plerumque crenato-striatis. Metatibiis setis apicalibus longitudine aequalibus.

Type species: *Scarabaeus ictericus* Laicharting, 1781.

DIAGNOSIS. Small or medium size species (length 4.0-6.0 mm), subcylindrical, shiny, glabrous or almost glabrous. Testaceous; head, pronotum and elytral suture usually dark brownish-red. Head with epistoma gibbous, more or less densely punctured; clypeus feebly sinuate at middle, rounded at sides, distinctly bordered, the border feebly upturned, glabrous or faintly bristled; genae obtusely rounded, ciliate, protruding more than eyes; frontal suture tuberculate. Pronotum transverse, punctured, with sides feebly arcuate; lateral margins distinctly bordered; hind angles obtusely rounded; base bordered. Scutellum small, triangular. Elytra elongate, usually almost parallel-sided; striae more or less coasely punctured, crenulate or subcrenulate; interstices flat or feebly convex, finely sparsely and irregularly punctured, sometimes shortly pubescent on preapical declivity. Pygidium with pubescence short and moderately dense, backward curved and with mixed few very elongate straight setae; at apical margin sparsely and elongately ciliate. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper face almost imperceptibly punctured. Hind tibiae with strong transverse carinae on outer face; apically fimbriate with spinules short and equal. Sexual dimorphism shown in males by relative more strong tubercles of frontal suture; by pronotum more transverse and more sparsely superficially puntured on disc; by fore tibiae apical spur shorter, stouter and downward curved. Aedeagus digitiform with paramera very short and, in lateral view, apically acuminate and downward curved. Epipharynx feebly sinuate at anterior margin, epitorma campaniform; corypha with stout and moderately elongate apical spiculae; pedia sparsely pubescent with several spinules rather elongate; chaetopariae almost short and dense.

Distribution. Palaearctic, Oriental and Afrotropical region

REMARKS. To *Bodiloides*, other than the type species, belongs *Bodiloides asiricus* (Pittino, 1989) **new combination** [ex *Aphodius*], as well as many other Afrotropical and Indo-malayan species in need of thorough taxonomic revision.

Bodiloides ictericus (Laicharting, 1781) **n. comb.** (figs 55-63)

Scarabaeus ictericus Laicharting, 1781: 14

Scarabaeus nitidulus Fabricius, 1792: 30; Bedel, 1911: 73 (as synonym of *ictericus* Laicharting, 1781)

Aphodius (Bodilus) ictericus; Bedel, 1911: 73; Dellacasa G., 1983: 197

TYPE LOCALITY: "Tyrol" [Austria] (conventional).

TYPE DEPOSITORY: unknown to Authors.

DESCRIPTION. Length 4.0-6.0 mm; subcylindrical, shiny, glabrous or almost glabrous. Reddish-testaceous, with epistoma and pronotal disc darker; elytra brownish-yellow with brownish suture; antennal club yellowish; legs dark brownish (*forma typica*; fig. 62), sometimes elytra entirely dark brownish-red (ab. *melanescens* Bouskell, 1901; fig. 63) or pale yellowish (ab. *pallescens* Bouskell, 1901; fig. 61). Head with epistoma gibbous,

coarsely punctured, punctation distally subrugose; clypeus feebly sinuate at middle, rounded at sides, genae rounded, subauriculate, feebly protruding more than eyes; frontal suture tuberculate. Pronotum convex, doubly punctured; large punctures umbelicate, two times larger than small ones; punctation coarser and denser on sides; lateral margins feebly arcuate, thinly bordered, the border ciliate toward front angles; hind angles obtusely rounded; base distinctly bordered. Scutellum punctured toward base. Elytra convex, subparallel-sided; striae fine, deeper and wider toward apex, superficially punctured, subcrenulate; interstices flat on disc, faintly convex on preapical declivity, sparsely and finely punctured; punctation somewhat denser toward apex. Male: central tubercle of frontal suture relatively more strong; pronotum more transverse with large punctures almost lacking on disc; fore tibiae apical spur short, stout and downward curved. Aedeagus figs 57-58. Female: tubercles of frontal suture relatively weaker; pronotum narrowed frontward with large punctures on disc also; fore tibiae apical spur slender and straight.
DISTRIBUTION. Species, *sensu lato*, widely spread in Europe, mainly in Mediterranean Countries, Asia Minor, Near and Middle East; Northern Africa (from Morocco to Egypt).

SUBSPECIES

ghardimaouensis Balthasar, 1929

Aphodius (Bodilus) ghardimaouensis Balthasar, 1929:105; Dellacasa G., 1983: 196
Aphodius (Bodilus) ictericus ssp. *ghardimaouensis*; Dellacasa G. & Pittino, 1985: 67
Bodilus ictericus ssp. *ghardimaouensis*; Dellacasa M., 2004: 82

TYPE LOCALITY: Ghardimaou (Algeria).

TYPE DEPOSITORY: Balthasar Collection, Národni Muzeum, Praha.

DESCRIPTION. Distinct from the nominotypical subspecies by the scutellum punctured to more than the half, flat apically; elytral interstices feebly convex on disc, entirely distinctly puntured, punctures almost regularly arranged in longitudinal series near striae, on preapical declivity with extremely short and sparse hairs; first segment of hind tarsi shorter than superior apical spur of tibiae and somewhat shorter than the following two combined. Aedeagus figs 59-60. Size medially somewhat larger: length 5-6 mm.

DISTRIBUTION. Circummediterranean region.

REMARKS. The subspecific characters are very variable, and the distinction between *ictericus* and *ghardimaouensis* as well as their systematic rank (good species, subspecies or synonyms) had been critically discussed by many authors (Mariani, 1959; Nicolas, 1972; Dellacasa G., 1983; Dellacasa M., 2004). Dellacasa G. & Pittino (1985) based on the study of material from Circumediterranean region stated that *ictericus* and *ghardimaouensis* can be maintained at subspecific rank. Even though this solution might be not definitive it could be reasonably accepted till the study of numerous specimens belonging to critical populations from the northern and southern limits of the distribunal area allows the establishment of the true taxonomic rank.

21) *Bodilus barbarus* "ab. ***elytrisflavis*** nov."

The typical form has the elytra brownish with juxtasutural interstice and lateral

margins yellowish. Some specimens from Algeria (Batna) have the elytra entirely pale yellowish. For this colour variation we propose the name "*elytrisflavis*".

22) *Melinopterus guillebeaui* (Reitter, 1891)

This taxon is distinguishable from its sibling species *Melinopterus prodromus* mainly by the structure of the metasternal plate of the male. In *guillebeaui* it is entirely almost regularly, coarsely and densely punctured (fig. 21), in *prodromus* it is superficially, almost sparsely and irregularly punctured (fig 20). *Melinopterus guillebeaui* seems to be widely spread, at least, in France (Bordat, *in verbis).*

23) *Pubinus tomentosus* ab. *modicus* (Semenov, 1899)

Based on original description the "varietas" *modicus* (Semenov, 1899) is distinguishable from the typical form mainly by the more superficial and finer pronotal punctation, by the reddish and more dull elytra with interstices more finely punctured and more densely pubescent on preapical declivity.

Though we have examined few specimens of the taxon, we think that these morphological characters do not justify the rank of subspecies, and we consider *modicus* simply colour variation of *tomentosus*.

24) *Sigorus porcus* ab. *ruficrus* (Marsham, 1802)

Scarabaeus ruficrus (Marsham, 1802) is characterized by elytra pale reddish with interstices superficially punctured. As have most authors, we consider it a colour variation of *Sigorus porcus* (Fabricius, 1792) instead of a subspecies (Dellacasa G. 1983: 410).

25) *Pseudacrossus suffertus* (Schmidt A., 1916)

We had the chance to study material ot this taxon from several localities (from eastern Turkey to southern Italy) and we noted that the characters previously used to characterize the subspecies *Ampliatus* (Reitter, 1892) and *Defiorei* (Fiori, 1907) are nothing more than traits of individual variation.

26) *Acrossus luridus* "morpha ***unicoloratus*** nov."

Among several hundreds of examples collected from sheep dung in the same pasture on June 2nd 1981 near Kars (eastern Turkey) we found only one specimen with the blackish left elytra with longitudinal stripes as in ab. *strigosus* and ab. *apicalis*. For this particular morpha we propose the new name "*unicoloratus*".

27) *Acrossus bimaculatus* (Laxmann, 1770)

A Pontic-pannonian species spread in northeast to northwestern Asia (Kirghizistan; Western Siberia: Krasnojarsk, Barnaul). It is recorded from many European Countries (Russia, Ukraine, Poland, Romania [Costanza; Paris Museum], Germany, Austria, Greece [Paris Museum], Slovenia, Slovakia).

Bertolini (1899: 61) recorded this taxon from "Regione Giulia" and Luigioni (1929: 1017) from "Venezia Giulia". In the collections of the Paris Museum there is a specimen labelled "Carniolia". That is, at present, a region of Slovenia but at Bertolini's time it was an ancient Province (Duchy) of Austrian Empire neighbouring northward with Carinzia and Stiria, westward with Friuli, eastward with Liburnia and southward with Istria and with Adriatic Sea (Predari, 1871: 249). To this historical change we can probably attribute the Italian records of this taxon.

28) *Acrossus depressus* ab. *atramentarius* (Erichson, 1848); m. *caminarius* (Faldermann; 1835); "ab. ***nigrolineatus*** nov."

The blackish colour variation of *Acrossus depressus* must be named *atramentarius*; *caminarius* has to be considered the blackish Caucasian morpha chatacterized by elytral interstices very finely and superficially punctured.

In Mondi environments (Sayan Mountains, Eastern Siberia) we found a specimen of *depressus* with elytra bright red and blackish striae. For this remarkable colour variation we propose the name "*nigrolineatus*".

29) ***Agolius abdominalis*** ssp. ***tatrensis*** nov.

The specimens of *Agolius abdominalis* from the Tatra and Carpathian Mountains differ from the Alpine typical form by the having sides of the pronotum regularly convex (i.e.: not depressed at all before hind angles); elytral interstices flat, very shiny and almost smooth; striae deep, coarsely punctured and distinctly crenulate; aedeagus with paramera, in lateral view, more elongate, almost straight proximally and more strongly sinuate distally.

For this subspecies we propose the name *tatrensis*. The male type specimen from "Podbanske, Visoké Tatri, Slovakia bor." is preserved in the authors' collection.

KEY TO *ABDOMINALIS* SUBSPECIES:

1 Pronotum distinctly sunken laterally before hind angles; elytral striae deep, almost distinctly punctured, feebly crenulate; interstices flat, distinctly microreticulate thus moderately shiny. Aedeagus figs 123-124. Alps and montains ranges of Balkan Peninsula (fig. 129 C): France, Switzerland, Italy, Austria, Slovenia, Croatia, Mecedonia, Greece ..... *abdominalis* (Bonelli, 1812)

1' Pronotum regularly convex laterally, not sunked before hind angles 2

2 Elytral interstices feebly convex; striae deeply punctured, distinctly crenulate. Aedeagus figs 125-126. Italy: Apennines of Liguria, Tuscany and Emilia (fig. 129 D) .... *emilianus* (Dellacasa G., 1983)

2' Elytral interstices flat 3

3 Elytral interstices superficially but distinctly microreticulate thus moderately shiny. Aedeagus figs 121-122. France: Massif Central (fig. 129 B) ..... *balazuci* (Nicolas J.-L., 1971)

3' Elytral interstices nearly smooth, strongly shiny 4

4 Elytral striae fine, relatively more superficially punctured, subcrenulate. Aedeagus figs 119-120. Hautes Pirénées (fig. 129 A) (France, Spain) ..... *pecoudi* (Hoffmann, 1954)

4' Elytral striae wide, relatively more coarsely punctured, distinctly crenulate. Aedeagus figs 127-128. Carpathian montains (fig. 129 E) (Slovakia, Poland, Ukraine, Romania).....*tatrensis* nov.

30) *Neagolius bilimecki* (Seidlitz, 1891) valid name for *Neagolius danielorum* (Semenov, 1902); taxonomic rank of *Neagolius limbolarius* (Reitter, 1892) and *Neagolius bilimecki* "ab. ***sulfureipennis*** nov".

Seidlitz in Fauna Transsylvanica (1891: 149) described *Aphodius bilimeckii* from "Schweitz" and "Abruzzen".

J. Daniel (1902: 80) stated that the specimens from "Abruzzen" belonged to a different taxon, maintained the name *bilimeckii* for examples from Switzerland, and described (1902: 83) the new "varietas" *samniticus* of his *Aphodius consobrinus* for the specimens from "Abruzzen".

Semenov (1902: 294) due to the fact that Seidlitz's species is a "Mischart", proposed for *bilimeckii* the new name *danielorum*. From a nomenclatural view point, Semenov's argument, that Seidlitz's name should not be used because it is a mixed species, is spurious. Hence *Aphodius danielorum* Semenov, 1902 is an unnecessary replacement name.

The original spelling is *bilimeckii*. Even if currently used, the alternative spelling *bilimecki* is an unjustified emendation, but it is possible to be conserved on the ground of prevailing usage (ICZN 33.2.3.1).

According to J. Daniel (1902) a syntype of *bilimecki* from Switzerland was in Seidlitz's collection. If after 1899, *bilimecki* Seidlitz, 1891 had not been used as valid name, a reversal of the precedence (ICZN 23.9) is possible, provided that condition of art. 23.9.1.2 is also met, and in that case *danielorum* Semenov, 1902 might be conserved as the valid name. J. Daniel (1902: 79), as well as other authors, used *Aphodius bilimecki*, thus this is the valid name of the taxon.

If, as argued by J. Daniel, Seidlitz's taxon is a mixed species, it becomes absolutely crucial to designate a lectotype. Without such action the name *bilimecki* cannot be applied unambiguously to a certain species, and its type locality would still include Switzerland and Abruzzi.

We have examined the syntype, a male surely identifiable by aedeagal features, of *bilimecki* preserved in Seidlitz's collection at Zoologische Staatssammlung in München. It is a specimen at one time pinned and subsequently remounted on a label. Unfortunately it has a locality handwritten label "Corsica" not corresponding at all with the original locality. Certainly there was a mistake in remounting!

Anyway we herein designate as lectotype this discussed specimen which bears the following labels:

- 1) white, handwritten: "Corsica" [false!];
- 2) white, handwritten: Kiswttr [Kiesenwetter?] mls / ???
- 3) white, surely handwritten by Seidlitz: Bilimeckii / n. sp.
- 4) white, printed: Sammlung / W. Seidlitz;
- 5) red, handwritten Lectotypus/ Aphodius bilimeckii Seidlitz, 1891 / M. & G. Dellacasa des., 2005.

Mariani (1980: 55) remarked that the distributional areas of *Neagolius limbolarius* and *danielorum* cannot be separate since specimens with the characteristcs of the eastern taxon can be found in western populations and also the aedeagal features are identical. As stated by W. Koshantschikov (1913: 198) *limbolarius* can only be considered a colour variation of *bilimecki* and ascertained that this is the valid name of the taxon.

The species is widely spread in montains ranges of central and southeastern Europe (fig. 130). At Katara pass (Pindo, Greece) were found specimems with elytra entirely yellowish. For this remarkable colour variation we propose the name "*sulfureipennis*".

31) *Neagolius montivagus* ssp. *cenisius* (Daniel J., 1902)

Franz (1938: 199-200), based on the study of the respective types, synonymized *cenisius* (Moncenisio, Alpi Cozie) with *montivagus* (Erichson, 1848). This indicates that the latter has to be considered, though doubtfully, a member of the Italian fauna.

32) *Aphodius fimetarius* (Linné, 1758) and *Aphodius pedellus* (Degeer, 1774)

Aphodius pedellus was treated as valid species by Wilson (2001). Bordat (2002) consider this taxon a junior synonym of *Aphodius fimetarius*, in spite of the karyotypes differences, primarily because the all morphological characters have to be included among the range of specific variability, and the material examined was from too few localities. While awaiting further investigations done on additional material from more numerous localities of the extremely wide distributional area of the taxon, we accepted the conclusions of Bordat (Dellacasa M. & Dellacasa G., 2003: 182).

33) Systematic redefinition of the genus *Rhodaphodius* Ádám, 1994 and of its type species *Scarabaeus foetens* Fabricius, 1787

A thorough study of the morphological characters of *Scarabaeus foetens*, type species of *Rhodaphodius*, and comparison with those of true *Aphodius* (e. g.: *fimetarius, foetidus,* etc) indicates that the former is a selfstanding genus.

KEY TO DISCUSSED GENERA

1 Scutellum triangularly equilateral; pronotum with anterior angles rounded, with sides regularly arcuate and, in dorsal view, not inwardly sinuate before hind angles; elytra regularly convex on disc. Species blackish; elytra reddish or yellowish, often with bind or spots blackish, rarely entirely blackish; abdomen almost always entirely black. Length 5.0-15.0 mm. Subcosmopolitan ..... *Aphodius*

1' Scutellum triangularly isosceles; pronotum with anterior angles distinct, sides, in dorsal view, inwardly sinuate before hind angles; elytra somewhat flattened on disc. Species blackish; elytra reddish, sometimes with more or less widened blackish spots, rarely entirely blackish; abdomen entirely pale reddish. Lenght 6.0-9.0 mm. Palaearctic region *Rhodaphodius*

Genus *Rhodaphodius* Ádám, 1994, **new status**

Rhodaphodius Ádám, 1994: 13; Dellacasa G. et al., 2001: 91 (as synonym of *Aphodius*)

Type species: *Scarabaeus foetens* Fabricius, 1787 (original designation).

DIAGNOSIS. Medium size species (length 6.0-9.0 mm); suboval, convex, shiny, glabrous. Head and pronotum pitch-blackish; elytra typically dark reddish. Head with epistoma gibbous, anteriorly faintly transversely carinate, almost superficially punctured; clypeus anteriorly subtruncate, rounded at sides, thinly bordered, the border slightly upturned, glabrous; genae obtusely rounded, ciliate, protruding more than eyes; frontal suture

tuberculate. Pronotum strongly convex, subquadrate, subparallel-sided; sides, seen from above, slightly inwardly sinuate before hind angles, latter obliquely truncate; lateral margins and base distinctly bordered. Scutellum narrowly elongately triangular. Elytra moderately elongate, strongly convex, barely flattened on disc; striae deep, superficially punctured, feebly crenulate; interstices flat on disc, convex toward apex. Pygidium with moderately elongate, dense and somewhat recumbent pubescence, at apical margin almost densely ciliate. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Sexual dimorphism shown in males by median tubercle of frontal suture relatively more distinct, by pronotum more transverse, nearly impunctate on disc and with a feeble foveola at middle of front margin. Aedeagus with rather slender and elongate paramera, moderately acuminate and, in dorsal view, sinuate before apex. Epipharynx transverse, with anterior margin slightly crenulate and faintly inwardly sinuate, regularly arcuate laterally; epitorma drop-shaped; corypha triangularly protruding beyond front margin with apical spiculae short and stout; pedia pubescent, mixed several short spinules irregularly scattered; chaetopariae almost short and densely arranged.

Distribution. Palaearctic region

Rhodaphodius foetens (Fabricius, 1787) (figs 64-71)

Scarabaeus foetens Fabricius, 1787: 8
Scarabaeus vaccinarius Herbst, 1789: 138; Schönherr, 1806: 68 (as synonym of *foetens* Fabricius, 1787)
Aphodius ochraceus Stephens, 1830: 191; Harold, 1869: 1047 (as synonym of *foetens* Fabricius, 1787)
Aphodius aestivalis Stephens, 1839: 160; Landin 1956: 212 (as synonym of *foetens* Fabricius, 1787)
Aphodius rufiventris Preller, 1862: 75; Harold, 1869: 1047 (as synonym of *foetens* Fabricius, 1787)
Aphodius foetens; Mulsant, 1842: 183; Dellacasa G. et al.: 2001: 92
Aphodius analis Gistel, 1857: 590; Dellacasa G., 1983: 44 (as synonym of *foetens* Fabricius, 1787)
Aphodius pseudanalis Strand, 1917: 95 (*nomen novum* for *analis* Gistel, 1857)
Aphodius (Aphodius) foetens; Mulsant & Rey, 1871: 474; Olsoufiev, 1918: 54; Landin, 1956: 212 (type location)
Rhodaphodius foetens; Ádám, 1994: 13

TYPE LOCALITY: "Halae Saxonum" [Halle, Sachsen; Germany].

TYPE DEPOSITORY: Zoological Museum, Kiel.

DESCRIPTION. Length 6.0-9.0 mm, suboval, convex, shiny, glabrous. Head and pronotum black; latter with fore angles reddish; elytra dark reddish; abdomen pale testaceous; antennae reddish with paler club; legs reddish (*forma typica*; fig. 69), sometimes the legs are blackish (ab. *fuscipes* Mulsant,1842), or elytra entirely piceous (ab. *hypocastaneus* Bouskell, 1901; fig. 71), or pronotum nearly quite black; anterior angles vaguely

brownish only (ab. *obscuriellus* Schmidt A., 1916; fig. 68), or elytra with more or less wide discal spot blackish (ab. *vaccinarius* Herbst, 1789; fig. 70). Head with epistoma feebly convex, anteriorly with transverse arcuate carina, minutely reticulate, rather finely and sparsely punctured, punctation denser and coarser distally; clypeus subtruncate anteriorly, rounded at sides, entirely bordered, the border slightly upturned; genae obtusely rounded, ciliate, protruding more than eyes; frontal suture trituberculate; front finely and very sparsely punctured. Pronotum transverse, strongly convex, doubly punctured; large punctures, four or five times larger than small ones, irregularly scattered, denser on sides and basally; extremely fine punctures regularly sparse throughout; sides feebly rounded, subsinuate before hind angles, thickly bordered, the border rather elongately ciliate; hind angles obliquely truncate; base feebly bisinuate, thickly bordered. Scutellum coarsely and irregularly punctured, with trace of preapical longitudinal carina. Elytra rather elongate, barely flattened on disc, subparallel-sided; striae deep and wide, feebly crenulate; interstices nearly flat basally, convex from disc to apex, almost imperceptibly punctured. Hind tibiae superior apical spur longer than first tarsal segment; latter as long as following three combined. Male: epistoma relatively more superficially and sparsely punctured, anterior transverse carina more distinct; tubercles of frontal suture stronger; pronotum more shiny and more strongly transverse, without large punctures on disc and with feeble foveola at middle of anterior margin; aedeagus figs 64-65. Female: epistoma relatively more densely and coarsely punctured, transverse carina nearly faint; tubercles of frontal suture weaker; pronotum less shiny, narrowed anteriorly, more densely and coarsely punctured on disc also and without foveola at middle of anterior margin.

DISTRIBUTION. Europe (sporadic in Southern Countries), Northern Asia (eastward to Transbaikalia and Yakutia), Turkey, Georgia, Azerbaijan, Ossetia, China (Xinjiang).

34) New systematc arrangement of "Agriliniform" with description of two new genera, *Planolinellus* and *Planolinoides*

Some of the genera belonging to "Agriliniform" are highly paraphiletic (e.g. *Planolinus*) and have to be split in several taxa. A thorough study of morpho-anatomical characters of the species considered by Ádám (1994) belonging to his new genus *Bodilopsis*, and their comparison with those of true *Agrilinus*, indicates that the former is a selfstanding genus.

Following is a key to genus-group taxa:

1 Frontal suture mutic ..... *Planolinus*
1' Frontal suture trituberculate or,at least, with a median tubercle 2
2 Frontal suture distinctly trituberculate 3
2' Frontal suture with a median tubercle only 5
3 Inferior apical spur of middle tibiae, in males, shortened and apically hooked ..... *Agoliinus*
3' Inferior apical spur of middle tibiae regularly acuminate in both sexes 4
4 Epistoma with anterior transverse carina ..... *Agrilinus*

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[2]) For redescription and figures of *Agoliinus congregatus* (Mannerheim, 1853) cfr. Dellacasa G. et al., 2001: 73.

4' Epistoma without anterior transverse carina ..... *Bodilopsis*
5 Clypeus subtruncate anteriorly or, at most, faintly sinuate at middle..... *Planolinellus*
5' Clypeus distinctly sinuate at middle 6
6 Size relatively larger (minimum 6.0 mm) ..... *Tristaphodius*
6' Size relatively smaller (maximum 5.0 mm)..... *Planolinoides*

Genus *Agoliinus* Mulsant & Rey, 1870

Five species other than the type species, *Agoliinus congregatus* (Mannerheim, 1853)[2], are recognized as belonging to this genus as herein redefined. These are listed below with the new combinations:
- *Agoliinus satyrus* (Reitter, 1892) **n. comb.** (ex *Aphodius*)
- *Agoliinus lapponum* (Gyllenhal, 1808) **n. comb.** (ex *Aphodius*)
- *Agoliinus piceus* (Gyllenhal, 1808) **n. comb.** (ex *Aphodius*)
- *Agoliinus ragusai* (Reitter, 1892) **n. comb.** (ex *Aphodius*)
- *Agoliinus nemoralis* (Erichson, 1848) **n. comb.** (ex *Aphodius*)

Genus *Agrilinus* Mulsant & Rey, 1870

Other than the type species, *Agrilinus* ater (Degeer, 1774)[3], two Italian species are recognized as belonging to this genus as herein redefined. These are listed below with the new combinations:
- *Agrilinus convexus* (Erichson, 1848) **n. comb.** (ex *Aphodius*)
- *Agrilinus ibericus* (Harold, 1874) **n. comb.** (ex *Aphodius*)

Genus *Bodilopsis* Ádám, 1994 **new status**

Bodilopsis Ádám, 1994: 5; Dellacasa G. et al., 2001: 76 (as synonym of *Agrilinus* Mulsant & Rey, 1870)

TYPE SPECIES: *Scarabaeus sordidus* Fabricius, 1775 (original designation).

DIAGNOSIS. Medium size species (length 6.0-8.0 mm), elongate, convex, moderately shiny, glabrous or nearly glabrous. Pronotum reddish-brown to pitch-black, anterior angles usually more or less widely yellowish or reddish; elytra tipically yellowish or reddish-brown, suture and first interstice or even lateral margins more or less blackish, sometimes on disc with more or less large brownish spots, exceptionally almost entirely blackish. Head with epistoma feebly gibbous on disc, distinctly punctured, without anterior transverse carina; clypeus subtruncate or feebly sinuate at middle, rounded at sides, almost thinly bordered, the border glabrous; genae obtusely rounded, ciliate, protruding more than eyes; frontal suture tuberculate. Pronotum transverse, convex, doubly punctured; sides feebly arcuate, distinctly bordered; hind angles obtusely rounded; basal margins bordered. Scutellum small, regularly triangular. Elytra elongate, slightly widened

3) For redescription and figures of *Agrilinus ater* (Degeer, 1774) cfr. Dellacasa G. et al., 2001: 76.

posteriorly, striae subcrenulate, interstices flat or almost flat. Pygidium regularly distinctly punctured, punctures almost elongately pubescent, pubescence backward recumbent; at apical margin elongately ciliate. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with strong transverse carinae on outer face; apically fimbriate with short and equal spinules. Sexual dimorphism shown in males mainly by relatively more strong tubercles of frontal suture and by pronotum not narrowed frontwardly and less densely punctured on disc. Aedeagus rather stout with paramera regularly elongate and feebly curved apically. Epipharynx subsinuate at anterior margin; epitorma globous; corypha not widened up to front margin and with several almost elongate spiculae protruding beyond front margin; pedia pubescent with mixed many short and subregularly scattered spinules; chaetopariae moderately dense and elongate.

DISTRIBUTION. Palaearctic region

REMARKS. Other than the species herein treated, other Afrotropical and Oriental species probably belong to this genus. From the viewpoint of Nomenclature, the ending *-opsis*, from the Greek word οψις meaning "appearance", is feminine. Thus all genera ending in *-opsis*, irrespectively of the original gender given by their authors, are feminine. According to ICZN, art. 30.1.12, the genus *Bodilopsis* too, is feminine, hence specific names that are not in accodance with the correct gender of the genus must be changed (art. 34.2).

KEY TO SPECIES:

1 Preapical declivity of elytra strongly microreticulate thus dull, not at all punctured; rarely superficially microreticulate, almost shiny, very finely and densely punctured (ssp. *changajica*); central tubercle of frontal suture, in males, bifid at tip. Head and pronotum brown-reddish, elytra yellowish with darker suture, seldom with blackish spots also. Length 6.0-8.0 mm. Palaearctic region, from northern Iberian Peninsula to eastern Siberia and Japan ..... *sordida*

1' Preapical declivity of elytra smooth, shiny, distinctly punctured 2

2 Pronotum doubly, subregularly, almost superficially and sparsely punctured; median tubercle of frontal suture, in males, regularly conical. Chestnut brown; sometimes elytra yellowish with or without blackish spots, rarely entirely blackish. Length 6.0-7.5 mm. Palaearctic region, from Iberian Peninsula to eastern Siberia ..... *rufa*

2' Pronotum doubly, somewhat irregularly, coarsely and densely punctured almost on sides and toward basal margin; median tubercle of frontal suture, in males, bifid at tip. Pitch-black, sometimes lateral and apical margin of pronotum and elytral apex reddish or elytra entirely pale red-yellowish. Length 6.0-7.5 mm. China, northern Vietnam ..... *aquila*

Bodilopsis aquila (Schmidt A., 1916) **n. comb.** (figs 72-79)

Aphodius (Agrilinus) aquilus Schmidt A., 1916: 109
Aphodius (Bodilus) aquilus; Balthasar, 1946: 60
Aphodius (Pseudacrossus?) pfefferi Balthasar, 1932: 113; Balthasar, 1946: 60 (as synonym of *aquilus* Schmidt A., 1916)

TYPE LOCALITY: Kiautschau [China] (restricted).

TYPE DEPOSITORY: Naturhistoriska Riksmuseet. Stockholm.

DESCRIPTION. Length 6.0-7.5 mm, elongate, convex, shiny with elytra strongly dull preapically. Pitch-black, sides of pronotum and elytral apex faintly reddish: legs dark brown; antennal club testaceous (*forma typica*; fig. 79*)*, sometimes clypeal margin faintly reddish, side of pronotum and elytra testaceous (ab. *bellus* Schmidt A. 1916; fig. 76), or clypeal margin faintly reddish; sides and base of pronotum more or less widely testaceous; elytra testaceous with three blackish spots: one subbasal on third and fourth interstices, another subhumeral on sixth and seventh interstices and even another on preapical declivity from third to seventh interstices (ab. *nigromaculatus* Schmidt A., 1909; fig. 77), *do.*, but elytra with an elongate blackish spot on fifth to seventh interstices longitudinally widened after shoulder to preapical declivity and herein broadened to third interstice (ab. *versabilis* Balthasar, 1932; fig. 78). Head with epistoma feebly gibbous on disc; densely, moderately coarsely evenly punctured, punctation somewhat confused distally; clypeus subtruncate anteriorly, widely rounded at sides, thinly bordered, the border glabrous and slightly upturned; genae obtusely rounded, sparsely ciliate, protruding more than eyes; frontal suture trituberculate; front distinctly, evenly punctured. Pronotum transverse, strongly convex, feebly arcuate laterally, with a short and superficial median longitudinal groove basally; doubly punctured; large coarse punctures, three to four times larger than small ones, irregularly dense on sides and toward basal margin, almost lacking on disc; small punctures regularly scattered throughout; lateral margins rather thickly bordered and sparsely ciliate toward anterior angles; hind angles obtusely rounded; base feebly bisinuate and thinly bordered. Scutellum somewhat depressed basally, shortly subcarinate apically, finely and rather sparsely punctured. Elytra strongly convex, subparallel-sided, deeply striate; striae superficially punctured, not crenulate; interstices very feebly convex, near imperceptibly sparsely punctured, before apex distinctly microreticulate so strongly dull and not punctured at all. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: central tubercle of frontal suture relatively stronger and distinctly bifid at tip; pronotum more transverse with large punctures sparser, lacking on disc; metasternal plate moderately excavate; aedeagus figs 72-73. Female: central tubercle of frontal suture relatively less elevate, rounded at tip; pronotum narrowed frontwardly with few large punctures on disc also; metasternal plate almost flat.

DISTRIBUTION. China (Hopeh, Kiautschau, Sichuan, Yunnan), northern Vietnam.

REMARKS. Balthasar (1932: 38) described *absconditus* as a subspecies of *Aphodius (Pseudacrossus) pfefferi*. Later Balthasar himself (1946: 60) synonymized *pfefferi* with *Aphodius (Bodilus*) *aquilus* Schmidt A., 1916 and upgraded *absconditus* to *species propria*, and considered to belong to the subgenus *Pseudacrossus.* We consider this taxon probably identical with one of the colour variations of *aquila*, but refrain from proposing the new synonymy until type material is studied.

Bodilopsis rufa (Moll, 1782) (figs 80-91)

Scarabaeus scybalarius Fabricius, 1781: 16; Ádám, 1994: 13; International Commission on Zoological Nomenclature, 1998: 54 *(nomen reiecendum)*
Scarabaeus rufus Moll, 1782: 372; Ádám, 1994: 13 (as synonym of *Bodilopsis scybalarius* Fabricius, 1781); International Commission on Zoological Nomenclature, 1998: 54 *(nomen conservandum)*
Aphodius scybalarius; Illiger, 1798: 33
Aphodius rufescens Fabricius, 1801: 74
Aphodius sordidus var. *rufus*; Mulsant, 1842: 221
Aphodius (Aphodius) scybalarius; Mulsant & Rey, 1870: 410
Aphodius (Bodilus) rufus; Mulsant & Rey, 1870: 524; Reitter, 1892: 193
Aphodius (Aphodius) scybalarius Fabricius, 1781 *nec Auctorum*, Landin, 1956: 213 (as synonym of *rufus* Moll, 1782)
Aphodius (Agrilinus) scybalarius; Dellacasa G., 1983: 149
Aphodius (Agrilinus) rufus; Dellacasa G., 1983: 149 (as synonym of *scybalarius* Fabricius, 1781)
Bodilopsis scybalarius; Ádám, 1994: 13

TYPE LOCALITY: Salzburg [Austria] (conventional).

TYPE DEPOSITORY: unknown to Authors.

DESCRIPTION. Length 5.0-7.5 mm, oblong, convex, shiny, glabrous. Chestnut-brown; elytral suture and pronotal disc dark brown; legs brown-reddish; antennal club reddish (*forma typica*; fig. 84), sometimes blackish; head distally, elytra with suture and a discal oblique spot reddish-brown (ab. *arcuata* Moll, 1785; fig. 87), *do.*, but sides and apex of elytra blackish (ab. *moscovitica* Semenov, 1900; fig. 85), *do.*, but elytra with wide discal spot blackish (ab. *hypocyphta* Schmidt W., 1840; fig. 86), or nearly entirely piceous-black; only sides of pronotum, elytral juxtasutural interstice and shoulders vaguely reddish (ab. *cohrsi* Kolbe W., 1911; fig. 89), *do.*, but only the elytral juxtasutural interstice reddish (ab. *melanota* Mulsant, 1842; fig. 90), *do.*, but elytra entirely reddish (ab. *melancholica* Bouskell, 1901; fig. 88), or entirely pitch-black (ab. *ultramontana* Sahlberg, 1926; fig. 91). Head with epistoma feebly gibbous, densely subregularly, rather finely punctured; punctation distally somewhat coarser and denser; clypeus feebly sinuate at middle, obtusely rounded at sides, thinly bordered, the border faintly upturned, glabrous; genae obtusely rounded, shortly ciliate, distinctly protruding more than eyes; frontal suture trituberculate; front finely and regularly punctured. Pronotum transverse, convex, finely, rather densely doubly punctured; large punctures, two times larger than small ones, more densely arranged on sides; latter feebly arcuate, thickly bordered, the border rather elongately ciliate toward anterior angles; hind angles obtusely rounded; base slightly bisinuate, distinctly bordered. Scutellum superficially punctured on basal half. Elytra elongate, feebly widened posteriorly, strongly convex; striae wide, superficial, feebly crenulate; interstices flat on disc, somewhat convex preapically, finely and sparsely punctured; punctation denser and coarser on preapical declivity. Hind tibiae superior apical spur shorter than first tarsal segment; latter almost as long as following three combined. Male: tubercles of frontal suture relatively stronger, the central one conical; pronotum more convex and not narrowed frontwardly, more sparsely and superficially punctured

on disc; aedeagus figs 81-82. Female: tubercles of frontal suture relatively weaker; pronotum less convex and narrowed frontwardly, more densely and coarsely punctured on disc.

DISTRIBUTION. Widely spread in Palaearctic region, from Iberian Peninsula to Siberia.

Bodilopsis sordida (Fabricius, 1775) (figs 92-99)

Scarabaeus sordidus Fabricius, 1775: 16
Aphodius sordidus; Illiger, 1798: 32
Aphodius (Bodilus) sordidus; Mulsant & Rey, 1870: 522
Aphodius (Agrilinus) sordidus; Dellacasa G., 1983: 150
Bodilopsis sordidus; Ádám, 1994: 13

TYPE LOCALITY: Anglia [United Kingdom].

TYPE DEPOSITORY: Zoological Museum. Kiel.

DESCRIPTION. Length 5.0-7.0 mm, elongate, convex, nearly glabrous; shiny, but elytra microreticulate on preapical declivity thus strongly dull. Head and pronotum reddish, latter with wide discal spot darker; elytra pale testaceous with darker suture; legs brownish, tarsi reddish (*forma typica*; fig. 97); or elytra with subhumeral blackish spot (ab. *bipunctatella* Mulsant, 1842; fig. 98), or elytra with subhumeral and discal rounded blackish spots (ab. *quadripunctata* Panzer, 1789; fig. 99), sometimes anterior and basal margins of pronotum blackish (ab. *limbatella* Mulsant, 1842; fig. 96). Head with epistoma feebly gibbous, superficially punctured on disc, subrugosely punctured distally; clypeus feebly sinuate at middle, rounded at sides, thinly bordered, the border feebly upturned; genae obtusely rounded, elongately ciliate, distinctly protruding more than eyes; frontal suture trituberculate; front feebly sunk back to central tubercle of frontal suture, finely and regularly punctured. Pronotum transverse, strongly convex, shiny, doubly punctured, large punctures three to four times larger than small ones, punctation fine and sparse on disc, somewhat coarser and denser laterally; sides subparallel, thinly bordered, the border elongately ciliate; hind angles obtusely rounded; base faintly bisinuate, distinctly bordered. Scutellum microreticulate, finely and sparsely punctured. Elytra elongate, strongly convex, almost subparallel-sided, moderately shiny; striae wide, deep, feebly crenulate; interstices feebly convex, microreticulate, sparsely finely punctured, apically strongly microreticulate so dull, not at all punctured (except in ssp. *changajica*) and with almost imperceptible, extremely short, sparse yellowish hairs. Hind tibiae superior apical spur shorter than first tarsal segment; latter somewhat shorter than following three combined. Male: central tubercle of frontal suture transverse, strong, bifid at tip, lateral ones weaker but distinct; pronotum not narrowed anteriorly, finely sparsely punctured on disc; aedeagus figs 92-93. Female: tubercles of frontal suture relatively weaker; pronotum narrowed frontward, more densely coarsely punctured on disc.

DISTRIBUTION. Palaearctic region, form Iberian Peninsula to eastern Siberia and Japan.

SUBSPECIES

changajica (Endrödi, 1965)

Aphodius (Bodilus) sordidus ssp. *changajicus* Endrödi, 1965: 195

LOCUS TYPICUS: "Archangaj aimak: 30km S von See Ogijnur, am Chogschin-Orchon" (Mongolia).

TYPE DEPOSITORY: Hungarian Natural History Museum. Budapest.

DESCRIPTION. Distinct from the nominotypical form mainly by the preapical elytral declivity superficially microreticulate, subshiny, very finely densely punctured; clypeus feebly but distinctly sinuate at middle; size medially usually smaller: length 5.5-6.5 mm.

DISTRIBUTION. Mongolia.

Genus ***Planolinellus*** nov.

Species parvae, subcylindricae, elongatae, modice nitidae, glabrae. Nigrae, elytris macula basali et apicali rufis plus minusve distinctis vel confluentibus. Capite clypeo medio vix sinuato, lateribus rotundato; sutura frontali tuberculo mediano bifido. Pronoto aequaliter, sat dense punctato; basi distincte marginato. Scutello parvo, triangulari. Elytris leviter crenato-striatis; interstitiis planis distincte punctulatis, apici subopacis. Metatibiis setis apicalibus longitudine aequalibus.

Type species: *Aphodius vittatus* Say, 1825

DIAGNOSIS. Small species (lenght 3.0-4.5 mm), subcylindrically elongate, moderately shiny, glabrous. Blackish; elytra with more or less wide reddish spots, rarely almost entirely reddish or blackish. Head with epistoma slightly gibbous, punctured; clypeus subsinuate at middle, rounded at sides, thinly bordered, the border glabrous, feebly upturned; genae rounded, ciliate, feebly protruding more than eyes; frontal suture with a median tubercle bifid at tip. Pronotum transverse, convex, doubly punctured; sides feebly arcuate, thinly bordered, the border shortly ciliate near front angles only; hind angles obtusely rounded; base distinctly bordered. Scutellum small, triangular. Elytra almost parallel-sided; striae fine, rather superficially punctured, subcrenulate; interstices flat, finely microreticulate, sparsely punctured. Pygidium regularly punctured, punctures with pubescence moderately elongate, sparse and recumbent, mixed few straight elongate setae; at apical margin sparsely and very elongately ciliate. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with distinct transverse carinae on outer face, apically fimbriate with short and equal spinules. Sexual dimorphism shown in males by central tubercle of frontal suture relatively more strong, pronotum broadly transverse and less densely punctured on disc, fore tibiae apical spur stouter. Aedeagus with paramera moderately membranous apically; in lateral view, distinctly curved apically. Epipharynx transverse, with anterior margin nearly straight, broadly rounded at sides; epitorma drop-shaped; corypha with slender and elongate apical spiculae strongly protruding beyond front margin; pedia densely pubescent, mixed few short spinules; chatopariae short and densely arranged.

DISTRIBUTION. Holarctic region and Mexican Transition Zone.

Planolinellus vittatus (Say, 1825) **n. comb.** (figs 100-112)

Aphodius vittatus Say, 1825: 191
Aphodius (Agrilinus) vittatus; Schmidt A., 1913: 164
Aphodius (Planolinus) vittatus; Dellacasa G., 1983: 390; Dellacasa M., 1988: 215; Dellacasa G. et al., 2001: 58

TYPE LOCALITY: Pennsylvania [USA] (conventional).

TYPE DEPOSITORY: unknown to Authors; type probably lost.

DESCRIPTION. Length 3.0-4.5 mm, elongate, subcylindrical, moderately shiny, glabrous. Elytra with a reddish spot at shoulder, widened somewhat obliquely toward the apex and narrowed at middle; legs reddish brown with tarsi paler; antennal club piceous (*forma typyca*; fig. 109), or elytra entirely reddish (ab. *semiruber* Motschulsky, 1860; fig. 104), or elytra entirely blackish (ab. *cockerelli* Leng, 1918; fig. 112); or elytra reddish with a blackish spot obliquely widened from shoulder to apical sutural angle (ab. *sellatus* Mannerheim, 1852; fig. 108), or elytra reddish with blackish margins (ab. *nigromarginatus* Cockerell, 1888; fig. 106), or elytra blackish with an humeral and a preapical reddish spot (ab. *mundus* Reitter, 1892; fig. 111), *do.*, but reddish spots strongly widened, only at half of elytra separated by a thin transverse blackish bind (ab. *vitiosus* Reitter, 1892; fig. 110), or elytra reddish with juxtasutural and second interstices blackish (ab. *rufoplagiatus* Reitter, 1892; fig. 105), or elytra reddish, first to third interstices and lateral margins blackish (ab. *tjanshanicus* Balthasar, 1956, China; fig. 107). Head with epistoma feebly convex, sparsely subregularly punctured, punctation somewhat sparse and finer on disc; clypeus feebly sinuate at middle, rounded at sides, thinly bordered, the border feebly upturned; genae rounded, sparsely ciliate, faintly protruding more than eyes; frontal suture with a median tubercle more or less strong and bifid at tip, the lateral ones feeble and transverse; front finely, subregularly punctured. Pronotum transverse, strongly convex, rather densely doubly punctured; the large punctures, few larger than small ones, sparsely irregularly scattered; sides feebly arcuate, thinly bordered, the border shortly ciliate toward anterior angles; hind angles obtusely rounded; base feebly bisinuate, distinctly bordered. Scutellum regularly triangular, subcarinate at middle; irregularly punctured basally and laterally. Elytra parallel-sided, epipleural carina somewhat raised at shoulder; striae fine, distinctly punctured, subcrenulate; interstices flat, finely almost sparsely punctured. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following two combined. Male: central tubercle of frontal suture relatively more strong; pronotum more transverse and less densely punctured on disc; fore tibiae apical spur stout; aedeagus figs 101-102. Female: central tubercle of frontal suture relatively weaker, the lateral ones nearly obsolete; pronotum somewhat narrower frontward and more densely punctured on disc; fore tibiae apical spur slender.

DISTRIBUTION. The species, *sensu lato*, is widely spread in North and Central America (from Canada to Mexico); in Palaearctic region its distributional area is expanded from Greece, Asia Minor, Caucasus, Transcaspia, Transcaucasia, Chinese Turkestan, Mongolia, eastern to Siberia (Transbaikalia) and Japan.

REMARKS. *Planolinellus vittatus* has been considered native to North America, however it is found in many regions of the Old World, from Siberia to Greece (Peloponnese: Rodos island in Aegean Sea seems to be the most western locality known). This distribution is unusual since the species is not present in western Europe and it is probable that it has been introduced from North America into these countries of the Old World. The taxon is probably a "Mischart": Balthasar (1964), e. g., upgraded to subspecies *sellatus*, *mundus* and *tjanshanicus* but, at present, we have at our disposal neither sufficient material from all distributional areas, nor all the types to redefine correctly the true value of all *vittatus* forms, thus we considered them simply colour variations.

Genus *Tristaphodius* Balthasar, 1932

Other than the type species, *Tristaphodius mortuorum* (Balthasar, 1932)[4], *asperulus* (Červenka, 1994) is recognized as belonging to this genus as herein redefined and we formulate the **new combination** *Tristaphodius asperulus* [ex *Aphodius*].

Genus ***Planolinoides*** nov.

Species parvae, obovales, convexiusculae, modice nitidae, glabrae. Nigrae, elytris piceis macula apicali rufa, interdum toto piceis vel toto rufis. Capite clypeo medio sinuato, lateribus subangulato; sutura frontali unituberculata. Pronoto sat dense dupliciter punctato, basi marginato. Scutello parvo, triangulari. Elytris tenuiter crenato-striatis, interstitiis convexiusculis, plerumque apici opacis. Metatibiis setis apicalibus longitudine aequalibus.

Type species: *Aphodius borealis* Gyllenhal, 1827.

DIAGNOSIS. Small species (length 3.5-5.0 mm) oblong, convex, few shiny, sometimes with elytra entirely or widely dull, glabrous. Blackish, seldom elytra more or less reddish. Head with epistoma gibbous, punctured; clypeus anteriorly subtruncate, obtusely subangulate at sides, thinly bordered, the border glabrous; genae obtusely rounded, ciliate, protruding more than eyes; frontal suture with distinct median tubercle. Pronotum transverse, punctured; sides arcuate, thinly bordered; hind angles obtusely rounded; base bordered. Scutellum small, triangular. Elytra oval; striae distinctly punctured, crenulate; interstices flat or feebly convex, sometimes finely sparsely punctured, distinctly microreticulate at least on preapical declivity thus more or less widely dull. Pygidium regularly punctured, puctures shortly pubescent; pubescence backwardly recumbent, mixed few very elongate straight setae; apical margin elongately sparsely ciliate. Fore tibiae distally tridentate and proximally serrulate at outer margin; upper side smooth. Middle and hind tibiae with distinct transverse carinae on outer face, apically fimbriate with short and equal spinules. Sexual dimorphism shown in males by relatively stronger central tubercle of frontal suture, by pronotum more transverse, less densely and more superficially punctured on disc. Aedeagus with paramera rather short, globulous, strongly sclerificate and shortly sparsely haired toward apex. Epipharynx transverse, inwardly bisinuate at anterior margin, moderately rounded at sides; epitorma drop-shaped; corypha with apical spiculae rather stout but distinctly protruding beyond front margin;

[4]) For redescription and figures of *Tristaphodius mortuorum* (Balthasar, 1932) cfr. Dellacasa G. et al., 2001: 296.

pedia densely pubescent with short spinules irregularly mixed; chaetopariae short and moderately dense.

DISTRIBUTION. Palaearctic and Nearctic region.

REMARKS. Gordon (*in* litteris) stated that, at least, four North American species belong to this genus.

Planolinoides borealis (Gyllenhal, 1827) **n. comb.** (figs 113-116)

Aphodius borealis Gyllenhal, 1827; 248
Aphodius (Agrilinus) borealis; Reitter, 1892, 1913: 200
Aphodius (Planolinus) borealis; Dellacasa G., 1983: 385; Dellacasa M., 1988: 215; Dellacasa G. et al., 2001: 58

TYPE LOCALITY: Lapponia [northern Sweden?].

TYPE DEPOSITORY: Universitets Zoologiska Institut. Uppsala.

DESCRIPTION. Length 3.5-5.0 mm, oblong, convex, glabrous; moderately shiny, apical declivity of elytra strongly dull. Blackish or piceous, usually with anterior angles of pronotum reddish; elytra near scutellum, at shoulder and preapically more or less widely reddish (*forma typica*; fig. 117), sometimes elytra entirely reddish (ab. *gyllenhali* Seidlitz, 1891; fig. 118). Head with epistoma convex, anteriorly transversely subcarinate, very finely regularly and sparsely punctured; clypeus subtruncate anteriorly, obtusely rounded at sides, thinly bordered, the border glabrous and laterally feebly upturned; genae rounded, shortly ciliate, feebly protruding more then eyes; frontal suture trituberculate; front finely sparsely punctured. Pronotum transverse, strongly convex, doubly rather densely punctured, large punctures two to three times larger than small ones; sides feebly arcuate, distinctly bordered, the border glabrous; hind angles obtusely rounded; base faintly bisinuate, distinctly bordered. Scutellum elongately triangular, finely and sparsely punctured on basal half. Elytra feebly widened posteriorly, strongly convex; striae fine, superficially punctured, subcrenulate; interstices faintly convex, superficially microreticulate and finely sparsely punctured on disc, strongly microreticulate thus dull and near imperceptibly punctured on preapical declivity. Hind tibiae superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: central tubercle of frontal suture relatively stronger; punctation of pronotum more sparse and more irregularly scattered; aedeagus figs 114-115. Female: central tubercle of frontal suture relatively weaker; punctation of pronotum more dense and more regularly scattered.

DISTRIBUTION. Canada (eastern, south to southern British Columbia), USA (Alaska); Europe, Caucasus, Transcaucasia, Transcaspia, eastern Siberia.

REMARKS. This Holarctic taxon was firstly recorded from North America by Brown (1930) as *Aphodius errans*. As *A. borealis* it was recorded by Lindroth (1957) and Landin (1960). These authors and Brown (1967) were of the opinion that *borealis* is truly Holarctic rather than introduced in North America.

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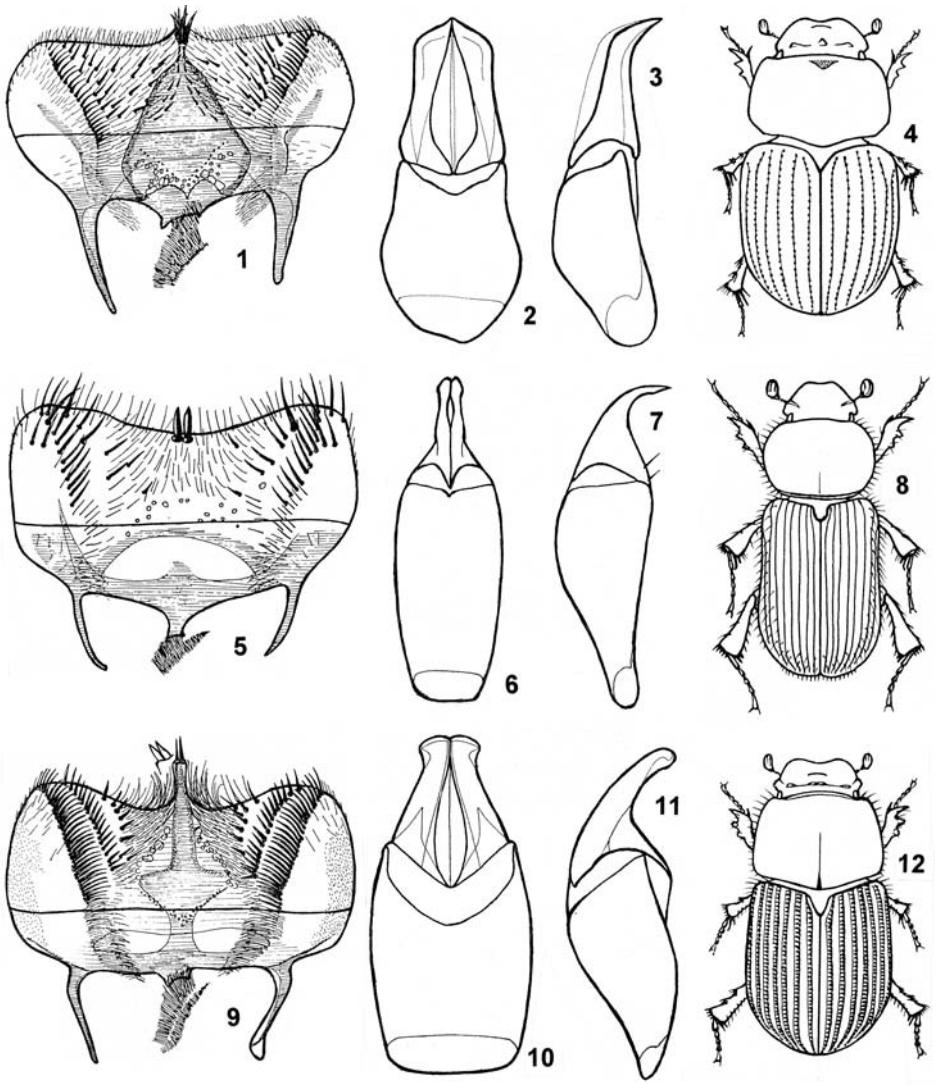
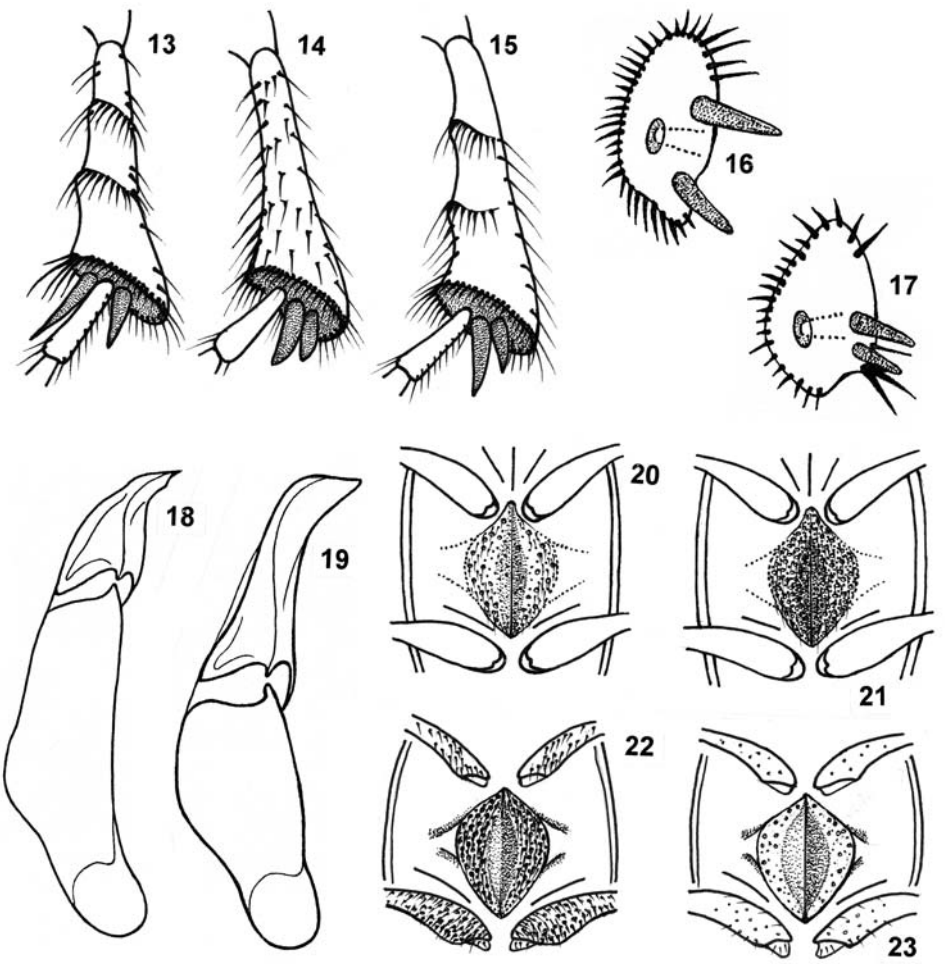
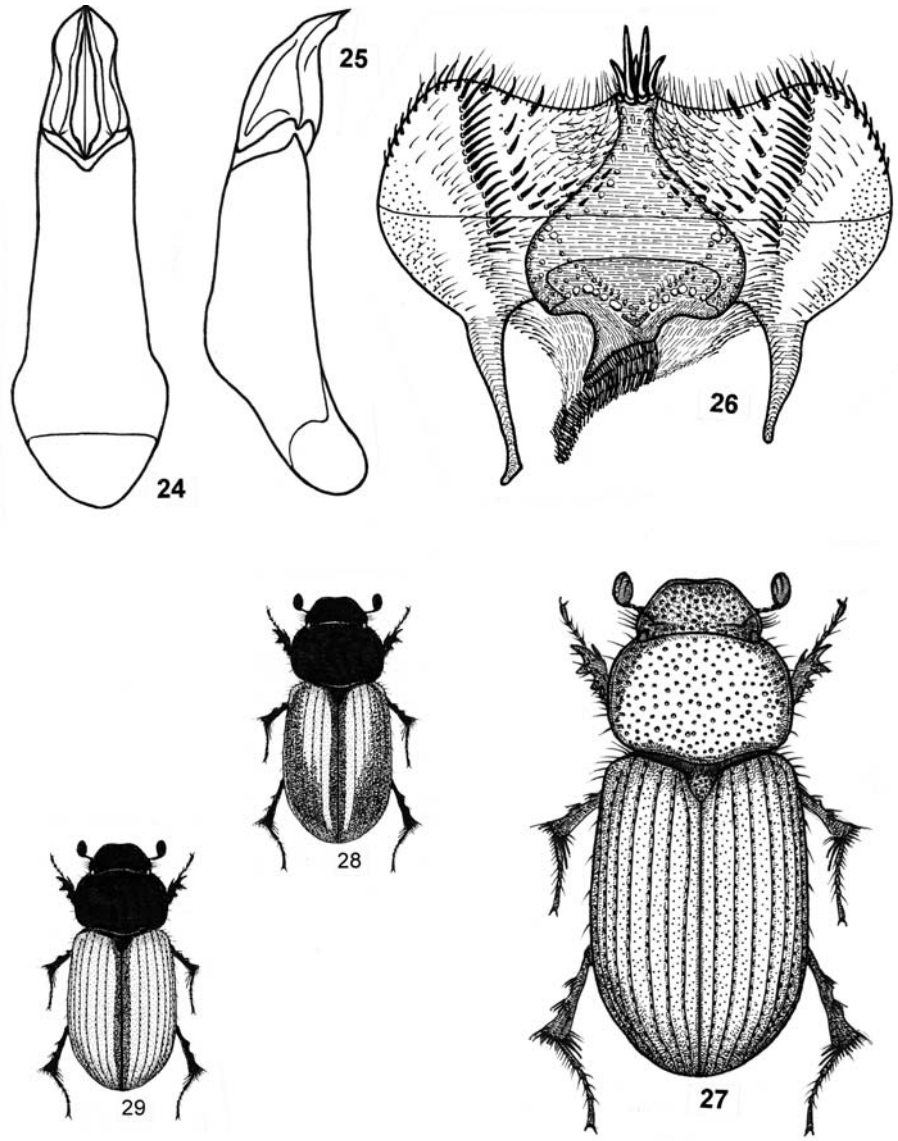


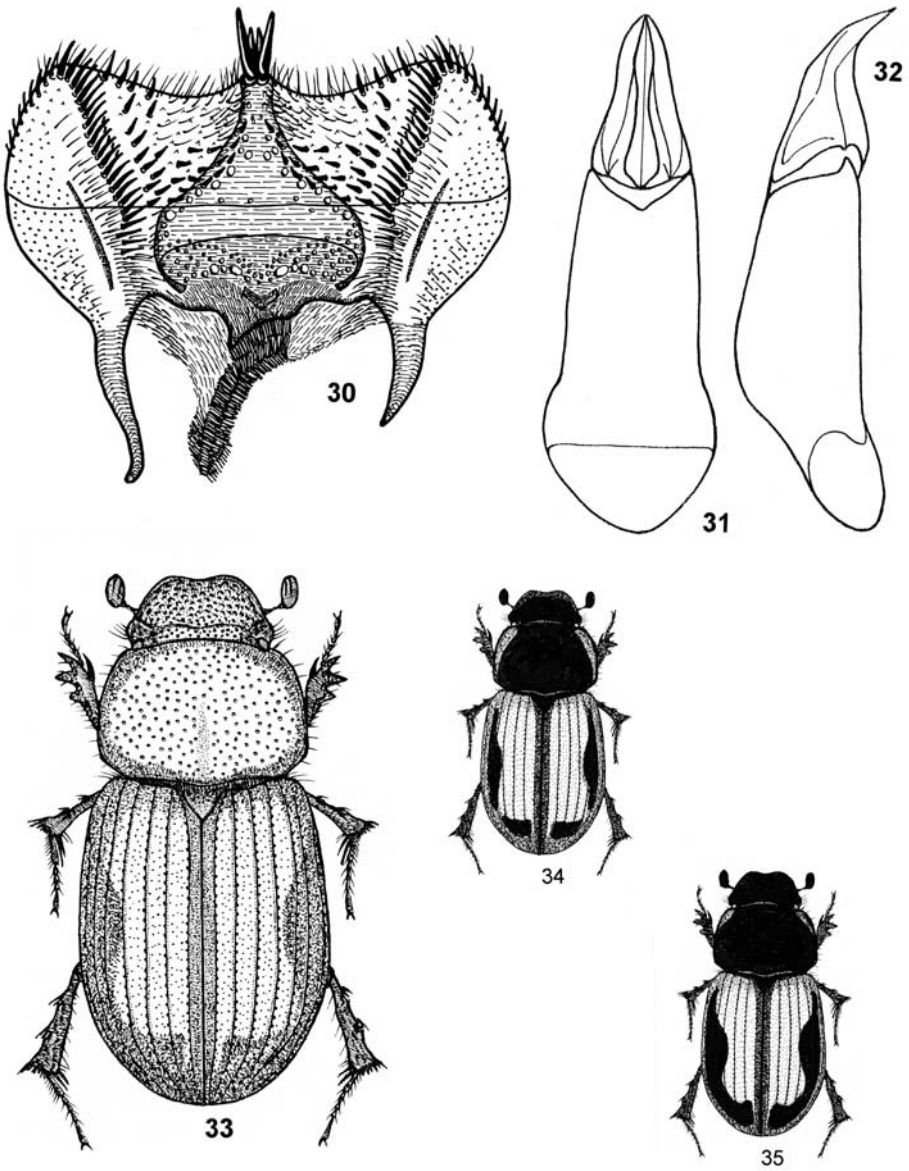
Figs 1-4. *Aphodius fimetarius* (Linné, 1758) (Aphodiini): 1 - epipharynx; 2-3 - aedeagus (dorsal and lateral view); 4 - habitus of the male.
Figs 5-8. *Didactylia pallicolor* (Fairmaire, 1886) (Didactyliini): 5 - epipharynx; 6-7 - aedeagus (dorsal and lateral view): 8 - habitus of the male.
Figs 9-12. *Proctophanes sculptus* (Hope, 1847) (Proctophanini): 9 - epipharynx; 10-11 - aedeagus (dorsal and lateral view); 12 - habitus of the male.



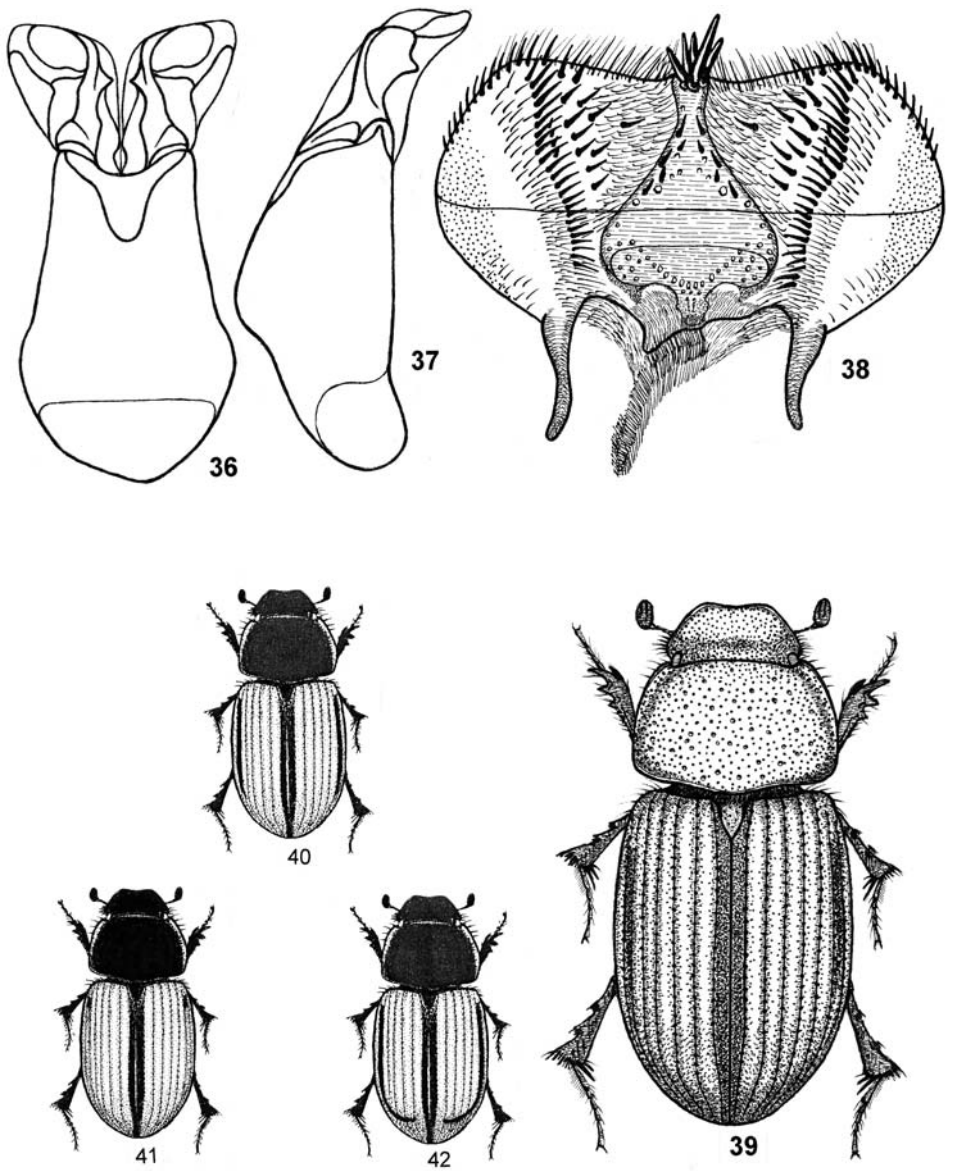
Figs 13-23: 13 - hind tibia outer face of *Aphodius fimetarius* (Aphodiini); 14 - idem, of *Didactylia pallicolor* (Didactyliini); 15 - idem, of *Proctophanes sculptus* (Proctophanini); 16 - hind tibia distal face of Aphodiini; 17 - idem, of Didactyliini; 18 - aedeagus, lateral view, of *Nobiellus bonnairei* (Reitter, 1892); 19 - idem, of *Nobius serotinus* (Panzer, 1799), 20 - metasternal plate of *Melinopterus prodromus* (Brahm, 1790); 21 - idem, of *Melinopterus guillebeaui* (Reitter, 1891); 22 - idem, of *Nobiellus bonnairei* (Reitter, 1892); 23 - idem, of *Nobius serotinus* (Panzer, 1799).



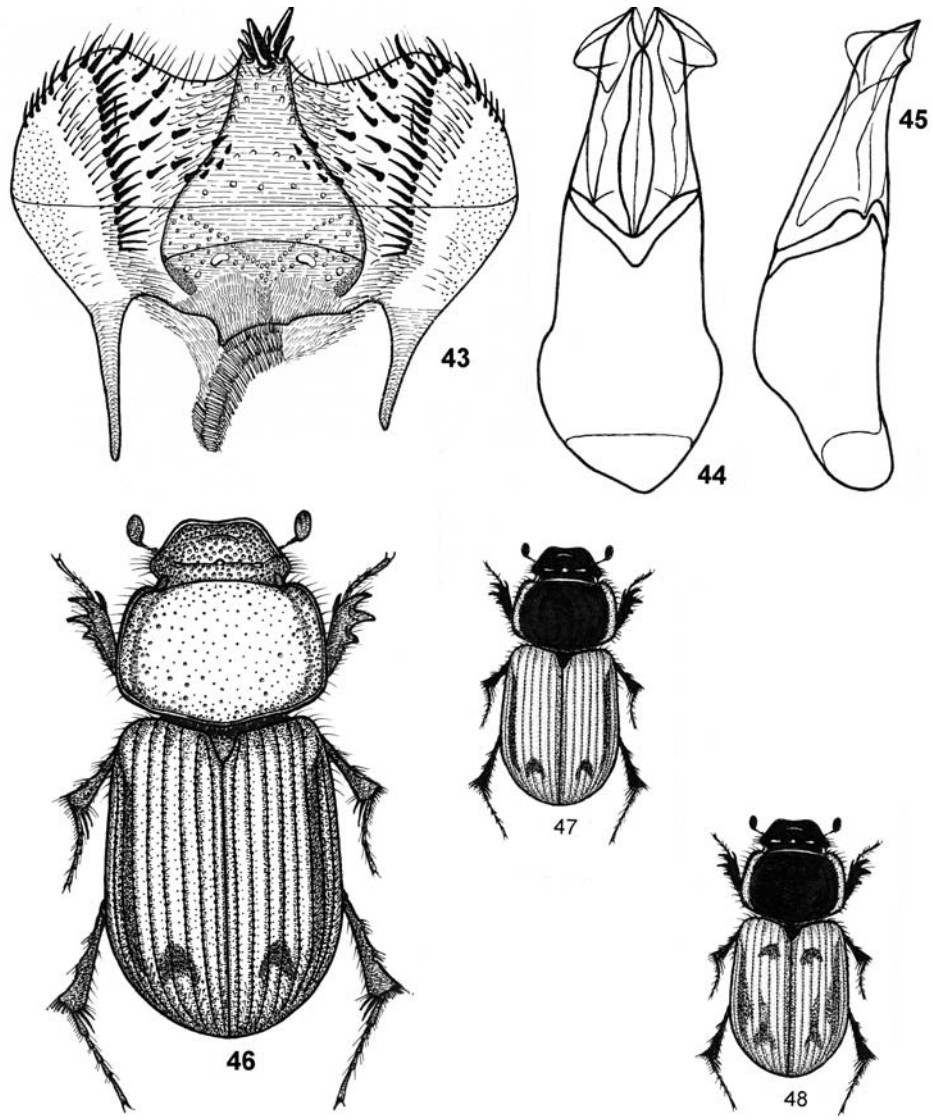
Figs 24-27. *Nobiellus bonnairei* (Reitter, 1892) (Oukaimeden, High Atlas, Morocco) (length 4.0 mm): 24-25 - aedeagus (dorsal and lateral view); 26 - epipharynx; 27 - habitus of the male; 28 - *forma typica*; 29 - "ab. *asfaricus* nov.".



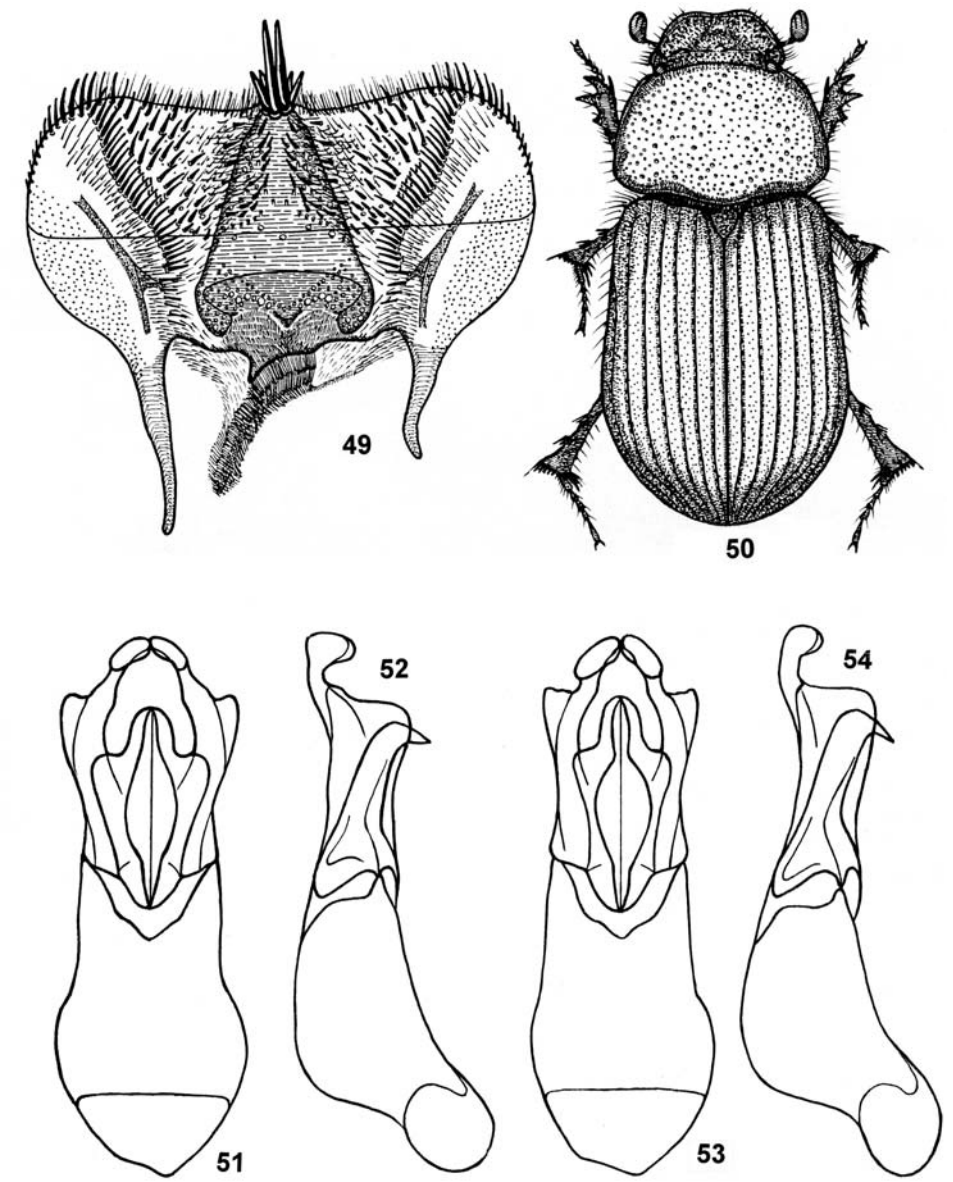
Figs 30-35. *Nobiellus pustulifer* (Reitter, 1892) (Gr. Balachan Dschbeil, Turkmenistan) (length 3.5 mm): 30 - epipharynx; 31-32 - aedeagus (dorsal and lateral view); 33 - habitus of the male; 34 - *forma typica*; 35 - ab. *malyi* (Obenberger, 1914).



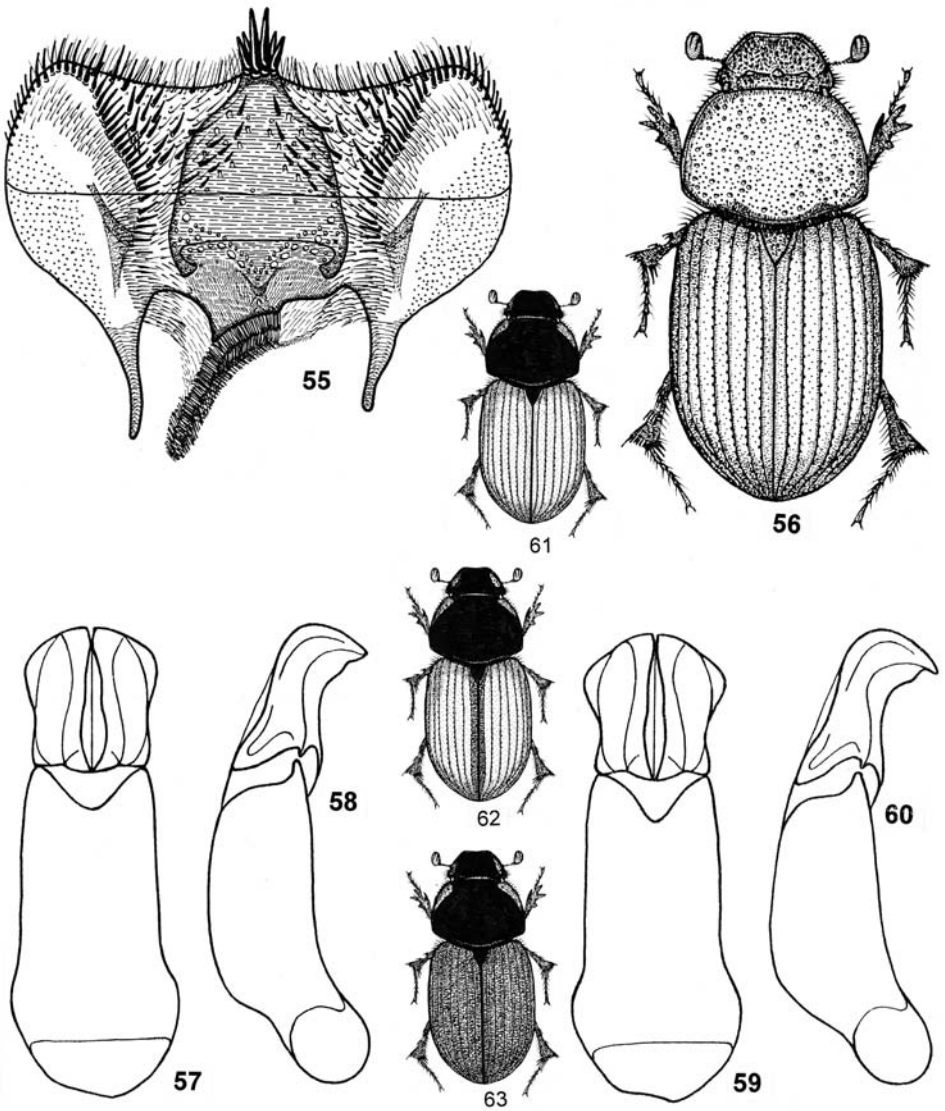
Figs 36-42. *Esymus sesquivittatus* (Fairmaire, 1883) (Maktaa, Tunisia) (length 3.5 mm): 43 - epipharynx; 44-45 - aedeagus (dorsal and lateral view); 46 - habitus of the male; 47 - *forma typica*; 48 - ab. *oligopictus* Báguena, 1930; 49 - ab. *fuentei* Báguena, 1930.



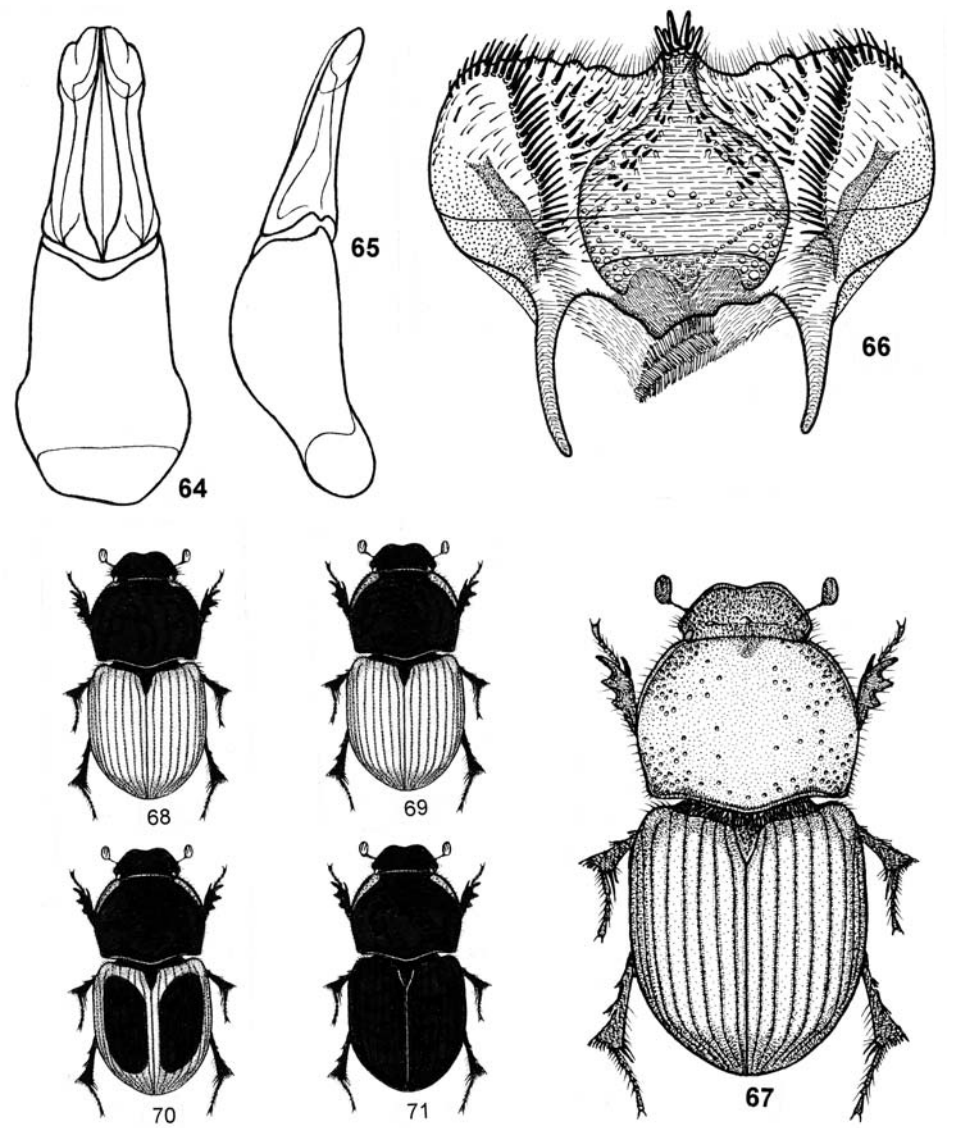
Figs 43-48. *Chilothorax exclamationis* (Motschulsky, 1849) (Kairouan, Tunisia) (length 4.0 mm): 43 - epipharynx; 44-45 - aedeagus (dorsal and lateral view); 46 - habitus of the male; 47 - *forma typica*; 48 - ab. *capbonensis* (Balthasar, 1964).



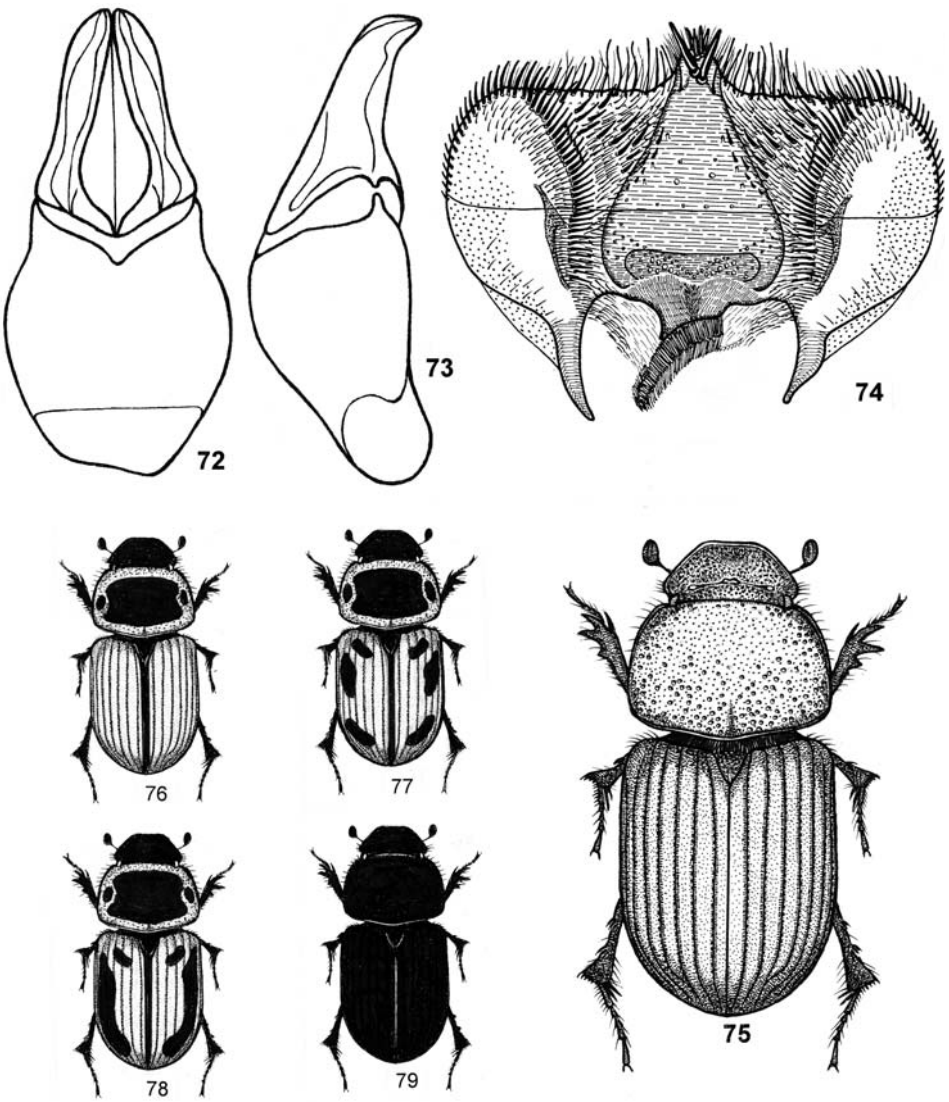
Figs 49-54. *Parabodilus wollastoni*: 49-50 - *P. wollastoni* ssp. *wollastoni* (Harold, 1862) (Erfoud, Morocco) (length 7.5 mm): 49 - epipharynx; 50 - habitus of the male; 51-52 - aedeagus (dorsal and lateral view); *P. wollastoni* ssp. *iranicus* (Balthasar, 1946) (Cha Bahar, Beluchistan, Iran): 53-54 - aedeagus (dorsal and lateral view).



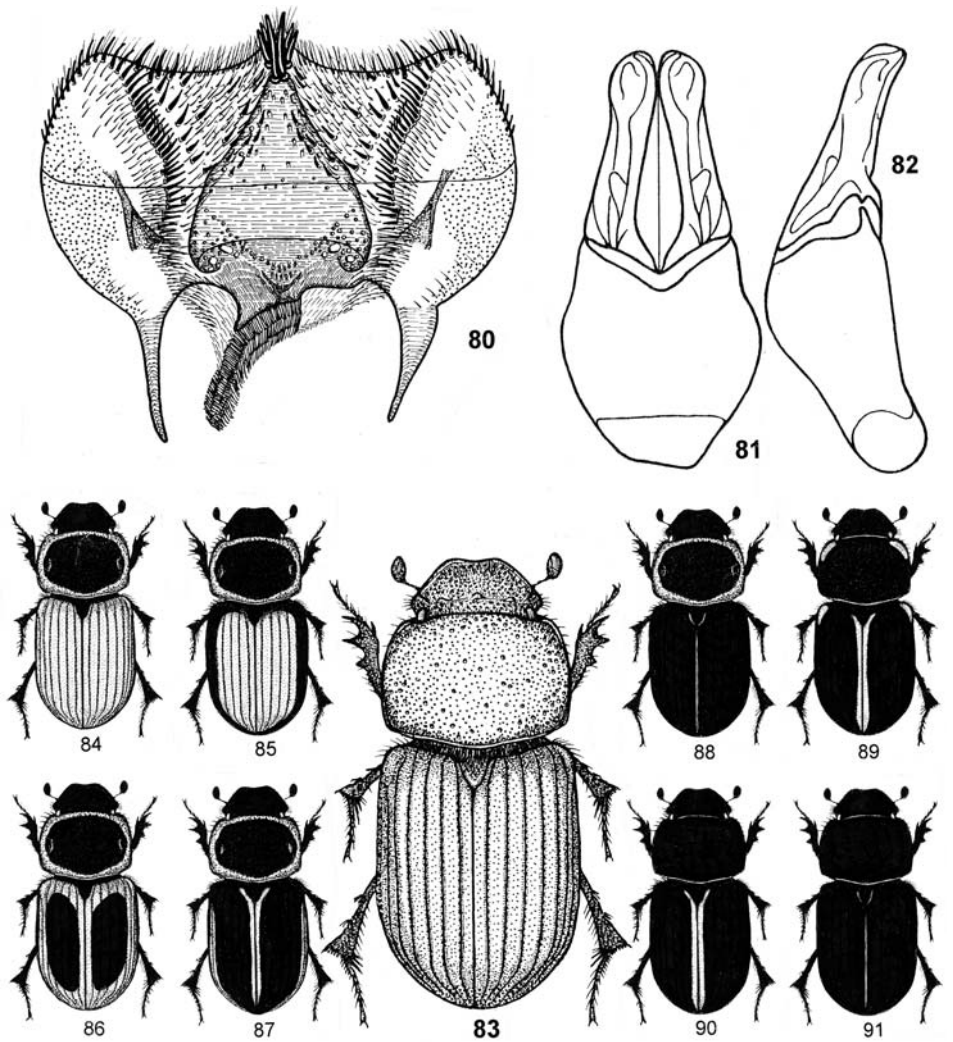
Figs 55-63. *Bodiloides ictericus*: *B. ictericus* ssp. *ictericus* (Laicharting, 1781) (Pandorf, Burgenland, Austria) (length 5.0 mm): 55 - epipharynx; 56 - habitus of the male; 57-58 - aedeagus (dorsal and lateral view); 59 - ab. *pallescens* (Bouskell, 1901); 60 - *forma typica*; 61 - ab. *melanescens* (Bouskell, 1901); *B. ictericus* ssp. *ghardimaouensis* (Balthasar, 1929) (Áin Sciahhàt, Lybia): 62-63 - aedeagus (dorsal and lateral view).



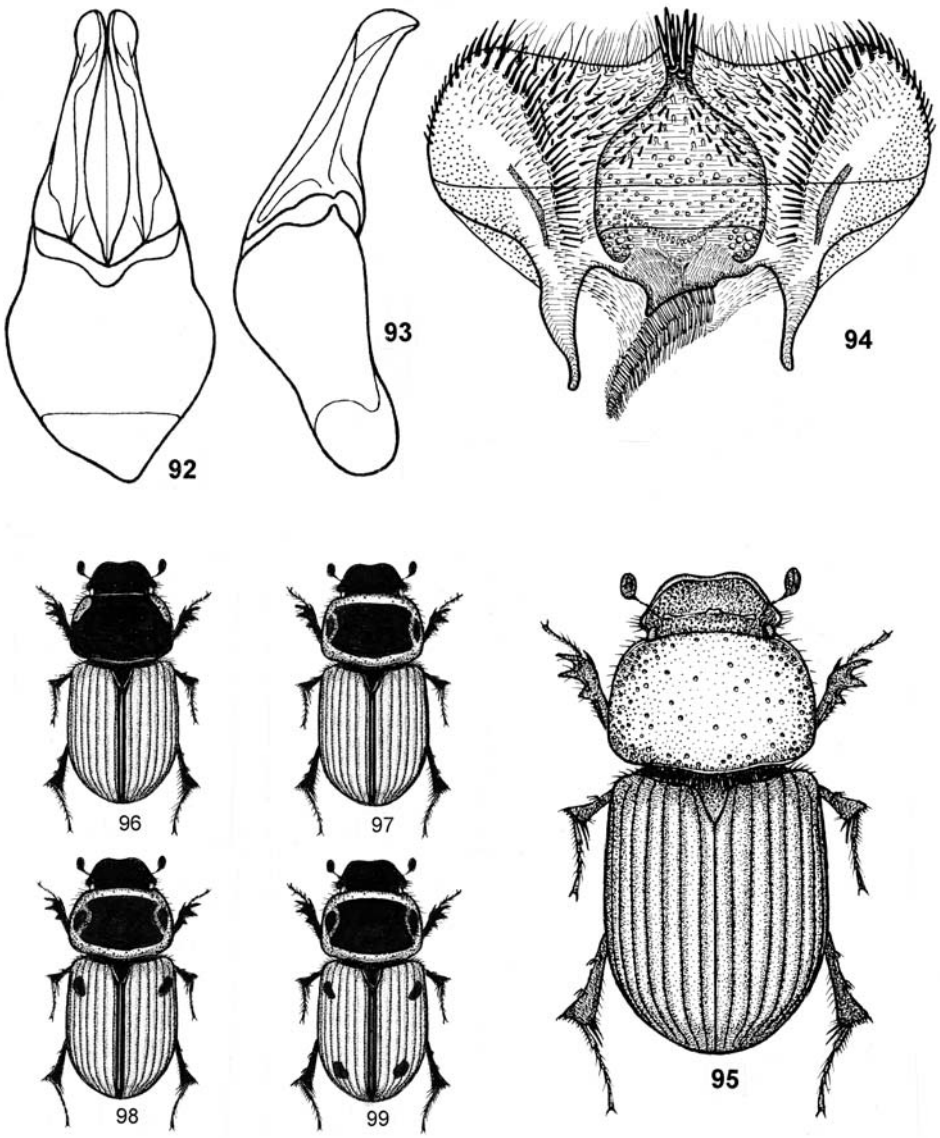
Figs 64-71. *Rhodaphodius foetens* (Fabricius, 1787) (Colle della Sea, Val Pellice, Piedmont, Italy) (length 8.0 mm): 64-65 - aedeagus (dorsal and lateral view); 66 - epipharynx; 67 - habitus of the male; 68 - ab. *obscuriellus* (Schmidt A., 1916); 69 - *forma typica*; 70 - ab. *vaccinarius* (Herbst, 1789); 71 - ab. *hypocastaneus* (Bouskell, 1901).



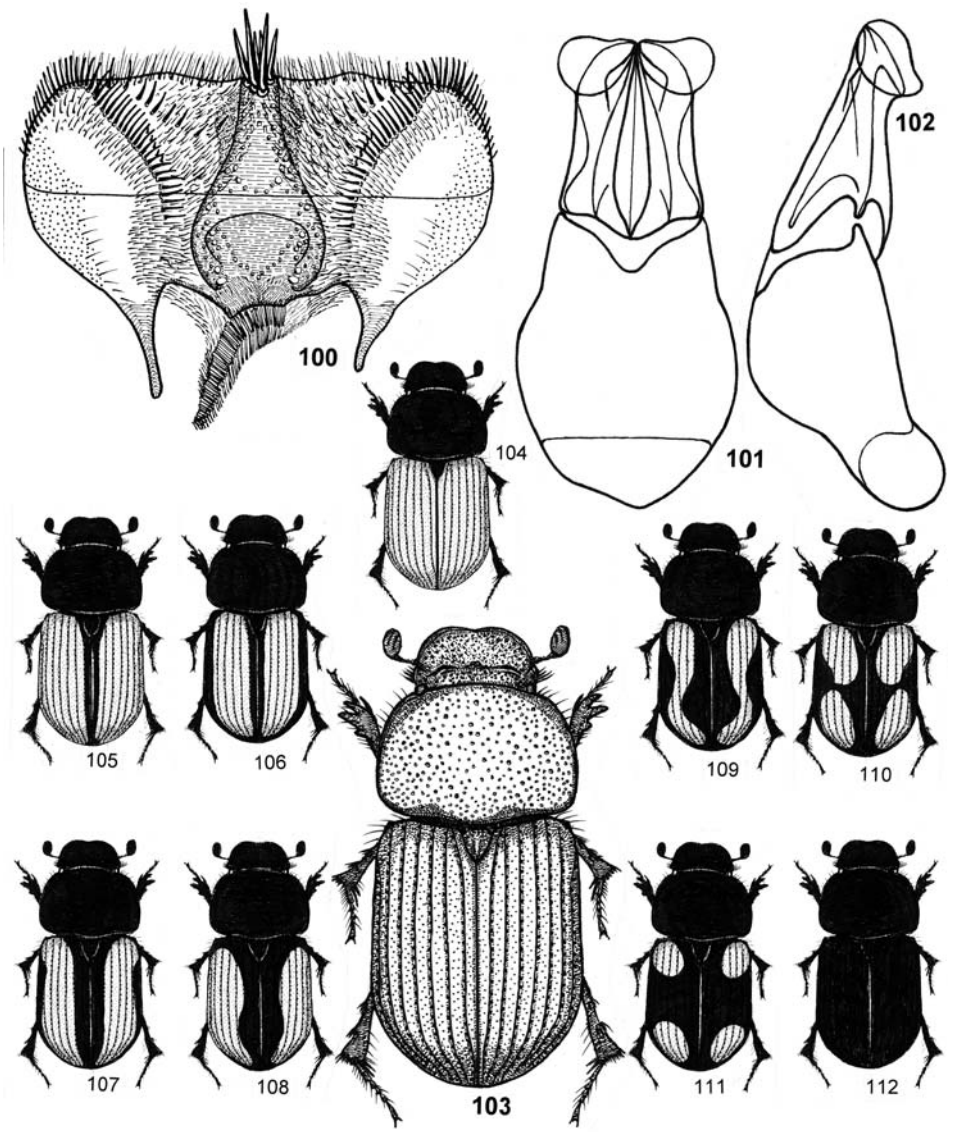
Figs 72-79. *Bodilopsis aquila* (Schmidt A., 1916) (Kiautschiau, China) (length 7.0 mm): 72-73 - aedeagus (dorsal and lateral view); 74 - epipharynx; 75 - habitus of the male; 76 - ab. *bella* (Schmidt A., 1916); 77 - ab. *nigromaculata* (Schmidt A., 1909); 78 - ab. *versabilis* (Balthasar, 1932); 79 - *forma typica.*



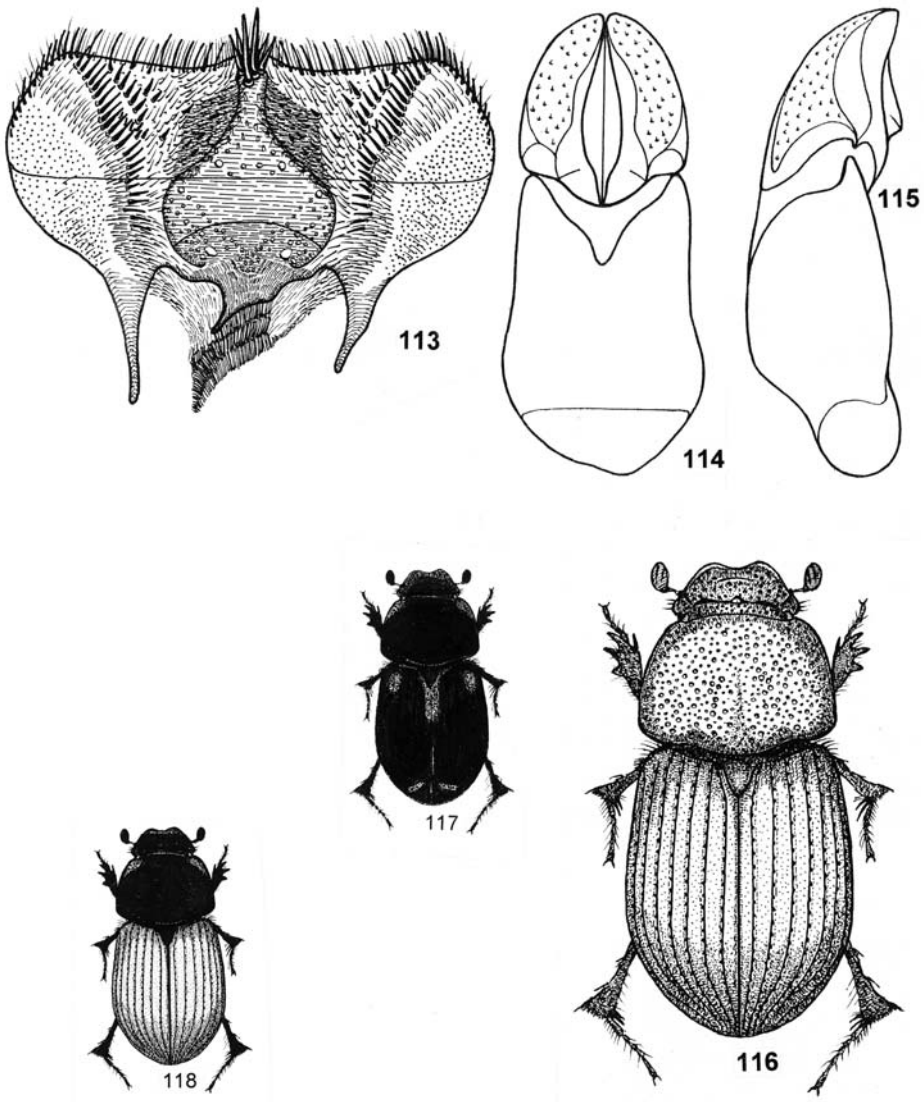
Figs 80-91. *Bodilopsis rufa* (Moll, 1782) (P.N. La Mandria, Torino, Piedmont, Italy) (length 6.5 mm): 80 - epipharynx; 81-82 aedeagus (dorsal and lateral view); 83 - habitus of the male; 84 - *forma typica*; 85 - ab. *moscovitica* (Semenov, 1900); 86 - ab. *hypocyphtha* (Schmidt W., 1840); 87 - ab. *arcuata* (Moll, 1785); 88 - ab. *melancholica* (Bouskell, 1901); 89 - ab. *cohrsi* (Kolbe W., 1911); 90 - ab. *melanota* (Mulsant, 1842); 91 - ab. *ultramontana* (Sahlberg, 1926).



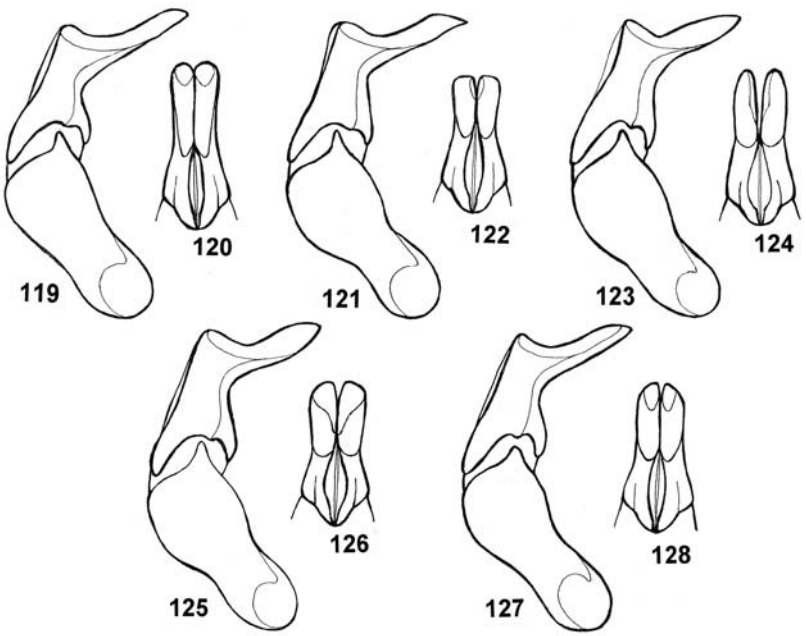
Figs 92-99. *Bodilopsis sordida* (Fabricius, 1775) (Prater, Wien, Austria) (length 7.0 mm): 92-93 - aedeagus (dorsal and lateral view); 94 - epipharynx; 95 - habitus of the male; 96 - ab. *limbatella* (Mulsant, 1842); 97 - *forma typica*; 98 - ab. *bipunctatella* (Mulsant, 1842); 99 - ab. *quadripunctata* (Panzer, 1789)



Figs 100-112. *Planolinellus vittatus* (Say, 1825) (Pismo Co., California, U.S.A.) (length 4.0 mm): 100 - epipharynx; 101-102 - aedeagus (dorsal and lateral view); 103 - habitus of the male; 104 - ab. *semiruber* (Motschulsky, 1860); 105 - ab. *rufoplagiatus* (Reitter, 1892); 106 - ab. *nigromarginatus* (Cockerell, 1888); 107 - ab. *tjanshanicus* (Balthasar, 1956); 108 - ab. *sellatus (*Mannerheim, 1852); 109 - *forma typica;* 110 - ab. *vitiosus* (Reitter, 1892); 111 - ab. *mundus* (Reitter, 1892); 112 - ab. *cockerelli* (Leng, 1918).



Figs 113-118. *Planolinoides borealis* (Gyllenhal, 1827) (Portella Materazzi, Aspromonte, Calabria, Italy) (legth 4.0 mm): 113 - epipharynx; 114-115 - aedeagus (dorsal and lateral view); 116 - habitus of the male; 117 - *forma typica*; 118 - ab. *gyllenhali* (Seidlitz, 1891).



Figs 119-128. Aedeagus (lateral view and paramera dorsal view) of: 119-120 - *Agolius abdominalis* ssp. *pecoudi* (Hoffmann, 1954) (Val d'Eyne, Pyrenéés Orientales, France); 121-122 - *A. abdominalis balazuci* (Nicolas J.-L., 1971) (Plomb du Cantal, Massif Central, France); 123-124 - *A. abdominalis* ssp. *abdominalis* (Bonelli, 1812) (Val d'Ayas, Valle d'Aosta, Italy); 125-126 - *A. abdominalis* ssp. *emilianus* (Dellacasa G., 1983) (Monte Cimone, Emilia Romagna, Italy); 127-128 - *A. abdominalis* ssp. *tatrensis* nov. (Podbaneko, Vyaoke Tatry, Slovakia).

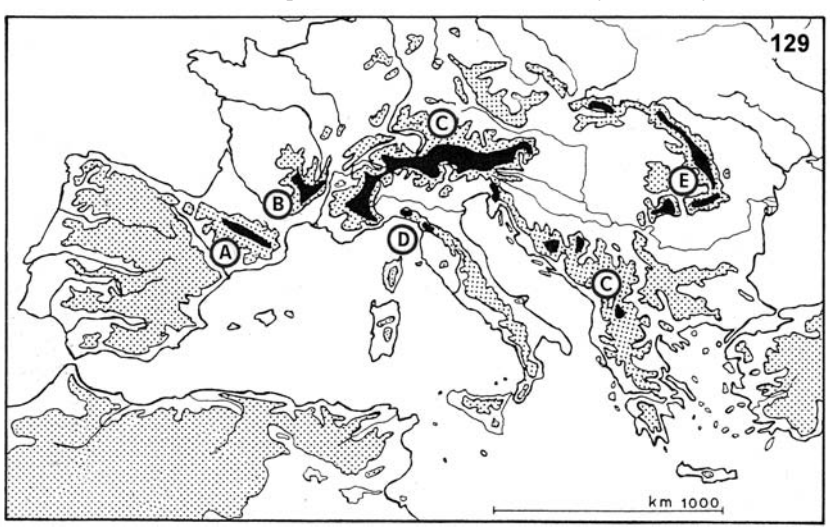


Fig. 129. *Agolius abdominalis:* distribution map of subspecies: A - *pecoudi*; B - *balazuci*; C - *abdominalis*; D - *emilianus*; E - *tatrensis.*

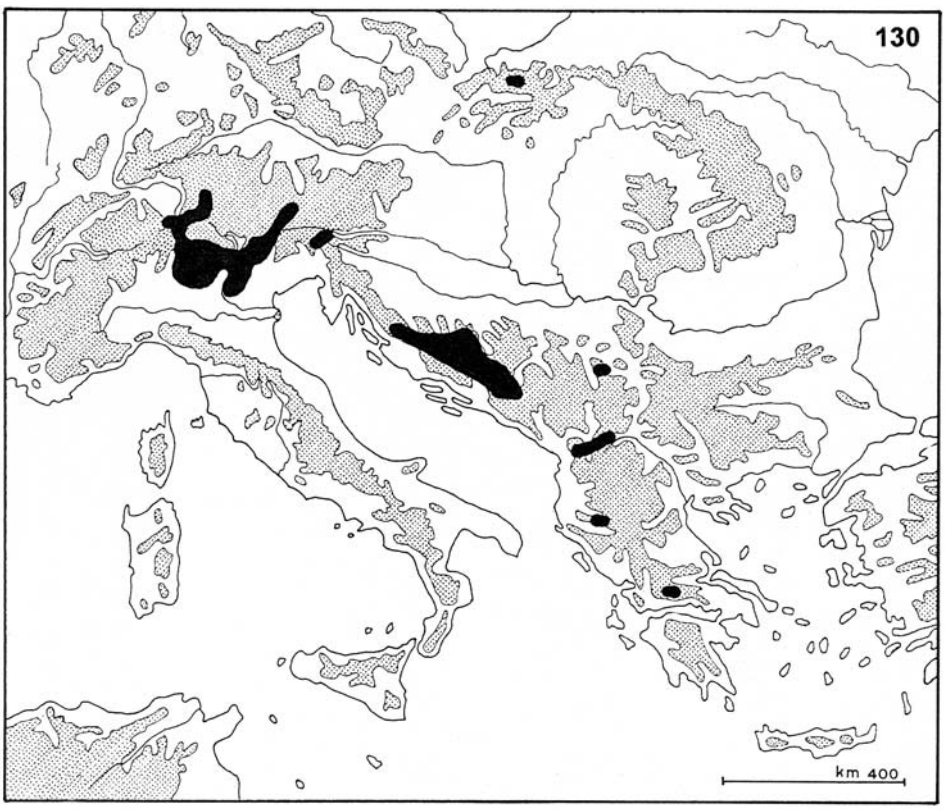


Fig. 130. *Neagolius bilimecki* (Seidlitz, 1891): distribution map.