

# REVISION OF THE GENUS *HYBOSORUS* MACLEAY (COLEOPTERA: SCARABAEIDAE, HYBOSORINAE)

by

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With 60 text-figures and one plate

## ABSTRACT

A taxonomic revision of the scarabaeoid genus *Hybosorus* is given, including descriptions, nomenclatorial notes, figures of genital apparatus and other relevant parts, a key, and notes on distribution and bionomics. Lectotypes are designated for *Hybosorus carolinus* LeConte, *H. crassus* Klug, *H. nitidus* Lansberge, *H. pinguis* Westwood, *H. roei* Westwood, and *Hybosoroides alluaudi* Benderitter. *Hybosorus arator* (Illiger), *H. carolinus* LeConte, *H. nitidus* Lansberge (nov. syn.), *H. illigeri* var. *nossibianus* Fairmaire, *H. pinguis* Westwood, *H. roei* Westwood, *H. arator* subsp. *arator* (Illiger) sensu Endrödi, 1957 (nov. syn.) and *H. arator* subsp. *palaearcticus* Endrödi (nov. syn.) are considered synonyms of *H. illigeri* Reiche. Problems concerning the type-species and some dubious names are discussed. Arguments are given for *Hybosorus oblongus* Dahlbom, *H. pinguis* Westwood, *H. roei* Westwood and *H. carolinus* LeConte being nomina oblita. *Hybosorus laportei* Westwood is considered a valid species and *H. thoracicus* Westwood a synonym of *H. laportei* (nov. syn.). Both were currently considered synonyms of *H. illigeri* Reiche. A new genus, *Seleucosorus*, is erected for *Hybosorus punctatissimus* Reiche. *Hybosoroides alluaudi* Benderitter, due to its close similarity to *Hybosorus*, is included in this revision. *Hybosorus laeviceps* Fairmaire is considered a synonym of *H. baliensis* Brancsik. Removed from *Hybosorus* are *H. curtulus* Fairmaire, being a Melolonthine, and *H. incultus* Péringuey, being an Orphnine.

## INTRODUCTION

With studies of *Phaeochrous* (1978) and *Phaeochroops* (1981) I initiated a revision of the Hybosorinae of South-East Asia. As a continuation I deal here with *Hybosorus*; the nomenclatorial problems concerning the type-species, the synonymies and the incorrect inclusion of several species in this genus induced me to treat it on a more general level.

### Nomenclatorial history

The intricate nomenclatorial problems concerning the type-species were partly solved by Landin (1964). The history is given as a summary (points 1–11) of Landin's extensive and thorough study. The most salient references are given here; for a complete survey of the relevant literature see Landin (1964).

1. — Fabricius (1775: 18) described *Scarabaeus arator*, comparing its form and size with *Scarabaeus fossor* (described by Linnaeus). This original description was overlooked by nearly all subsequent authors. Later diagnoses by Fabricius (1792, 1801), lacking this comparison to *Aphodius fossor* (*Scarabaeus fossor*), but demonstrably referring to the 1775 species, were considered the original description of *Scarabaeus arator*. Subsequently this gave rise to the dilemma which insect was meant by Fabricius, a *Hybosorus* or a *Heteronychus*. From the aforesaid comparison it is evident that Fabricius did not describe a *Hybosorus*, but a *Heteronychus* (Dynastinae), as defined by Burmeister (1847).

2. — One of the subsequent authors, Illiger (1803: 210–212), described a Scarabaeid from Portugal and identified it with *Geotrupes arator* Fabricius, 1801 (the former *Scarabaeus arator*), basing this identification only on Fabricius' text. Actually, however, he described a new species, naming it "*Scarabaeus arator* Nobis — *Geotrupes arator* Fab. 75" (where Nobis stands for Illiger and 75 is the list number of *arator* in Fabricius, 1801), thus creating a homonym. Evidently he did not see Fabricius' 1775 description, comparing *arator* to *fossor*.

3. — In 1819 (pp. 120, 121) MacLeay established his new genus *Hybosorus*, with type-species *Scarabaeus arator* Fabricius, 1792. As may be concluded from his description he most probably based his study on specimens from South Europe and North Africa, and the characters given refer to a Hybosorine, not to a Dynastine or Aphodiine. Thus in reality MacLeay designated *Scarabaeus arator* Illiger, 1803, as the type-species.

4. — Early 19th century authors, though evidently describing and figuring Illiger's insect, referred the species to Fabricius (e.g., Mulsant, 1842: 337, 338).

5. — Burmeister (1847: 94, 95) was the first to recognize the true status of *Scarabaeus arator* Fabricius. Basing his opinion on authentic Fabricius material in the Banks Collection (London) he placed the species under *Heteronychus* (Dynastinae).

6. — In 1853 (: 87, 88) Reiche recognized Illiger's (1803) misinterpretation of the Fabrician *Scarabaeus arator* and changed the homonym *Hybosorus arator* (Illiger) et auct., nec Fabricius, into *Hybosorus illigeri* Reiche. This was "quite an up-to-date treatment in the sense of the modern rules of nomenclature" to eliminate future confusion. Reiche's new name has been accepted by many later authors (Mulsant & Rey, 1871; Arrow, 1912; Schmidt, 1913; e.g.).

7. — Prell (1936: 149) disturbed the stability established by Burmeister's and Reiche's actions. In his opinion *Scarabaeus arator* Fabricius was a *Hybosorus*, this opinion being based on specimens in the Fabricius Collection in Kiel. The Kiel specimens, however, are not of the same size and form as

*Aphodius fossor* (see 1), and consequently cannot be the insects on which Fabricius based his description in 1775. Additionally Landin emphasized that Fabricius came to Kiel only late in 1775, while his study was published around Easter of that year, a date on which Fabricius' Kiel Collection did not yet exist.

8. — Britton (1951) accepted Prell's interpretation, giving some arguments for the Kiel specimens being the original material of *Scarabaeus arator* Fabricius, 1792. If Britton had seen Fabricius' original (1775) description with the comparison of *Scarabaeus arator* and *Aphodius fossor*, his conclusion almost certainly would have been that Prell was incorrect.

9. — Various opinions exist among more recent specialists. Paulian (1936, 1959) used, respectively, *Hybosorus arator* (Illiger) and *Hybosorus illigeri* Reiche, whereas Endrödi (1957, 1962) followed Prell and Britton, using *Hybosorus arator* (Fabricius) (= *arator* (Illiger) = *illigeri* Reiche).

10. — Illiger's type-specimens were collected by Von Hoffmannsegg in Tavira, Portugal. They could not be traced in the Illiger and Von Hoffmannsegg collections in the Zoological Museum, Berlin, and in the Museum of Natural History, Braunschweig, where they should be according to Horn & Kahle (1935). The syntypes no longer being available Landin designated as neotype for Illiger's species a male from Olhão, at ca 20 kms from Tavira (see p. 17).

11. — Landin's eventual conclusion: *Scarabaeus arator* Fabricius, 1775, is a *Heteronychus*; *Scarabaeus arator* Illiger, 1803, is correctly renamed into *Hybosorus illigeri* by Reiche, 1853. Synonyms of *H. illigeri* Reiche are *H. arator* (Illiger), *roei* Westwood, 1845, *laportei* Westwood, 1845, *thoracicus* Westwood, 1845, *pinguis* Westwood, 1845, and *carolinus* LeConte, 1847.

After Landin's study instability did not disappear, though most specialists do use *Hybosorus arator* (Illiger) or *Hybosorus illigeri* Reiche. Some examples may illustrate this: Petrovitz (1965, 1967, 1972) used, respectively, *H. arator* Fabricius, *H. arator* (Illiger) and *H. arator* Fabricius; Howden (1970) *H. illigeri* Reiche; Woodruff (1973) *H. illigeri* Reiche; Endrödi (1974) ranged *arator* Fabricius, 1775, under *Heteronychus* and so agreed with Illiger's *arator* being a *Hybosorus*; Baraud (1977) *H. arator* (Illiger); Paulian (1981) *H. arator* (Fabricius).

Woodruff (1973) revived the problem, stressing that the synonyms *H. laportei* Westwood, 1845, *H. roei* Westwood, 1845, and *H. carolinus* Leconte, 1847, must compete with *H. illigeri* Reiche, 1853, for priority. He observed, that *H. laportei*, *roei* and *carolinus* (and *H. pinguis* Westwood, 1845, synonymized by Landin (1964) and in this revision, should be added here) have been out of use in the primary zoological literature for more than a century and therefore

are nomina oblita (art. 23 b of the Code). He planned the prescribed reference to the International Commission on Zoological Nomenclature, but by several circumstances this action was omitted (Woodruff, pers. comm.).

Some considerations about this new complication may follow here. As shown below, *Hybosorus laportei* Westwood (= *H. thoracicus* Westwood) is not a synonym, but a valid species; so it does not compete for priority. The status of nomina oblita of *H. roei*, *carolinus* and *punguis* (see p. 19) might be interfered with by the work of Endrödi (1957). Though not primary zoological literature, it was a contribution of a leading specialist, and should be reckoned with in the question of those names being nomina oblita. Endrödi degraded *H. punguis* from species level to an aberration of *H. illigeri* Reiche (*H. arator* (Fabricius) in Endrödi's opinion) and he defined ab. *punguis* as having a fine, sparse, often nearly indistinct punctuation on the pronotum. However, the lectotype of *H. punguis* (p. 19), evidently not seen by Endrödi, has a coarse pronotal punctuation falling within the range of variation of *H. illigeri*. Consequently, Endrödi's action is too superficial and therefore not sufficient to raise *H. punguis* from its status of nomen oblitum. *H. roei* and *H. carolinus* were given by Endrödi as the Indian and American subspecies, respectively, of *H. illigeri*, albeit with a question mark, as Endrödi "did not have sufficient material"; again the type-material evidently was not consulted. From the study of the type-material of both taxa (p. 19 and 20), and of many further specimens, I concluded that they are both mere synonyms of *H. illigeri*, as already stated by, e.g., Arrow (1912). Here again Endrödi's superficial dealing with these taxa is not sufficient to raise them from their status of nomina oblita. For further comments on Endrödi's subspecies conception see p. 21.

Only recently Allsopp (1982) proposed the conservation of *Hybosorus illigeri* Reiche by giving it precedence over its predated synonyms (*H. laportei*, *H. thoracicus*, *H. roei*, *H. punguis* and *H. carolinus*). Mutatis mutandis this is in accordance with the aforesaid considerations.

#### Neotype

Landin (1964) decided for the designation of a neotype for *Scarabaeus arator* Illiger, in absence of the original Illiger material (see nr 10, p. 5). For several reasons this designation seems not completely in accordance with art. 75 of the Code. This article requires a neotype designation only in connection with revisory work and accompanied by a statement of the differentiating characters of the taxon for which the neotype is designated, or a bibliographic reference to such a statement. Landin's study is not a revisory work on *Hybosorus*, but a nomenclatorial research to establish the identity of *Scarabaeus arator*

Fabricius, 1775. Synonymies were derived from the literature without proper study of the type-specimens of the relevant names; the remaining species of *Hybosorus* were not studied; the differentiating characters were not sufficiently defined by the given references to the literature (Illiger, 1803, and Reitter, 1892).

To check the absence of the Illiger material, I asked Messrs Schulze and Uhlig of the Berlin Museum to look once more for Illiger's specimens. They sent four specimens from their Historic Collection, in their opinion presumably the type-specimens. A vestigial evidence that the specimens are actually Illiger's material may be derived from their number, as Illiger described four specimens. Branco (Oporto, Portugal) obtained some more, circumstantial evidence by comparing the labels with labels of other specimens in the Historic Collection (Branco, pers. comm.). However, the type status is contradicted by the following: Illiger's specimens came from Tavira (Portugal), whereas the Berlin historic specimens are labelled "Lusit./Gall.m.", where "Lusit." stands for Portugal and "Gall. m." probably for South or Central France; their labels are not green, as original Illiger labels should be (Horn & Kahle, 1935–1937); the handwriting on some labels might be of Erichson.

Furthermore I studied the two specimens of Fabricius' Kiel Collection (now in Copenhagen). They bear no locality labels; one specimen belongs to *H. laportei* Westwood, the other one to *H. illigeri* Reiche. Landin (1964) demonstrated sufficiently, that they cannot be the types of Fabricius' *arator*.

Consequently, more possible type-material not being available, I think Landin's neotype designation should be accepted, although it does not completely agree with the requirements of the Code. To burden the nomenclature of *H. illigeri* with another intricacy would not contribute to stability.

Further species of *Hybosorus*. — After Illiger (1803) several authors have added species to the genus. Some of these have been or will be considered here synonyms. Other taxa have been described as *Hybosorus*, but were found not to fit in the genus or not to belong even to the Hybosorinae. They all will be dealt with in the pertinent paragraphs, as far as Old World species are concerned.

#### TAXA REMOVED FROM THE GENUS *HYBOSORUS*

Some species originally described as *Hybosorus* or placed in the genus by subsequent authors, were earlier or have here to be transferred to other taxa. The remaining species are sufficiently similar to assume their monophyletic origin.

1. — The species from the Neotropics, described by early authors as *Hybosorus*, but ranged in other genera from the mid-nineteenth century onwards (e.g., Westwood, 1846), are beyond the scope of this study.

2. — The following species belong to other scarabaeoid subfamilies:

*Hybosorus curtulus* Fairmaire, 1887. I studied the holotype from Kipalapa, East Africa (Paris), and from this it is evident, that the species belongs to *Apogonia* or a closely related genus (Melolonthinae).

“*Hybosorus nitidulus* Dufour, 1821. From the description (*Scarabaeus nitidulus*, type-locality Senegal) and figure (Dufour, 1821: 358) it is evident, that the species is not a *Hybosorus*, but most probably belongs to the Orphninae. Dejean (1833: 149) arranged the species under *Orphnus*. Laporte de Castelnau (1840: 108), however, considered it a *Hybosorus*. Westwood (1845: 159) qualified it as a “MS. species of Dufour” belonging to *Hybosorus* with a query. This apparently has been accepted by all subsequent authors, as Dufour’s *nitidulus* has disappeared since from the literature (e.g., not in Arrow, 1912, and Schmidt, 1913; Sherborn, 1928, quoted the taxon with full references).

Guérin de Méneville (1838: 86) described his *Orphnus nitidulus* from Madagascar, without reference to “*Orphnus nitidulus* (Dufour). *Orphnus nitidulus* Guérin is the type-species of *Triodontus* Westwood, 1846 (Orphinae), and in this sense was used, e.g., by Paulian (1936). Examination of the type-material of both Dufour’s and Guérin’s species should establish their true status; as both evidently do not belong to the Hybosorinae, this is beyond the scope of this study.

*Hybosorus incultus* Péringuey, 1892. In 1902 Péringuey transferred the species to *Orphnus*, but Arrow (1912) and Schmidt (1913) enumerated it (inadvertently?) again under *Hybosorus*. I studied the two syntypes from Ovampoland (Cape Town); they belong unmistakably to the Orphninae. I saw a third specimen of *Orphnus incultus* from Ovampoland (Cape Town), labelled in Péringuey’s hand “*Hybosorus neglectus* Py type”, but Péringuey never published this name.

“*Hybosorus latipes* Germar. Germar (1824: 114) described the taxon (from East India with a ?) as *Scarabaeus*, but Westwood (1845: 159) ranged it in *Hybosorus*. From Germar’s description it is evident, that the species is not a *Hybosorus* (colour coppery black, sides of pronotum bifoveate, a.s.o.). Consequently the name has disappeared from Hybosorine literature, and Arrow (1912) quoted the name as a synonym of *Cloeotus aphodioides* Illiger (Acanthocerinae).

3. — For the following species, originally described as *Hybosorus*, new ge-

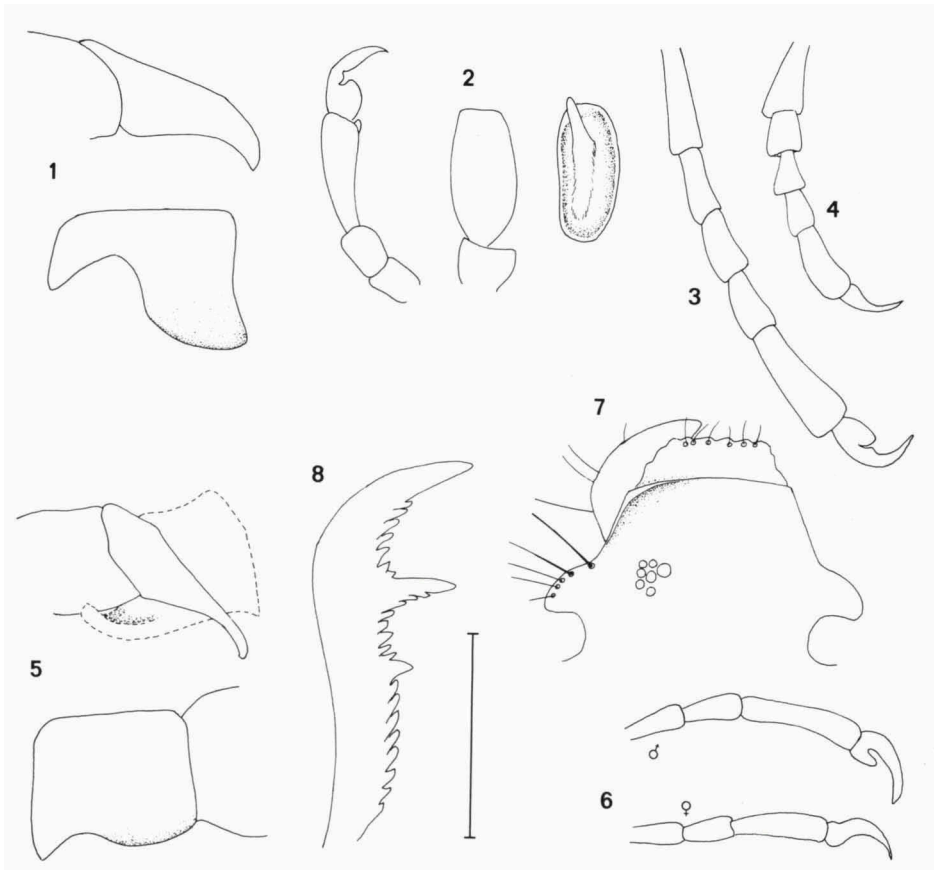
neric names have been created: *Kuijtenous* for the Madagascan taxa (Paulian, 1981), and *Seleucosorus* for the Near East species (this study):

*Hybosorus baliensis* Brancsik, 1892, was transferred to *Phaeochrous* (Paulian, 1936) and incorrectly considered a synonym of *H. laeviceps* Fairmaire (Paulian, 1936 and 1981; Endrödi, 1959). In my revision of *Phaeochrous* (1978) I replaced *baliensis* into *Hybosorus*, but after having studied two "types" and six cotypes from Baly, Madagascar, in the Brancsik Collection (Chicago), I am convinced that Paulian's creation (1981) of a new genus, *Kuijtenous*, for this species is well founded. Many characters, e.g., parameres, sexual dimorphism, tarsal segments (figs. 1–4, key) exclude it from both *Hybosorus* and *Phaeochrous*.

*Hybosorus laeviceps* Fairmaire, 1893. Transferred to *Phaeochrous* by Paulian (1936) and Endrödi (1959). Petrovitz supported this transfer (1975), but stressed the fundamental differences between these two and the remaining species of *Phaeochrous*. I replaced this form into *Hybosorus*, too (1978). Subsequent comparison of the type-material of *H. baliensis* and *H. laeviceps* (Paris; from Mayotte in the Comores) convinced me of *H. laeviceps* being a synonym of *H. baliensis* — and not the reverse, as accepted by Paulian (1936, 1981) and Endrödi (1959).

*Hybosorus tenuepunctatus* Fairmaire, 1895. Here again the species was ranged under *Phaeochrous* by Paulian (1936) and Endrödi (1959), and replaced into *Hybosorus* by me (1978). Petrovitz (1975) made the same observations as mentioned for *H. laeviceps*. Paulian (1981) included the species in his new genus *Kuijtenous*.

*Hybosorus sparsepunctatus* Pic, 1930. I studied the type from Mananghary (Paris), and some specimens from Bétioky, Tuléar, and Ambodivoangy (Geneva, Paris, my collection), all in Madagascar. Genital characters, development of accessory denticles in fore tibia, sexual differences in tarsal development, a.s.o., exclude this species, too, from both *Hybosorus* and *Phaeochrous* (figs. 5–8, key). Paulian (1981) considered *H. sparsepunctatus* a synonym of *H. tenuepunctatus* and ranged this species in his new genus *Kuijtenous*. This synonymization was based, as far as *H. tenuepunctatus* is concerned, on Fairmaire's description only; the type-material could not be traced in the Paris Museum (Descarpentries, pers. comm.). As the locality Mananghary (not quite well legible on the label) of the type-specimen of *H. sparsepunctatus* does not appear in Paulian's list of consulted material, here again the type-material probably was not studied. Paulian's description (1981) fits exactly with Pic's description and with specimens of *H. sparsepunctatus*, but not completely with Fairmaire's description of *H. tenuepunctatus*. Consequently one should be so-



Figs. 1–3. *Kujitenous baliensis* ♂. 1, Parameres; 2, terminal segments of left fore tarsus, lateral, dorsal and ventral aspect; 3, left hind tarsus. Fig. 4. *Hybosorus illigeri*, left hind tarsus for comparison. Figs. 5–8. *Kujitenous sparsepunctatus* ♂. 5, Parameres; 6, terminal segments of left fore tarsus ♂ and ♀, lateral aspect; 7, head, setae at real relative lengths, only a few drawn; 8, right fore tibia. Scale line represents approximately 1 mm.

mewhat suspicious about this synonymization. According to the description *H. tenuepunctatus* is similar to or identical with *baliensis-laeviceps*, whereas *sparsepunctatus* is a distinct species.

*Hybosorus punctatissimus* Reiche, 1861, from Syria and Turkey, is so different from the remaining species of *Hybosorus* that it merits a genus of its own. The description of the here established new genus, *Seleucosorus*, is given on p. 36.



## DESCRIPTIONS, NOTES, SYNONYMS

**Hybosorus** MacLeay, 1819

- MacLeay, 1819: 120–121 (description of genus, type-species *Scarabaeus arator* Fabricius, 1792, sensu Illiger, 1803).  
Mulsant, 1842: 337 (description).  
Lacordaire, 1856: 133–134 (detailed description).  
Mulsant & Rey, 1871: 489 (description).  
Péringuey, 1902: 492–493 (detailed description).  
Arrow, 1912: 36–37 (species listed).  
Schmidt, 1913: 43–45 (detailed description, species listed).

Short diagnosis. — First segment of antennal club cupuliform, hiding most of the last two segments. Labrum protruding beyond clypeus; anterior margin convex and serrate. Mandibles sickle-shaped. Each elytron with nine complete striae between suture and humeral umbone, and seven to nine more or less complete ones between umbone and elytral margin. Dorsal surface shining, without hairs. Lateral margin of elytra with a fringe of variably long setae, occupying from somewhat more than half the length to greatest part of elytral margin. Accessory denticles on external margin of fore tibia very limited in number and development. Left paramere with a dorsal and a ventral, rather acuminate lobe; right paramere simple, somewhat triangular. No external sexual dimorphism. Approximate length from 6–16 mm. Type-species *Hybosorus illigeri* Reiche, 1853 (= *Scarabaeus arator* Illiger, 1803).

Note. — The description of the type-species may, mutatis mutandis, serve as a more extensive description of the genus, all species being very similar.

Distribution and bionomics. — *Hybosorus illigeri* occurs from the Mediterranean part of Eurasia to South Africa, Madagascar, India and Palaeartic East Asia, and in the warmer parts of the U.S.A. and several Caribbean islands, probably transported by ship in the early nineteenth century (Horn, 1867; Howden, 1970; Woodruff, 1973). In this vast area the species is rather constant within the limits of its variability in size and sculpture. Endrödi (1957) tried to establish subspecific status for the American, Afrotropical, Palaeartic and Indian populations on untenable arguments. The other species live in relatively restricted areas, mostly sympatrically with *H. illigeri*: *H. orientalis* from Pakistan to Java, *H. crassus* and *H. ruficornis* in Southern Africa, *H. laportei* in the dry parts of West and Central Africa. I could find hardly any specimens in the museum collections from the humid forest areas in South-East Asia. Pitfall traps baited with carrion placed by me especially for the purpose to collect Hybosorinae in various habitats — from cultivated

areas to dense forest — in Thailand, Malaysia and the Philippines did not yield a single *Hybosorus*. Paulian (1945) did not mention the genus for Indo-China. In Central Asia, South-West Asia, the Mediterranean area and the Afrotropics the majority of the localities are situated in dry open country. A considerable number of localities of African *H. illigeri* do lie in the forest zone, but it is not clear from the labels, whether the exact sites of capture are in forest or in other situations. Labels indicate localities at altitudes from sea level to nearly 2000 metres (Ruanda). A specimen of *H. illigeri* from 2600 metres in the Spanish Sierra Nevada, an area covered by snow and ice during a considerable part of the year, certainly arrived there accidentally. Most specimens were collected at light, in carrion and in a lesser degree in dung (human, cattle, buffalo, giraffe, rhinoceros, elephant). The adults are predominantly active at night, but I found considerable quantities of *H. laportei* busily crawling on and near a large heap of rotting fish in hot sunshine in dry savanne country in Senegal. Fletcher (1919) described and figured all stages of *H. orientalis*. The insects came from farmyard manure and cattle droppings on roads and in pasture lands. Gardner (1944) and Ritcher (1966) both described and Ritcher figured the larvae of this species.

### ***Hybosorus illigeri* Reiche, 1853**

(figs. 9–16)

- Illiger, 1803: 210–212 (description under name *Geotrupes arator* Fabricius, 1801, = *Scarabaeus arator* Fabricius, 1792, type-locality Tavira, Portugal).
- MacLeay, 1819: 120–121 (*Scarabaeus arator* Fabricius, 1792, designated type-species of *Hybosorus* MacLeay, but reference made to Illiger's South European species).
- Guérin de Méneville, 1829–1838: 85 and pl. 22 (described as *Hybosorus arator* F.).
- Castelnau, 1840: 108 (*Hybosorus arator* Fabricius, scantily described).
- Mulsant, 1842: 337–338 (detailed description of *Hybosorus arator* Fabricius).
- Westwood, 1845: 158 (*Hybosorus arator* F., MacLeay, habitat Europa australis).
- Reiche, 1853: 87–88 (*Hybosorus illigeri* Reiche, new name for *Hybosorus arator* (Illiger), nec Fabricius).
- Lacordaire, 1856: 134 (catalogued as *Hybosorus illigeri* Reiche (= *H. arator* Illiger)).
- Boheman, 1857: 370–371 (short diagnosis and synonyms of *Hybosorus illigeri* Reiche).
- Klug, 1862: 248 (accepts *Hybosorus arator* Illiger, discussion of Reiche's new name).
- Gemminger & Harold, 1869: 1074 (catalogued as *Hybosorus illigeri* Reiche).
- Von Harold, 1871: 26 (distribution of *Hybosorus illigeri* Reiche).
- Mulsant & Rey, 1871: 489–491 (detailed description of *Hybosorus illigeri* Reiche).
- Reitter, 1892: 119 (*Hybosorus illigeri* Reiche, key).
- Péringuey, 1902: 493–494 (detailed description of *Hybosorus illigeri* Reiche).
- Arrow, 1912: 36 (*Hybosorus illigeri* Reiche, catalogued, synonyms, distribution).
- Schmidt, 1913: 45 (*Hybosorus illigeri* Reiche, catalogued, synonyms, distribution).
- Paulian, 1936: 139 (description and distribution in Madagascar of *Hybosorus arator* (Illiger)).
- Prell, 1936: 149 (reinstallation of *Hybosorus arator* (Fabricius) as type-species).
- Britton, 1951: 133–134 (accepted Prell's opinion).
- Endrödi, 1957: 43–49 (discussion of name, accepts *Hybosorus arator* (Fabricius), synonymies, co-

- loric and sculptural aberrations named, subspeciation, distribution, especially in Africa).  
 Paulian, 1959: 59 (description, figure, distribution of *Hybosorus illigeri* Reiche).  
 Endrödi, 1962: 424 (distribution of *Hybosorus arator* Fabricius in East Africa).  
 Landin, 1964 (detailed discussion and argued conclusion in nomenclatorial question, accepting *Hybosorus illigeri* Reiche, and designation of neotype).  
 Howden, 1970: 3 (distribution in Jamaica of *Hybosorus illigeri* Reiche).  
 Woodruff, 1973: 146–147 (figure, distribution, especially American, synonymies, further nomenclatorial and taxonomical questions, accepts *Hybosorus illigeri* Reiche).  
 Baraud, 1977: 147 (distribution etc. of *Hybosorus arator* Illiger).  
 Paulian, 1981: 27–28 (distribution of *Hybosorus arator* Fabricius in Comores, Mascarenes and Madagascar).  
 Allsopp, 1982: 218–219 (proposed conservation of combination *Hybosorus illigeri* Reiche).

Note. — The synonyms and their references are given on p. 18.

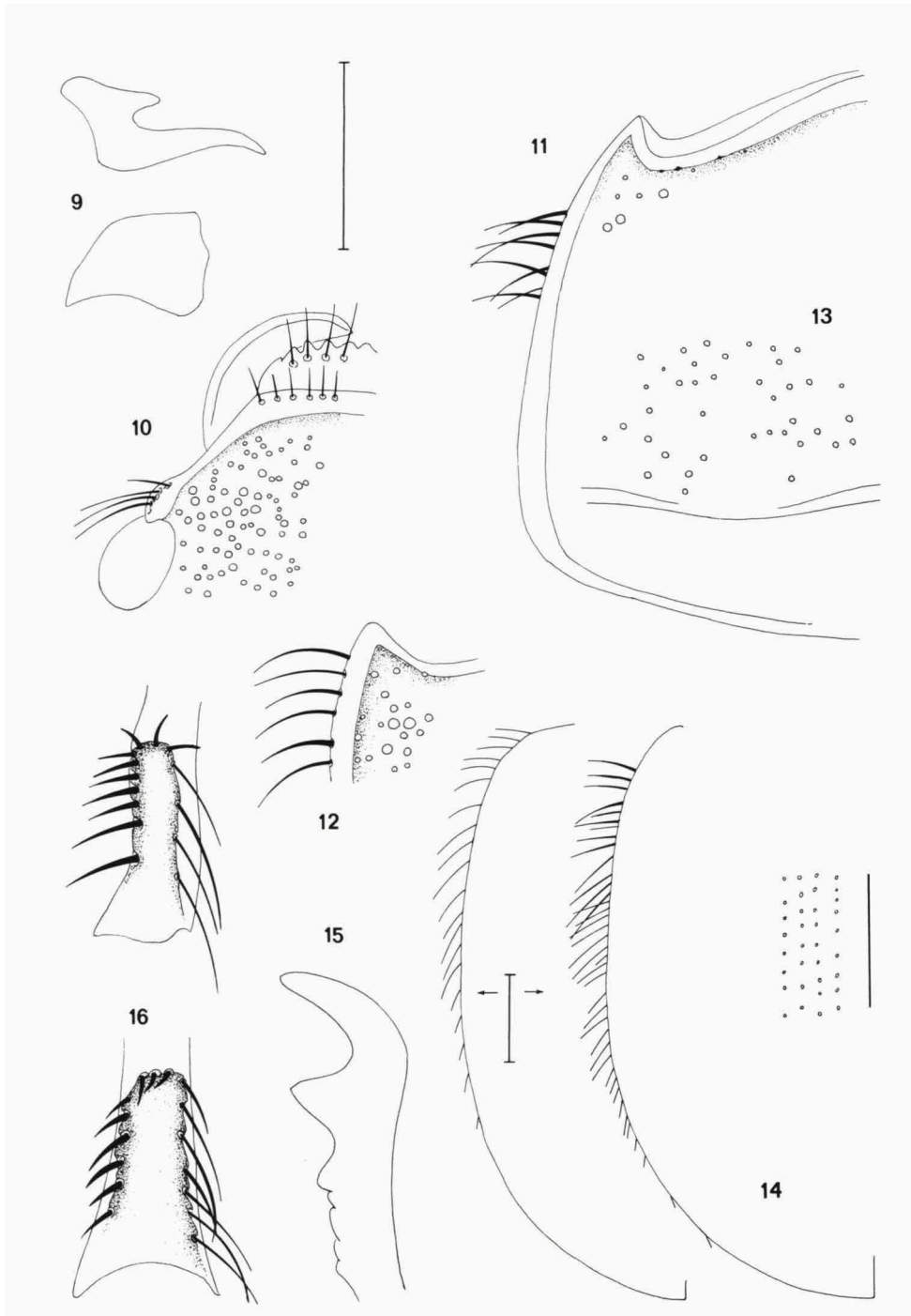
Description of a ♂ from Portugal (Berlin). — Dark reddish brown, underside yellowish brown, setosity ferruginous. Length 8.4 mm.

Labrum: Protruding beyond clypeus, subsemicircular; anterior margin with seven blunt teeth, the incisions between the teeth with a seta; disc with a series of coarse setigerous punctures along anterior margin, and a weak transverse ridge along posterior margin; surface shiny.

Mandibles: Sickle-shaped, with a very weak and blunt ante-apical tooth on dorsal side; dorsal surface flat; external margin dorsally somewhat cariniform; a series of 10–11 setigerous punctures along infero-external margin.

Clypeus and rest of head: Anterior margin of clypeus nearly straight, lateral margins straight and strongly divergent; eye-canths still more diverging. Anterior and lateral margins bordered by an impunctate area, except for a series of setigerous punctures along its external border. Internally this area limited by a rather sharp ridge, regularly curved from eye to eye; anteriorly, where it is wide, and laterally, where it is narrowing, the area sloping forward and laterad to below general level of clypeal dorsal surface. Eye-canthus dorsally slightly concave, bearing a tuft of 8–9 variably long, erect setae. Clypeofrons shining, more or less regularly set with shallow, round to subtransverse punctures; interspaces varying from somewhat smaller to considerably wider than diameter of punctures. Vertex with a wide impunctate band, extending approximately from eye to eye.

Pronotum: Anterior margin slightly bisinuate, antero-lateral angles sharp and strongly protruding. Lateral margins posteriorly very weakly curved and very weakly converging in anterior direction, anteriorly more strongly curved and converging. Posterior margin convex in middle, subsinuate before the apically rounded, subrectangular postero-lateral angles. Lateral margins bordered by a roundtopped ridge, this ridge limited internally by a shallow groove with some punctures at its bottom. Ridge prolonged along anterior



Figs. 9–16. *Hybosorus illigeri*. 9, Parameres; 10, head; 11, left half of pronotum; 12, antero-lateral angle of pronotum of other specimen, slightly more from lateral; 13, median part of posterior margin of pronotum; 14, left elytron of two specimens with part of suture and striae; 15, left fore tibia; 16, apical half of left hind tibia of two specimens, in slightly different positions. Scale lines represent approximately 1 mm. Setae drawn at real relative lengths and density, except in fig. 10.

margin of pronotum, gradually widening and fading away, and completely absent in median one-fourth. Anterior margin of pronotum seamed by a hyaline zone. Posterior margin bordered by a fine groove, obsolescent towards middle and completely absent over some distance in middle. Derm shining. Disc with sparse and fine round punctures, and a nearly impunctate median longitudinal band; punctures slightly denser and deeper, and interspersed with some larger ones, towards lateral margins; the larger punctures approximately twice the diameter of the smaller ones. Infero-external surface of lateral marginal ridge with a fringe of long setae, outward directed, and slightly curved upward.

Scutellum: Triangular, apex slightly rounded, derm smooth except for a few setigerous punctures at base.

Elytra: Lateral margins nearly straight and somewhat divergent in anterior three-fifths, posteriorly strongly curved and convergent towards apex; sutural angle with an extremely fine denticle. External margin bordered by a rather flat, slightly elevate ridge, narrowing posteriorly and obsolete shortly before apex, internally limited by a fine groove. External margin of the ridge fringed with erect setae, implanted in weak incisions; setae about equally long as pronotal ones anteriorly, but considerably shortening from about the level of the third coxa, and disappearing far before apex. Derm shining, completely hairless, with nine longitudinal series of small round punctures (striae) between suture and humeral umbone, and eight/nine series between umbone and lateral margin, partly ill-defined, and not reaching base of elytron. The striae extend to apex of elytron, but partly anastomose here and form an area of irregular punctation. Humeral umbone weakly elevate, nearly without punctures. Iuxta-sutural stria somewhat more impressed apically. Interstriae virtually of equal width, except for the sutural one, which is about twice as wide and slightly higher over most of its length, but somewhat higher and narrower before apex. Interstriae with sparse, widely separated minute punctures. Strial punctures often longitudinally connected in short series by a poorly developed groove; nearly all punctures of iuxta-sutural stria situated in a fine connecting groove.

Sternites: Anterior margin of prosternum weakly quadrisinuate before bases of fore coxae. Abdominal sternites shining; lateral parts densely punctate, medially the punctation is limited to a single series at short distance from posterior margin of sternite. Most punctures with a reclining seta of variable length, the longest ones reaching length of sternite.

Pygidium: Subsemicircular, shining, densely and somewhat rugosely punctate; each puncture with a fine reclining seta. Margins serrulate and fringed with dense and long setosity.

Fore tibiae: External lateral margin with three teeth, the apical and median ones large, basal one much smaller. Between the large teeth and basally of the small one some ill-defined, blunt accessory denticles.

Middle and hind legs: Femora shining, with an area of setigerous punctures in anterior half and a well defined single series along posterior margins. Infero-posterior margin of hind femur ending in a short angular protrusion. Middle and hind tibiae with a transverse ridge somewhat past middle of external surface; this ridge with a short series of spiniform setae, the series being continued along inner and outer margins of external surface towards apex of tibiae. In hind tibia the internal series with 5–6 long, rather slender setae; the external series, including the setae of the ridge, comprises about ten much shorter and stouter setae. Apical spurs in hind tibia slightly surpassing respectively the apices of first and second tarsal segments, their apices bluntly rounded. In middle tibia the spurs somewhat longer and more slender, their apices slightly more acuminate than in posterior ones. Apex of hind tibia with a crown of stiff setae, short in middle, gradually longer towards articulation of shorter spur, somewhat more strongly increasing in length towards articulation of longer spur. Tarsal segments 1–4, in both pairs, with an apical crown of variously long setae, the longest ones considerably surpassing the apex of the next tarsal segment.

Parameres: Left paramere with a long and slender acuminate lower lobe and a somewhat shorter upper one. Right paramere simple, triangular, apex acute.

Variation: Colour homogeneously reddish via all shades of reddish and dark brown to black; or with slightly lighter areas in some or all marginal parts of head, pronotum and elytra; or whole pronotum lighter or darker than elytra; or scutellum and antero-lateral angles of pronotum slightly lighter than rest of dorsal surface, a.s.o.; legs, mouth parts and antennae reddish in several shades, tarsi often somewhat lighter than rest of leg; underside reddish to reddish brown. Naming these colour variations seems quite superfluous. So the colour aberrations described by Endrödi (1957), *bicolor* Endrödi, *rufus* Endrödi and *suturalis* Endrödi, the type-material of which I studied (Tervuren), lie within the range of variation of the species; using colour characterizations as Endrödi did, at least a dozen names could easily be added. As shown on p. 22, *H. thoracicus* Westwood is a synonym of *H. laportei* Westwood, and not a colour aberration of *H. illigeri*, in which sense Endrödi used it (1957). The names, being of infrasubspecific rank and not denoting taxonomic units, do not have nomenclatorial status. Length approximately 6–10 mm. Considerable variation exists in density, depth and diameter of punctures and in some aspects of setosity. The area between the eyes may be punctured, though less

deeply and densely than remaining punctation of head. More or less developed impunctate areas on pronotal disc, apart from the normal interspaces between punctures, may be present or not, or the larger punctures may take a larger proportion. The areas between the punctures mostly show an extremely fine scattered punctulation, hardly visible at  $50\times$ . I saw the type-specimens of ab. *punctator* Endrödi, 1957 (Tervuren). They can easily be ranged among the various gradations of density in pronotal punctation; the distances between the punctures are often many times the diameters of the punctures. Endrödi's statement "impunctate areas between the punctation are hardly or not discernible" does not apply to the types. This infrasubspecific name again has no nomenclatorial status. The basal groove along posterior margin of pronotum mostly medially interrupted over a distance approximately equal to base of scutellum; however, specimens without real interruption, but only a strong obsolescence of the groove do occur; in some cases the interruption very short. Relative width of iuxta-sutural interstria slightly variable. The connecting grooves between the stria punctures more or less developed; the groove of iuxta-sutural stria may be rather deep and the stria punctures very fine. In fore tibia the basal lateral tooth may be very weak, but is rarely completely indistinguishable. Accessory denticles may be absent from the spaces between the large teeth, and they vary in number and size in the basal part of tibia, but hardly ever exceed 6. Spurs of hind tibia may be somewhat less blunt, but are mostly more rounded, shorter and wider than spurs of middle tibia. The internal series of long setae in hind tibia comprises 4–7, mostly 4 or 5 setae; the external series 6–12, mostly 7–10 short setae; short setae at most reaching nearly half the length of the long ones. Considerable variation in density of the spiniform setae on external margin of hind tibia occurs. Elytral fringe ending at variable distances before apex of elytron; up to two-fifths of margin may be without fringe (N.B. fringe may be rubbed off).

A correlation between morphological characters and distribution could hardly be observed (see p. 20 on Endrödi's subspecies). In the Afrotropics, e.g., some series include approximately the whole length range, the specimens of other series are uniformly long or short. Generally spoken the majority of African specimens is rather small. A few Arabian specimens reach 10 mm, but there are no noteworthy morphological differences between these large specimens and smaller ones. The variation in size may well be dependent on local, variably favorable environmental circumstances.

Type-material. — I studied the neotype, designated by Landin (1964), in the Lund museum, with labels "Olhão, Portugal, K. Lindberg, 17.5.1961", white, hand; "Neotype *Scarabaeus arator* Illiger Design Landin-63", red, hand; "*Hybosorus illigeri* Reiche (*Scar. arator* Illiger), det. B.O. Landin 1963",

white, hand and print combined. See nr. 10 of Nomenclatorial History and the paragraph on this neotype designation, p. 5, and 6.

**Material examined.** — The area of distribution of this species is usually given rather roughly as South Europe, Africa and India. A somewhat more detailed enumeration of the distribution of the material studied here seems useful, though the enormous amount of localities prohibits their complete listing. I studied material from the following museums and collections: Basle, Berlin, Brussels, Cambridge (U.S.A.), Cape Town, Chicago, Copenhagen, Florence, Geneva, coll. Hardy, coll. Kuijten, Leiden, London, Lund, Oxford, Paris, Ter-vuren, Washington. The localities are situated in the following countries and areas (with approximate numbers of specimens studied):

Southern Europa (3), Hungary (1), Yugoslavia (1), Greece (23), Creta (2), continental Italy (1), Sicilia (1), Sardinia (13), Southern France (2), Corse (1), Spain (far more than 100, most from South coast), Portugal (7), Maroc (6), Algeria (more than 50), Tunisia (6), Egypt (11), Jordan (9), Arabian Peninsula (160), Syria (4), Turkey (6), Cyprus (1), Iraq (6), Iran (60), Afghanistan (2), Transcaspia & Turkestan (6), India (58), Pakistan (43), Sikkim (1), North Vietnam (1), China (1), Sudan (11), Nubia (3), Ethiopia (260), Eritrea (6), Somalia s.l. (200), Uganda (35), Kenya (450, most from northern and eastern parts), Tanzania (nearly 400), Mozambique (65), Mauritius & Réunion (50), Comores (1), Madagascar (130 from main island, 16 from Majunga, 7 from Nossi Bé), Zimbabwe (21), Nyassaland (2), Zambia (more than 20), South Africa (75), Bechuanaland (34), Namibia (115), Angola (20), Zaire (more than 500), Ruanda (8), Congo (17), Central African Republic (74), Chad (8), Niger (1), Nigeria (35, most from Kano in the North), Cameroons (14), Saõ Thomé (4), Mali (4), Benin (50), Togo (2), Ghana (31), Ivory Coast (11), Liberia (9), Sierra Leone (3), "Guinea" (2), Guinée (40), Guinea Bissão (1), Senegal (nearly 100), Mauritania (3), Cabo Verde Islands (1), U.S.A. (more than 500), Bahamas (2), Cuba (6).

### Synonyms of *Hybosorus illigeri* Reiche

#### *Hybosorus arator* (Illiger)

Illiger, 1803: 210–212 (description, type-locality Tavira, Portugal).

*Hybosorus arator* (Illiger) being a homonym of *Hybosorus arator* (Fabricius), Reiche (1853) introduced the new name *Hybosorus illigeri* Reiche. Subsequently many authors used Reiche's name and considered *Hybosorus arator* (Illiger) its synonym.

#### *Hybosorus oblongus* Dahlbom

Dejean (1833: 149) cited *Hybosorus oblongus* Dahlbom from Sicilia. Westwood (1845: 159) saw specimens in Melly's collection and synonymized them with *H. thoracicus* ("Individua alia, nomine *H. oblongus* inscripta, in Mus. D. Melly vidi, sed haud distincta"). Hagen (1862) did not mention any publication of Dahlbom and Melly referring to *H. oblongus*. Gemminger & Harold (1869: 1074) gave "*H. oblongus* Dahl, in litt." and "*H. oblongus* Melly, in litt.", as a synonym and a variety, respectively, of *H. illigeri* Reiche. The



name, most probably being a nomen nudum, has since disappeared from the literature (e.g., not in Arrow, 1912, Schmidt, 1913 and Sherborn, 1928) and has to be considered a nomen oblitum.

*Hybosorus pinguis* Westwood

Westwood, 1845: 159 (description, type-locality Sierra Leone).

I studied a male (Oxford), here designated lectotype, labelled "S.L.", hand; "*Hybosorus pinguis* Westwood", Westwood's hand; "Type Westwood, Trans. Ent. Soc. 4, 1846, p 159, Coll. Hope Oxon.", combined hand and print; "Type Col: 492 *Hybosorus pinguis* Westwood, Hope Dept. Oxford", combined hand and print. I saw one specimen from the Melly Collection (Geneva), labelled only "*pinguis*". This may be a syntype as Westwood mentioned Melly specimens in his description, but its status is too doubtful to designate it paralectotype. Both specimens are normal *H. illigeri* Reiche.

Apart from the catalogues of, e.g., Gemminger & Harold (1869), Arrow (1912) and Schmidt (1913) the name does not occur in the primary literature. Only Endrödi (1957) erroneously considered *pinguis* an aberration of *H. illigeri* with fine, often nearly absent punctuation on pronotum; apparently he did not study the type-specimen, with coarse pronotal punctuation. The name may best be considered a nomen oblitum, not competing for priority with *H. illigeri* Reiche.

*Hybosorus roei* Westwood

Westwood, 1845: 159 (description, type-locality India Orientalis).

I studied eight specimens from the Hope Department (Oxford), labelled only "Roe", handwritten, and standing under *H. orientalis*. According to Graham (pers. comm.) they are probably the syntypes of *H. roei*. Apart from a ninth specimen in the Roe series, belonging to *H. orientalis*, the insects are completely equal to *H. illigeri* Reiche. No other specimens collected by Roe are known. So nothing contradicts their being the material quoted by Westwood as "sent by Mr Roe from E. India to Mr Hope" on which he based his *H. roei*, characterized by him as hardly distinct from *H. orientalis*. I designate the eight specimens here lectotype and paralectotypes; they are labelled accordingly.

Gemminger & Harold (1869) considered *H. roei* a synonym of *H. orientalis*; Arrow (1912) and Schmidt (1913) cited *H. roei* as a synonym of *H. illigeri*. Subsequent authors neglected the name, or at most placed it as a synonym of *H. illigeri*. Only Endrödi (1957) unfoundedly considered *H. roei* the Oriental

subspecies of *H. illigeri*, without study of the original material and of sufficient additional specimens. Consequently, here again the name is best considered a nomen oblitum, excluded from competition for priority with *H. illigeri* Reiche.

*Hybosorus carolinus* LeConte

LeConte, 1847: 84 (description, type-locality South Carolina).

I studied three specimens (Cambridge, U.S.A.), the LeConte material according to Woodley (pers. comm.). They are very probable syntypes and I here designate one ♂ lectotype, labelled "Type 3747", red, print; "*Hybosorus arator* (Fabr.) *Carolinus* Lec.", hand; one ♂ paralectotype, "*arator* 2", hand; one ♀ paralectotype, "S.C.", print; "*arator* 3", hand; plus my type and identification labels. Apart from these three I saw many more American specimens and all are completely similar to the Old World *H. illigeri*. Already LeConte himself (1861) stressed the possible synonymy.

Afterwards there has been no doubt about the synonymy; apart from incidentally citing the name as a synonym of *H. illigeri* no author used it since its description. Only Endrödi (1957) prematurely proposed to consider *H. carolinus* the American subspecies of *H. illigeri*, without study of sufficient material. Consequently the name may best be considered a nomen oblitum, not competing for priority with *H. illigeri* Reiche.

*Hybosorus nitidus* Lansberge

Lansberge, 1882: xxiii (description, type-locality Somaliland).

Lansberge in Révoil, 1882: 21–22 (somewhat changed description).

I saw seven specimens from the Oberthür Collection (Paris), "probably the syntypes" according to Descarpentries (pers. comm.). They bear labels "Somalia Révoil", print (1 ♂, 3 ♀), and "Somali", hand (2 ♂, 1 ♀), and stand under a common label "*Nitidus* Lansberge, Afr. Or. Types", where Or. is crossed out, handwritten. The Révoil labels and the indication above the series corroborate their syntype status. To go as safe as possible I consider only the Révoil specimens syntypes, and designate the ♂ lectotype and the three ♀ paralectotypes. The remaining three specimens are without special status. Two specimens (London), labelled "Afr. Or. Sumalis" and "G. Révoil", both in the same hand, may have belonged to the original series.

All these specimens, and nearly 200 more from many localities in Somalia and adjacent areas (Berlin, London, Paris, Tervuren) I could study, fall within the range of variation of *H. illigeri* Reiche. Henceforth *H. nitidus* Lansberge is a synonym of *Hybosorus illigeri* Reiche (nov. syn.).

*Hybosorus illigeri* var. *nossibianus* Fairmaire

Fairmaire, 1895: 17 (description, compared to *H. illigeri*, type-locality Nossi Bé).

Fairmaire described the taxon in the sense of a subspecies as “smaller and with somewhat finer punctation, but seeming not different from the European species”, a very scanty characterization. Type-material could not be traced in the Paris Museum (Descarpentries, pers. comm.). Paulian (1936) already observed, that this variety occurs as well in the rest of the distribution area of the species. I studied many specimens from Madagascar, including Nossi Bé, in both Fairmaire’s characters falling within the range of variation of continental populations. Henceforth, *nossibianus* is at most a slight aberration, as stipulated by Endrödi (1957), and has to be synonymized with *H. illigeri* Reiche.

*Hybosorus illigeri* Reiche subspecies *palaearcticus* Endrödi

Endrödi, 1957: 46–47 (description, type-locality Vodena, Macedonia).

As already stressed by Landin (1964) the subspecific division as established by Endrödi (1957) is untenable. First, Endrödi erroneously used the name *H. arator* (F.), with synonyms *H. illigeri* Reiche and *H. arator* (Illiger), thus accepting European specimens being the type-material of the species. Henceforth the Palaearctic subspecies should have been named *arator*, and for the African subspecies a new name should have been created. Second, in Landin’s opinion, and I agree fully with him, this problem does not necessarily cause much confusion: Endrödi’s subspecific division is “very dubious”. The dividing characters certainly are not correlated with distribution and do fall completely within the range of variation. This may be demonstrated in the following review, giving Endrödi’s differentiating characters in a slightly condensed form:

*H. arator arator*: dorsally black, sometimes completely or partly reddish; clypeus more elliptic; punctation of pronotum very variable, from nearly absent to very dense and coarse; elytral striae narrow to coarse; length 5–7.5 mm; Africa and Madagascar.

*H. arator palaearcticus*: not really black, although black specimens do occur; clypeus less elliptic, more semicircular; punctation of pronotum in general finer and somewhat sparser; striae as in *arator*; length 7–9 mm; Europe, Palaearctic Asia; the populations of North Africa intermediate; no further differences present.

I could not study the type-material of subsp. *palaearcticus* from Vodena in Macedonia, but I saw eight specimens (Cambridge, London, Paris) from Salonika and “Vardar Ebene, Salonich, A. Schatzmayr” (about 60 km from Vodena). Endrödi considered specimens in his own collection with identical

Schatzmayer label to be subsp. *palearcticus*. The specimens I studied are within the range of variation of the further European and African material; henceforth subsp. *palearcticus* is a synonym of *H. illigeri* Reiche.

Note 1.—It should be emphasized here, that three specimens of *H. laportei* Westwood (p. 22) from Chad are named *H. arator palearcticus* by Endrödi (Tervuren). This clarifies perhaps some details of Endrödi's description, but is an argument against his subspecific division.

Note 2.—The names *punctator*, *bicolor*, *rufus* and *suturalis*, established by Endrödi (1957) for sculptural and coloric aberrations do not have taxonomic status (p. 16).

Note 3. — *Hybosorus laportei* Westwood, with synonym *H. thoracicus* Westwood, considered synonyms of *H. illigeri* by most authors, is re-established as a separate species in this revision.

**Hybosorus laportei** Westwood, 1845  
(figs. 17–24)

Westwood, 1845: 158–159 (cites *Hybosorus arator* Fabricius, from Spain and Southern France; the species described by Laporte de Castelnau, 1840: 108, as *Hybosorus arator* Fabricius, from Senegal, is renamed into *Hybosorus laportei* Westwood, with *Hybosorus arator* Fabricius sensu Laporte de Castelnau as synonym; description of *Hybosorus thoracicus*, type-locality Senegal).

Reiche, 1853: 88 (synonym of *Hybosorus illigeri*).

Lacordaire, 1856: 134 (catalogue, *Hybosorus laportei* synonym of *H. illigeri*).

Boheman, 1857: 371 (synonym of *Hybosorus illigeri*).

Gemminger & Harold, 1869: 1074 (catalogued as variety of *Hybosorus illigeri*).

Arrow, 1912: 36 (catalogued as synonym of *Hybosorus illigeri*).

Schmidt, 1913: 45 (catalogued as synonym of *Hybosorus illigeri*).

Endrödi, 1957: 45 (synonym of *Hybosorus illigeri*).

Landin, 1964: 137 (synonym of *Hybosorus illigeri*).

Woodruff, 1973: 146 (synonym of *Hybosorus illigeri*).

Note 1. — *Hybosorus laportei* has nearly always been considered a synonym of *H. illigeri*, but careful study of the type and other specimens shows that the taxon merits full species rank.

Note 2. — Most authors considered *Hybosorus thoracicus* Westwood an aberration or a synonym of *H. illigeri*, but Woodruff (1973) signalled its status not yet being evaluated. My study of the holotype (Oxford), a female, revealed that *H. thoracicus* is a synonym of *H. laportei*. The holotype is labelled “*Thoracicus* Hope Senegal”, hand, a MS name of Hope; “Type Westwood Trans. Ent. Soc. 4. 1846, p. 159 Coll. Hope Oxon.”, hand and print combined; “Type Col: 491 *Hybosorus thoracicus* Westwood Hope Dept. Oxford”; plus my labels. A specimen in the Melly Collection (Geneva) might be a syntype, as Westwood did mention Melly specimens; it is labelled “*Thoracicus* Senegal”, but in an other hand than the Oxford specimen.

Redescription of ♂ holotype. — For practical reasons mainly the differences from *H. illigeri*, the only species with which it is sympatric, are given.

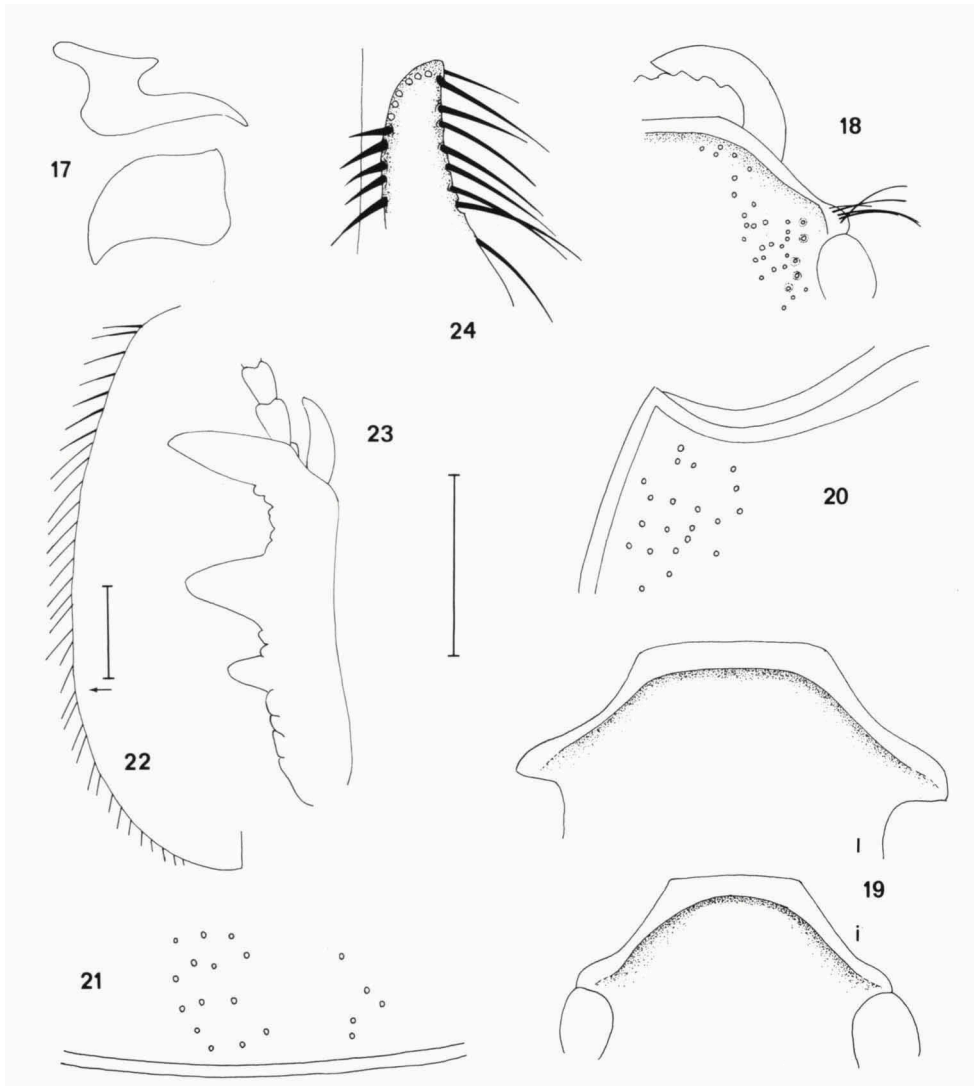
Length 9 mm. General appearance somewhat plumper. The ridge, limiting anterior smooth zone of clypeus posteriorly, slightly more evenly curved, subsemicircular; henceforth the head seems somewhat wider and shorter. Lateral margins of pronotum evenly curved over whole length, somewhat converging shortly before postero-lateral angles. Posterior margin of pronotum with a continuous fine groove along extreme border (in *H. illigeri* the groove more or less widely interrupted medially, often the interruption as wide as base of scutellum; sometimes the groove complete but very much weaker medially than more laterally). Punctuation of pronotum much finer, less dense and less conspicuously double, though in *H. illigeri* the punctuation is very variable. Fringe along lateral margin of elytra occupying about 5/6 of length of margin; setae of fringe apically about 1/3 of length of anterior ones (in *H. illigeri* fringe mostly occupying 2/3 of marginal length or slightly more, setae in apical part of fringe often only 1/10 of anterior ones). Setae of fringe gradually diminishing in size from anterior to apically (in *H. illigeri* mostly rather abruptly shortening from about halfway the margin). External series of spiniform setae on posterior half of hind tibia, including those on transverse ridge, composed of ten setae; the six on internal margin very long. Fringe along lateral margins of pronotum considerably denser in *H. laportei*. Genital characters identical.

Variation: Colour ranges from deep black to reddish, including specimens with reddish thorax and brown elytra; sometimes a whole series is reddish. Lengths from 8.5–10.0 mm. In a few cases the groove along posterior margin of pronotum very shortly, and abruptly, interrupted medially. The regular curvation of lateral margins of pronotum may be less evident. The usual variation in diameter, depth and density of punctures on pronotal surface occurs, as in those of elytral striae. Elytral fringe variably dense, occupying even 6/7 or nearly whole margin; apical setae may be much shorter than anterior ones, but less differing than in *H. illigeri*. External series of spiniform setae with up to twelve setae, internal series with up to nine long and slender setae.

Some character states of *H. laportei* and *H. illigeri* may overlap in a few specimens, but a combination of (most of) the following characters will easily define *H. laportei*: (i) punctuation of pronotum fine, rather scarce, and nearly uniform; (ii) fringe along pronotal margins dense; (iii) groove along pronotal posterior margin complete; (iv) marginal fringe of elytra occupying most of length of margin; (v) ten to twelve short and six to nine long setae on external and internal margins, respectively, of hind tibia; (vi) length 8.5–10 mm.

Type-material. — I studied the holotype in the Hope Collection (Oxford), with labels "*laportei* 7506 Senegal", hand; "Senegal Miers Coll. Presented

1880 by J.W. Miers", hand and print; "Type Col: 2124 *Hybosorus laportei* Westwood, Hope Dept. Oxford", hand and print.



Figs. 17–24. *Hybosorus laportei*. 17, Parameres of type; 18, head of Senegal specimen; 19, clypeofrons of *H. laportei* (l) and *H. illigeri* (i) compared, both from same locality; 20, antero-lateral angle of pronotum, type; 21, median part of posterior margin of pronotum, type; 22, margin of left elytron, Senegal specimen; 23, fore tibia, type; 24, posterior half of left hind tibia, Senegal specimen. Scale line represents approximately 1 mm. Setae at real relative lengths and density; punctures at real relative diameters and density.

Material examined. — I saw specimens from the museums in Berlin, Chicago, Copenhagen, London, Paris, Tervuren and Washington, and from my own collection. They are from the following localities (with numbers of specimens and month of capture indicated); in series marked with *ill.* both *H. laportei* and *H. illigeri* are represented:

Mauritania: Trarza Medrda (5), Guidimaka (3, *ill.*).—Senegal: (18). Thiès (1, x, *ill.*) Sébikotane (abundant, collected approx. 25 specimens, vii), Bambey (11, *ill.*), Richard Toll (2, xi), Palmarin (1), Rufisque (3), Dialakar (2), Diourbel (2), Sabary (1), Menéméné (1), Saint Lous (2), Nara (2, *ill.*), Podor (4, *ill.*), Dakar (9, *ill.*). — Gambia: (6, vi). — Mali: Timbuctu (7, vii), M'pesoba (1, vii), Sikasso (2, *ill.*), Kayes (6), Niafunke (2), Nioro (2), Dioulentza (5), Baraguine (2). — Upper Volta: Bobo Dioulasso (2). — Niger: Agala (1), Kanem (4), Agadez (6), Zinder (5, *ill.*). — Chad: Ngouri (3, viii, *ill.*; the three specimens with Endrödi's enigmatical labels *H. arator palearcticus*, see pag. 22), Mondou (7, i, *ill.*), Kouri (4), N'guigmi (24), Komadougou (1), Ennedi (2), Mortcha (2), Fort Lamy (5, *ill.*), Fort Archambault (21, *ill.*), Baguirmi (8). — Nigeria: Ibadan (1, *ill.*), Kano (2, v, vi, *ill.*), Bodegí (2, iii), Maiduguru (1), Jos (1, iv), Kankya (1, vi). — Ghana: (2). — Benin: Agoué (13, *ill.*), Cotonou (1), Porto Novo (1, *ill.*), Zaganado (5, *ill.*). — Togo: Lomé (2, iv, dry cow dung). — Cameroons: Garna (7, *ill.*), Adamaua (1, *ill.*). — Sudan: Berber (2), Kordofan (1, *ill.*). — Ethiopia: (1). — Egypt: (1, "in ventr. bufonis"). — "Turcomanie": (1, in collection Ancy, now Paris, very probably mislabelled). — Southern France: (2, possibly transported by ship from Senegal).

### **Hybosorus orientalis** Westwood, 1845 (figs. 25–30)

Westwood, 1845: 159 (very short description, type-locality India orientalis).

Lacordaire, 1856: 134 (catalogue).

Gemminger & Harold, 1869: 1074 (catalogue; *Hybosorus roei* is a synonym); see p. 19.

Arrow, 1912: 37 (catalogue).

Schmidt, 1913: 45 (catalogue).

Fletcher, 1919: 11 (description and figures of all stages, bionomics).

Gardner, 1944: 114 (description of larva, stridulation, bionomics).

Ritcher, 1966: 37 (larva described and figured).

Redescription of male holotype, mainly restricted to characters differentiating the species from *H. illigeri* Reiche. — Colour black, underside a shade lighter. Length 11.5 mm.

Labrum: Anterior margin with nine denticles.

Mandibles, clypeus and rest of head: Very similar to those of *H. illigeri*.

Pronotum: Lateral margins weakly and nearly evenly rounded, converging towards anterior margin, but hardly converging towards posterior margin of pronotum. Posterior margin evenly rounded in middle, weakly sinuate before the rounded, somewhat blunt postero-lateral angles. The lateral marginal ridge bordered along its inner side by a shallow groove, with a series of shallow punctures at its bottom. The marginal ridge prolonged along anterior margin, gradually less elevate, and fading out at a short distance before middle of anterior margin, extending far beyond level of inner margin of eye; its median-

most part only indicated by the fine, bordering groove. Along posterior margin the ridge is considerably narrowing, but it is continuous in the middle; the groove marking the inner side of the ridge is very distinct as a sharply impressed line over its whole length. Surface shining, with sparse, fine, circular punctures; punctation somewhat denser toward sides, specially anteriorly; the fine punctures mixed with scarce, much larger punctures, two to three times the diameter of the fine punctures.

Elytra: The ridge along margin reaches apex of elytron. Nine complete striae between suture and humeral umbone, and 7–8 well developed striae and some interrupted short traces of further striae on lateral part (left and right elytron slightly different by some faint anastomoses, specially in the lateral striae).

Hind tibia: Ten stout setae on transverse ridge and external margin, 7–8 slender setae on internal margin of apical half of tibia.

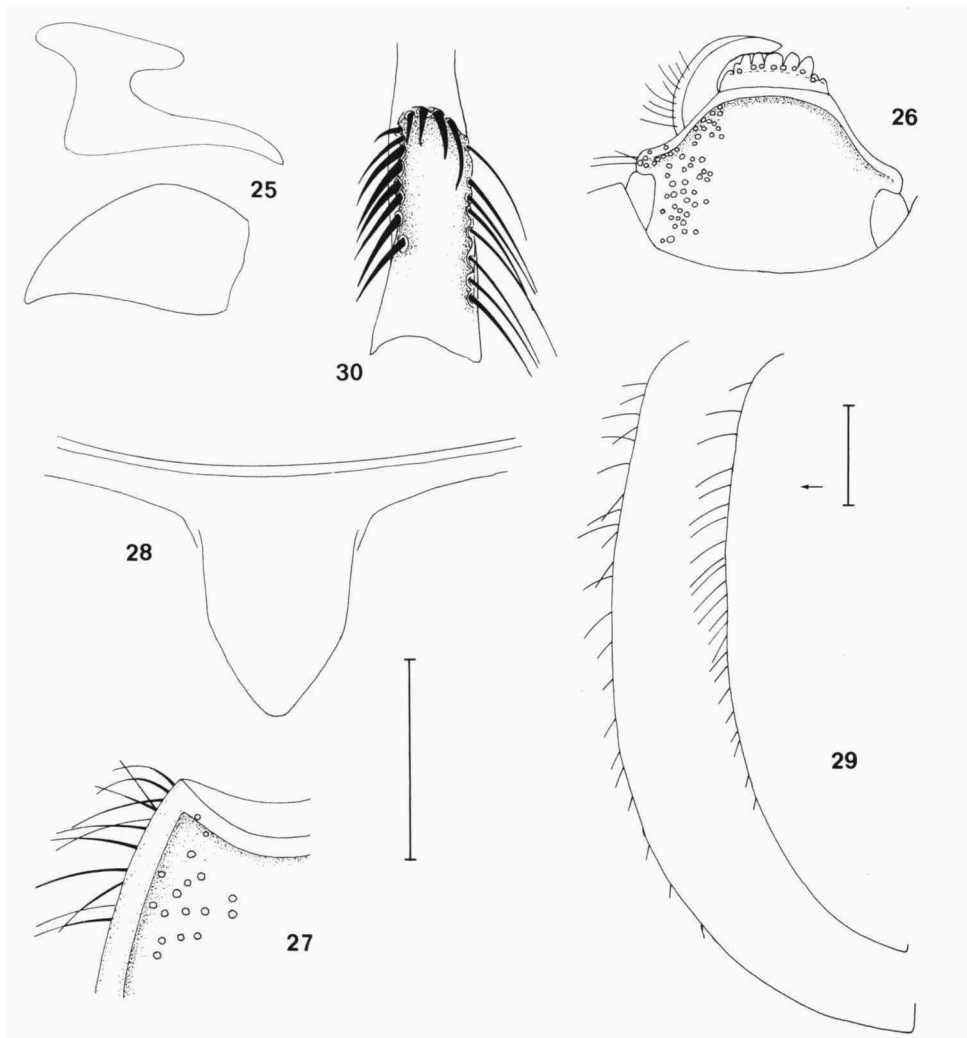
Abdominal sternites: Laterally rather densely punctate, the punctation occupying about 1/4 of total width of sternite. Middle of sternites shiny, with a single transverse series of coarse punctures at short distance from posterior margins of sternites 3 and 4, much finer and not uniseriate in sternite 5; last sternite impunctate, except for a dense punctation along extreme posterior margin; second sternite punctate over nearly whole width. Most punctures with a yellow seta; short setae mainly concentrated in most lateral parts of sternites, nearly adpressed and somewhat curved, long ones reclined to erect, their length sometimes equals length of sternites.

Pygidium: Subsemicircular, shining, densely transversely ruguloso-punctate, but with some simple round punctures near apex. Margin finely serrate and fringed with setae of about the same size as the long sternal ones. Surface with setae of strongly variable lengths, the longest ones equal to marginal ones, the shortest ones only 1/3 to 1/4 of this size.

Parameres: Closely similar to *H. illigeri*.

Variation: Apparently this species lacks the many colour aberrations of *H. illigeri*, the vast majority of specimens being black, with only a few dark reddish brown. As in *H. illigeri*, the specimens of some series are predominantly large, of other series small, in still other series they show most of the length range. The longest specimen is 12.3 mm, the two smallest ones studied are 8.2 and 8.7 mm. Clypeus may be semicircular in circumference, eye-canthus strongly directed backward, nearly in prolongation of lateral margin of clypeus. Elevated ridge along anterior margin of pronotum always obsolete medially, the fine groove may be continuous, or, in most cases, only evident as a series of punctures in middle, or completely absent in median third. In some cases the ridge along posterior margin of pronotum slightly widening in mid-





Figs. 25–30. *Hybosorus orientalis*. 25, Parameres of holotype; 26, head of Karachi specimen; 27, antero-lateral angle of pronotum of Karachi specimen; 28, posterior margin of pronotum before scutellum, holotype; 29, lateral margin of left elytron, left holotype, right Barmer specimen; 30, posterior half of left hind tibia, Barmer specimen. Scale lines represent approximately 1 mm. Except in fig. 26, setosity at real relative length and density; punctures at real relative diameter and density.

dle. Lateral margins of pronotum may be subrectilinear in median one-third.

In well-preserved specimens elytral fringe somewhat denser and occupying full 4/5 of elytral margin. The length of the setae of elytral fringe in general diminishes from anterior to posterior. At about middle of elytral margin frin-

ge may be composed of mixed long and short setae. The punctures forming the striae mostly subcircular, sometimes slightly transverse; punctures in some cases locally connected longitudinally by a narrow, weakly to clearly impressed groove, and then interstriae somewhat convex. Apical half of metatibia with up to 12 stout setae and 6–10 (mostly 7 or 8) long setae; the latter ones up to thrice the length of the short ones. Slight variation in length and width of lower branch of left paramere. Additionally the usual slight variations in characters of punctuation and setosity may be observed.

Type-material. — Holotype ♂ (Oxford), labelled "*Hybosorus orientalis*", hand; "Prof. Westwood's private collection purchased from Miss Swann. 1895. Collected by Gen. Harsey in India", print; "Type Westwood, Trans. Ent. Soc. 4. 1846. p. 159, coll. Hope Oxon.", combined print and hand; "Type Col: 493 *Hybosorus orientalis* Westw., Hope Dept. Oxford", combined print and hand. As this is the only specimen of *H. orientalis* present in the original Westwood/Hope collection, its holotype status is most probable.

A second specimen of *H. orientalis* in the Oxford collection, labelled "Roe", stands in a series considered to be *Hybosorus roei* by Westwood (p. 19).

Material examined. — Apart from the holotype I studied material from the following collections: Amsterdam, Berlin, Brussels, Budapest, Cambridge (U.S.A.), Chicago, Copenhagen, Florence, Geneva, coll. Hardy, coll. Kuijten, Leiden, London, Oxford, Paris, Washington. The localities are distributed as follows (with numbers of specimens and months of capture indicated); some labels give "at lamp", or "in cow dung":

Thibet: Po-o (1). — Nepal: Tarai (3), Dharan (34). — Pakistan: Lahore (5, vii), Karachi (17), Pakistan (2). — India: "India orientalis", "Ostindien" etc. (23), Himalaya (3), Murree Hills (2), Dehra Dun (5), Hoshiarpur (3), Punjab (1), Sariska (6), New Delhi (61, vii), Thar Desert: Barmer (8), Calcutta (2), Bihar (2), Nagpore (5), Poona (5), United Provinces (23), Madhya Pradesh (2), Darjiling (2), Bengal (5), Aurangabad (3), Jabalpur (6), Faizabad (3), Ahmadnagar (2), Rutlam (13), Shambaganur (7), Central India (1), Deccan (1), Bellary (10), Bangalore (3), Mysore (2), Goa (39, viii), Mahé (4), Tranquebar (1), Madras (3), Madura (1), Coromandel Coast (9), Malabar Coast (59), Kodaicanal (1), Nilgiris (10), Coimbatore (3, vi, ix, xi), South India (9). — Sri Lanka: Ceylon (13), Mount Lavinia (1, vii), Belihul Oya (1), Inginiyagala (1), Wadduwa (5). — Burma: (1). — Sumatra: (1). — Java: (2), mountains near Batavia (1), Batavia (6), Tengger Mts (1). — Petrovitz (1965: 681) cites the species from Afghanistan: Nuristan, 1800 m.

Note 1. — One specimen from Senegal and two from Egypt in the Melly material (Geneva) most probably are mislabelled, but displacement by human activities, as occurred in *H. illigeri*, might well be possible.

Note 2. — *Hybosorus illigeri* is known from several localities within the distributional area of *H. orientalis*, and in some localities is sympatric with it: Thar Desert, Punjab, Faizabad. This co-occurrence may support the opinion, that they are different on specific level.

**Hybosorus ruficornis** Boheman, 1857  
(figs. 31–38)

Boheman, 1857: 369 (detailed description, type-locality Caffraria).  
Gemminger & Harold, 1869: 1074 (catalogue).  
Péringuey, 1892: 31 (catalogue; Transvaal, Limpopo, Zambeze).  
Péringuey, 1902: 494 (compared to *H. illigeri*; whole of South Africa except Cape Colony).  
Arrow, 1912: 37 (catalogue; Natal).  
Schmidt, 1913: 45 (catalogue; Caffraria).

Redescription of ♀ holotype. — Black, with a faint reddish tinge on elytra, mouth parts somewhat reddish, antennal club yellowish red. Length 12.4 mm; measured as projection of total length 11 mm.

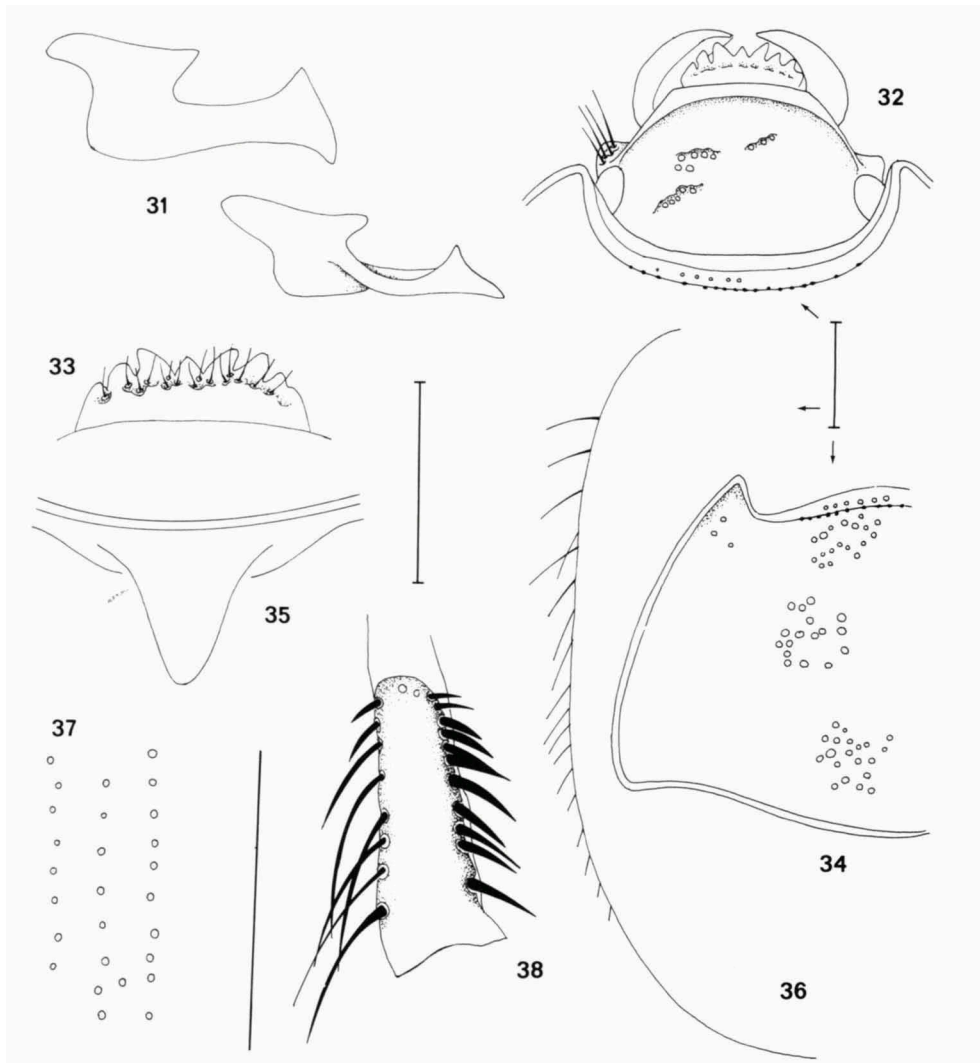
Labrum: Anterior margin rounded, with seven teeth. Median tooth smaller than the adjacent ones, which are somewhat pointing outward. Disc with a rather sharp transverse ridge; anteriorly to this ridge and in the incisions between the marginal teeth some erect setae.

Mandibles: As in *H. illigeri*, with a series of about 13 long setae along external margin.

Clypeus and rest of head: Anterior margin straight, lateral margins straight and strongly diverging towards eye-canthus; anterior and lateral margins with weak incisions, each incision with an erect seta. Eye-canthus protruding, with a tuft of thick, erect setae; its anterior margin approximately perpendicular to length axis of head. Anterior and lateral margins bordered by a smooth elevation, the elevation sloping towards anterior margin and lateral margins; internal border of elevation concave and sharply falling down to level of clypeal surface. Elevation continued, though much narrower, along inner margin of eye-canthus. Surface of clypeofrons with transverse rugules, partly extending nearly from side to side. Bottom of rugules with shallow, coarse, dense, subcircular, partly coalescent punctures. In marginal parts of clypeofrons the punctures are somewhat deeper and well isolated. Vertex with a wide, nearly impunctate band between eyes.

Pronotum: Anterior margin nearly straight in middle (weakly bisinuate if seen from more dorsally), strongly concave before sharp, depressed antero-lateral angles. Lateral margins evenly rounded, diverging towards rounded, subrectangular postero-lateral angles. Posterior margin convex, evidently sinuated before postero-lateral angles. Anterior margin with a hyaline anterior seam, and bordered by a flat elevated zone, bearing a series of scanty punctures, and narrowing before antero-lateral angles. This elevation posteriorly limited by a fine groove with some shallow punctures at its bottom. Elevation continued along lateral margins as a fine, round-topped ridge, bearing a series

of fine punctures, and slightly increasing in height and width in posterior direction. The elevation continued along posterior margin as an extremely fine ridge, bearing some punctures, and limited against pronotal disc by a fine



Figs. 31–38. *Hybosorus ruficornis*. 31, Left paramere of Salisbury specimen, lateral and dorsal aspect; 32, head of holotype ♀; 33, labrum of Salisbury specimen; 34, left half of pronotum, holotype; 35, posterior margin of pronotum before scutellum, holotype; 36, lateral margin of left elytron, holotype; 37, suture, iuxta-sutural and two discal interstriae of left elytron, holotype; 38, posterior half of right hind tibia, holotype. Scale lines represent approximately 1 mm. Setae at real relative length and density, except in fig. 32; punctures in fully drawn areas at real relative diameter and density.

continuous groove. Lateral margin with a thin fringe of about 20 backward curved setae. The setae rather long, but rather abruptly shortening before postero-lateral angles; the setae are implanted on underside of extreme lateral margin; laterally protruding setae originating from more central parts of underside are not included in this number. Surface shiny, set with rather shallow, round punctures of variable diameter (large ones approximately twice the diameter of the small ones), mostly rather evenly spaced (distances 1–4 × diameter), but locally, especially in medial parts, much less dense. Between these punctures widely spaced micropunctures, hardly visible at 50 × magnification, are present.

Scutellum: Triangular, apex acuminate; surface smooth except for some punctures and rugules in the part of the base normally not covered by the pronotum, and with annulate setigerous punctures in the covered part.

Elytra: Lateral margins weakly rounded and slightly divergent in about anterior half, more curved and rather convergent towards apex in posterior half. Margins bordered by an elevation, narrow anteriorly, gradually and slightly widening and more roundtopped posteriorly, but narrowing again and eventually fading out before apex. Extreme external margin weakly serrulate and with a fringe of laterally directed, curved setae, implanted in the incisions of the serrulation. Length of setae of fringe anteriorly approximately equal to width of iuxta-sutural interstria; at the height of third coxa setae abruptly shorter and from there gradually shortening to complete absence at short distance from apex. Derm shining, with approximately 18, laterally incomplete, striae composed of round, rather shallow punctures. Punctures locally connected by a faint groove, which is well-developed, however, in posterior part of iuxta-sutural stria. Interstriae weakly convex, some of them with a single series of widely scattered punctures, much smaller than the strial ones. Under strong magnification (50 ×) and a certain angle of illumination an extremely fine micropunctuation, rather evenly distributed over the whole surface of interstriae, may be observed. Striae confluent on apical declivity, forming a more or less irregularly punctate area with only traces of the original striation. Iuxta-sutural interstria about twice as wide as second and third ones. Suture with a minute apical denticle.

Pygidium: Subsemicircular; surface shining, with numerous, irregularly undulating transverse rugules, partly extending from side to side. Between the rugules numerous very shallow ill-defined punctures with a fine reclined seta of variable length. Margins densely fringed with still longer setae, longest along apex.

Fore tibia: External margin, between the three lateral teeth, virtually complete; basally of the small tooth about five small accessory denticles.

Middle and hind tibiae: External surface with a median transverse ridge; this ridge with some setae, the setosity extended along both margins of external surface toward apex of tibia. In hind tibia the ridge and exterior margin with a series of 12–15 spiniform setae; internal margin with 8–10 much longer and finer setae (left and right tibia not completely identical).

Abdomen: Sternites shining medially and with a series of setigerous punctures along posterior margin. Laterally densely ruguloso-punctate and with sparse reclining setae, often of approximately the same length as the sternite.

Variation: Black to dark red. Length 10.1–15.8 mm. Smaller specimens in general with less rich metatibial setosity. Lateral margins of pronotum may be rectilinear or even very weakly concave before antero-lateral angles. Micro-punctuation in elytra may be invisible at 50 ×. Mostly 4–5 basal accessory denticles in fore tibia, but in a few specimens only 2–3. From 5–7 setae in internal series and 9–18, mostly 11–13, in external series of setae on apical half of hind tibia. Slight variations in density, depth and other characters of punctuation, in relative lengths of setae, a.s.o., may occur.

Type-material. — The above described ♀ specimen is labelled “Dohrn”, hand; “Caffraria”, print; “Type”, white, print; “Typus”, red, print; “Riksmuseum Stockholm”, blue, print; name label. According to Lindskog (pers. comm.) the type labels are only museum labels, without nomenclatorial value, but nevertheless I agree with Lindskog’s opinion, that the Caffraria specimen probably is the holotype. Its length exactly fitting the original description corroborates this opinion, as does the fact that it is the only specimen I saw bearing a label “Caffraria”, Boheman’s type-locality.

Material examined. — I saw material from the following museums and collection: Berlin, Cape Town, Chicago, Copenhagen, Florence, Geneva, coll. Kuyten, Leiden, London, Paris, Stockholm. As distribution data in the literature are scarce, a rather detailed list of the localities may be useful. Nearly all dates of captures are in the Southern summer (x–iii); many specimens were caught at light; numbers of specimens in parentheses.

Namibia: Barby Farm (3), Damaraland (1), Hoffnung (1, 1850 m. alt.), Kuiseb Canyon (1), Okahandja (2), Otavi (3), Otavifontein (7), Otjitambi (1), Rietmond (4), Sesriem Canyon (8), Sissekab (1), Sobabis (1), Sossusvlei (2), Svakop (1), Windhoek (1). — Bechuanaland: (4). — Botswana: Kanyu (1), Ngami (4), Serowe (1). — Zambia: Chilonga (1), Monze (31). — Zimbabwe: Atlantica (3), Bulawayo (3), Fort Victoria (1), Filabusi (1), Guelo (2), Insiza (1), Mlanla (1), Salisbury (7), Wankie (5). — South Africa: Cape Province: Cradock (3), Maseking (1); Transvaal: Bloemhof (1), Magaliesberg (2), Mooisplaats (1), Potgietersrust (1), Rustenburg (1), Transvaal (2); Natal: Durban (1), Estcourt (1), Natal (6), Weenen (1). — Mozambique: Pandama (1). — Tanzania: Seronera (2). — Kenya: Kedong valley, near Nairobi (2). — Somalia: Lugh (1, iv).

**Hybosorus crassus** Klug, 1855  
(figs. 39–44)

Klug, 1855: 657 (very short Latin description, type-locality Tette).

Klug, 1862: 248 (again given as new species, with identical Latin and more detailed German description, type-locality Tette).

Gemminger & Harold, 1869: 1074 (catalogue).

Péringuey, 1902: 494 (compared to *H. ruficornis*, Southern Rhodesia and Mozambique (Tette); named "*grossus*" in key).

Arrow, 1912: 36 (catalogue, distribution).

Schmidt, 1913: 45 (catalogue, distribution).

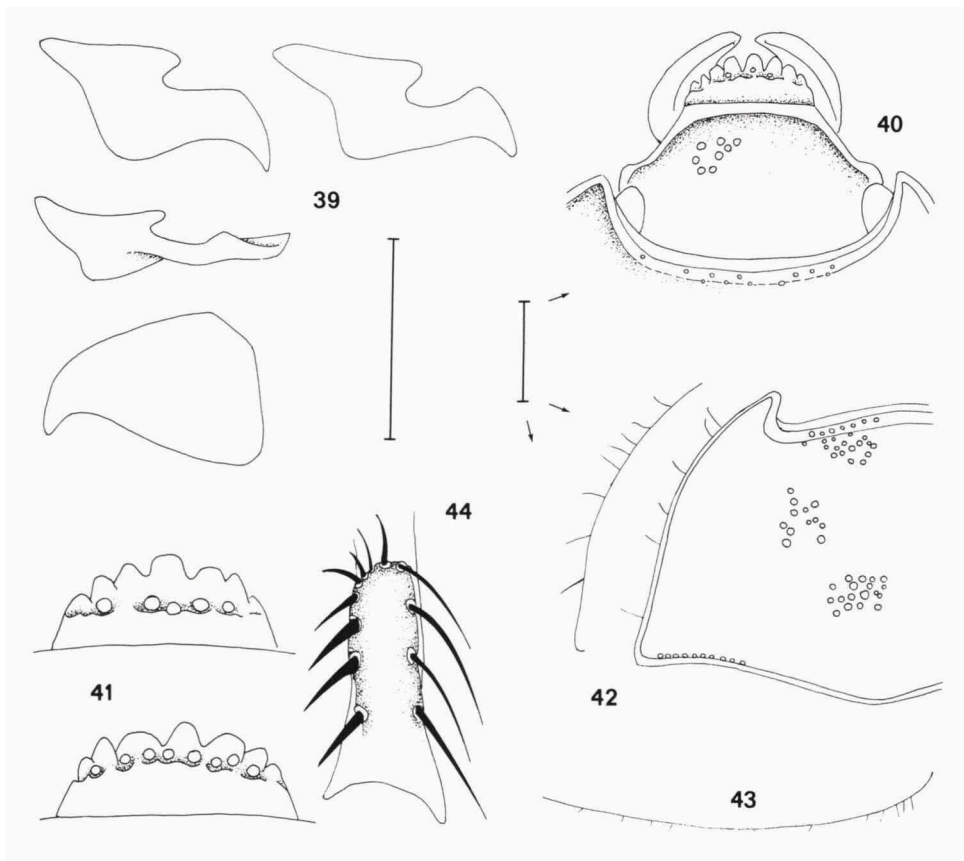
Redescription of ♂ lectotype and ♀ paralectotype combined. — Black; elytra, legs and mouth parts with a reddish tinge, antennal club yellowish red. Lengths 11.6 mm (♂) and 12.4 mm (♀).

Labrum: Subsemicircular; anterior margin with seven teeth, the median one as strong as the adjacent ones or stronger. Disc with a transverse elevation, anteriorly bordered by a series of coarse setigerous punctures; surface smooth behind the elevation.

Mandibles: As in *H. illigeri*, with a series of about ten deep setigerous punctures along external margin.

Clypeus and rest of head: Anterior margin of clypeus subrectilinear, lateral margins rectilinear and strongly divergent in posterior direction; extreme margins with a series of large setigerous punctures, giving an impression of incisions. Eye-canthus strongly protruding, its anterior margin approximately perpendicular to length axis of head; apex of canthus with a tuft of 5–6 closely set, rather stout setae. Anterior and lateral margins bordered by a smooth elevation, its exterior part gently sloping down, but its internal surface abruptly falling down to surface of head. The elevation continued, though much narrower, along inner part of eye-canthus. Clypeofrontal surface shining between the rather coarse and deep punctation and rugulation. Punctures of variable diameters, often coalescent; rugules often with punctures at their bottom and coalescent in series reaching from side to side. Punctures more isolated near vertex, which shows a transverse nearly smooth area.

Pronotum: Anterior margin, seen from above, weakly bisinuate. Antero-lateral angles acute, distinctly protruding and rather depressed. Lateral margins divergent in posterior direction, anteriorly weakly curved, posteriorly subrectilinear. Postero-lateral angles subrectangular, their apices strongly rounded. Posterior margin convex, but evidently emarginate before postero-lateral angles. A low ridge, hardly or not higher and wider in posterior direction, along lateral margin. Lateral marginal fringe composed of maximally ten short, hardly curved setae. Punctation virtually the same as in *H. ruficornis*, but slightly deeper and denser.



Figs. 39–44. *Hybosorus crassus*. 39, Lateral and dorsal aspects of parameres; left lectotype, right paralectotype; 40, head of Zambesi specimen; 41, labrum, above lectotype, below other Zambesi specimen; 42, left half of pronotum of lectotype, and lateral margin of pronotum of paralectotype; 43, anterior part of lateral margin of right elytron, lectotype; 44, posterior half of left hind tibia, lectotype. Scale lines represent approximately 1 mm. Setosity at real relative length and density; punctures in fully drawn areas at real relative diameters and density.

Scutellum: As in *H. ruficornis*.

Elytra: Form of lateral margins and bordering ridge as in *H. ruficornis*. Fringe restricted to a scanty series of very fine setae, much shorter than the width of iuxta-sutural interstria. Surface shining, with 18 striae per elytron, composed of round, in general equidistant, rather shallow punctures. The punctures locally connected by a longitudinal groove; in the iuxta-sutural stria this groove nearly complete and gradually more impressed towards apex. Striae partly confluent and irregular in apical declivity. Sutural angle with a very fine denticle. Interstriae flat to weakly convex; some with a single series,



the iuxta-sutural one with several series, of minute, widely scattered punctures; additionally the same extremely fine micropunctuation as in *H. ruficornis* is present.

Pygidium and abdominal sternites: As in *H. ruficornis*.

Fore tibia: Lateral margin between the large teeth without denticles; basally of small lateral tooth only two or three blunt accessory denticles.

Hind tibia: External surface of apical half with 8–10 short setae on transverse median ridge and external margin combined, and 4–6 long setae along internal margin.

Parameres: Superior denticle on apex of left paramere very obtuse.

Variation: Length 10.5–12.4 mm. In the posterior half of pronotum a narrow, impunctate, longitudinal median band may be present. Short setae in hind tibia mostly 7–9, exceptionally 10 or 12; mostly 4 long setae, sometimes up to 6. Superior denticle in parameral apex may be hardly discernible.

Type-material. — Lectotype ♂ (Berlin), here designated, with labels “Tette Peters”, blue, hand; “Type”, red, print; “*Hybosorus grossus* Kl”, white, hand, probably Klug’s; “*grossus* Klug Tette Peters”, large, green, hand. Paralectotype ♂ (Berlin), here designated, labelled “Tette Peters”, blue, hand; “Type”, red, print. Both specimens additionally labelled with a name label by Petrovitz, reading *Hybosorus crassus* Klug, and my lectotype labels.

Of the four Tette specimens catalogued in the Berlin files only the aforementioned two ♂ could be traced there (Schulze, pers. comm., 1980). However, I saw two ♀ specimens (Geneva: Petrovitz Collection) that Petrovitz retained after his examination of the Berlin Hybosorinae (Schulze, pers. comm.). They bear the same “Tette Peters” labels as the two Berlin specimens and are additionally labelled with Petrovitz’ name label *H. crassus* Klug. I designated the two Geneva specimens paralectotypes too and labelled them accordingly. In my opinion the “Tette Peters” labels are sufficient evidence for the four specimens forming the original material.

Note on the correct name. — Several specimens are labelled *Hybosorus grossus* Klug. Péringuey used this name in his key (1902: 493), but in the text he used *H. crassus* (1902: 494). Klug (1855: 657), in his original description, named the species *H. crassus*, but the label on the lectotype reads *H. grossus*, probably in Klug’s hand. The published text being decisive, the correct name is *H. crassus*.

Material examined. — Apart from the aforementioned type-specimens I saw 1 ♂ from Zambesi, leg. Bradshaw, 1879, with a label “*H. grossus* Klug, compared to type”, by Péringuey, and 1 ♀ from Beira, Zambesi, leg. Stoehr, 1905 (Cape Town); 1 ♂ from Otjitambi, 1050 m, S.W. Africa, ii.1965, leg. Königsbauer (Geneva); 1 specimen from “Kongo, Tavares S.”, 1 ♀ from “Chupanga, Mosambique, Tavares S., *grossus* Klug”, 1 specimen from Tette and 1 without label (Berlin); 1 specimen from Rhodesia (coll. Kujiten).

**Seleucosorus** gen. nov.  
(figs. 45–51)

*Hybosorus punctatissimus* Reiche, 1861: 1–2 (description, compared to *Hybosorus illigeri*, type-locality Antiochia, Syria).

Type-species. — *Hybosorus punctatissimus* Reiche, 1861, the only species included.

This species differs in so many respects from the other *Hybosorus* species, that the erection of a new genus for it is necessary.

Differential diagnosis of the genus. — Well preserved specimens with a pruinose lustre on dorsal surface. Anterior margin of labrum subrectilinear (curved in *Hybosorus*). Anterior margin of eye-canthus perpendicular to length axis of head (directed backward in *Hybosorus*). Setae of lateral fringe in elytra very short, occupying only one-fourth to one-third of length of elytron (in *Hybosorus* setae considerably longer and fringe more extended towards elytral apex). Left paramere unilobate, with a strong upward tooth before apex (in *Hybosorus* bilobate; at most, in the large species, with a rather weak upward tooth). Elytral punctures at most locally weakly seriate (in *Hybosorus* evidently seriate).

Redescription of *Seleucosorus punctatissimus*. — Nearly black, with very dark red tarsi and protibial teeth. Dorsal surface in well preserved specimens with a faint but evident pruinose lustre. Setosity mostly very dark on legs, yellowish brown on underside; upperside hairless. Length 7–8.5 mm.

Mandibles: Sickle-shaped, with a very acute apex and a sharply elevated lateral margin.

Head: Anterior margin of labrum very wide, subrectilinear; anterior margin of eye-canthus perpendicular to length axis of head. Eyes hardly protruding, in one line with lateral margin of eye-canthus. Surface densely set with round to transverse, often annulate punctures, which are sometimes locally nearly coalescent.

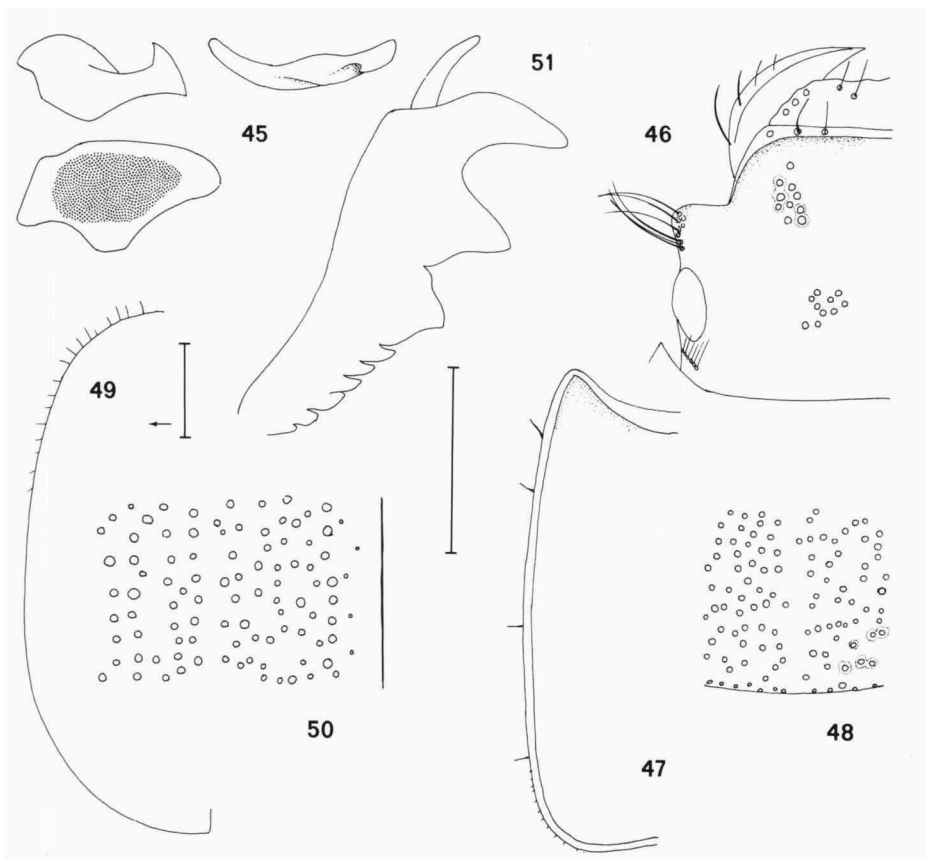
Pronotum: Lateral margins weakly and evenly curved, and slightly diverging in posterior direction; margins bordered by a very narrow, somewhat sharp-topped ridge. Surface punctate, with a longitudinal median zone less densely punctured. Punctures slightly varying in diameter, circular, many subannulate; along posterior margin punctures simple and finer. Lateral margin fringed with scanty short setae. The very weakly sinuate posterior margin me-

dially bordered by a fine groove, fading out considerably far from middle.

Scutellum: Virtually impunctate.

Elytra: Margins regularly curved, with a fringe of very short setae, in anterior 1/3 to 1/4 only. Surface densely punctate; a weak seriation of the punctures may be present locally at the sites of the conjectured striae. Only the iuxta-sutural stria well developed over most of its length.

Fore tibia: Three well developed external lateral teeth. Between the teeth without, or sometimes with a single, accessory denticle; 5–6 denticles basally of the smallest tooth, well developed and rather acute.



Figs. 45–51. *Seleucosorus punctatissimus*, Silifke specimen. 45, Lateral and dorsal aspects of parameres, grey area transparent; 46, head; 47, left lateral margin of pronotum; 48, posterior part of pronotum before scutellum; 49, lateral margin of left elytron; 50, suture, iuxta-sutural interstria and punctation at about middle of left elytron; 51, right fore tibia. Scale lines represent approximately 1 mm. Setae, except in figs. 46 and 47, at real relative length and density; the microsetae at hind angle in fig. 47 hardly visible at 50 ×; punctation in fully drawn areas at real relative diameter and density.

Claws: All claws simple.

Abdominal sternites: Shining, without the pruinosity of the dorsal surface; medially smooth or with a few setigerous punctures, laterally with scattered, often somewhat transverse, annulate setigerous punctures. Setae approximately half as long as length of sternites.

Pygidium: Subsemicircular; closely transversely ruguloso-punctate and finely setose. Margins with somewhat longer and denser setae.

Parameres: Left paramere tapering towards apex, with a strong upward tooth before apex.

Material examined. — I saw three specimens of *Seleucosorus punctatissimus* (Paris), which are “perhaps the types” according to a personal communication of Descarpentries. The specimens are ranged in the Paris collection under a single heading museum label, reading “*punctatissimus* Reiche, Syria”, and do not bear any label of their own.

Furthermore I studied four specimens from Syria (Paris) and some 20 specimens from Petrovitz’ collection (Geneva, coll. Kuijten), collected in Silifke, Cilicia, Turkey. Petrovitz (1963) writes: we could observe these insects on a few days only in the beginning of May, on the sand and mud plains that border the banks of the Goksü near Silifke in Anatolia. In the hours before noon they emerge in large numbers from the mud, copulate and feed on dead and still living Ephemeroidea washed ashore, and sometimes on human faeces.

Further dealing with this species, including lectotype designation, will take place in a later revision of the smaller Old World genera of Hybosorinae.

Derivation of name. — From *Seleucia*, the antique name of Silifke, and the second part of *Hybosorus*.

### **Hybosoroides** Benderitter, 1914

(figs. 52–60, pl. 1)

*Hybosoroides alluaudi* Benderitter, 1914: 203 (description of genus and species, figures, type-locality Pori de Séringhét).)

Type-species. — *Hybosoroides alluaudi* Benderitter, 1914, the only species included.

Notes. — Benderitter based the genus and species on three females, and considered them very close to *Hybosorus*. After study of these three specimens and further material I agree fully with this opinion. I am even inclined to consider *Hybosoroides alluaudi* belonging to *Hybosorus*, albeit at a subgeneric lev-

el; hence its inclusion in this revision (for some differences from *Hybosorus* see key, p. 44). However, as the name expresses a close similarity to *Hybosorus*, and for continuity's sake the original taxonomic rank has been maintained here.

Presumably the species has other habits than *Hybosorus illigeri*. I saw a relatively limited number of specimens among considerable quantities of *H. illigeri* (and other Coleoptera), collected with various methods, in various seasons and in various habitats in the relevant areas in East Africa.

Redescription of ♀ lectotype. — Blackish brown, legs dark reddish brown, setosity yellowish brown in varying shades. Length 10.2 mm.

Labrum: Subtrapezoid, margin serrate, with seven denticles. Disc with a low blunt ridge from side to side; before the ridge some shallow setigerous punctures.

Mandibles: Sickle-shaped, with a blunt protrusion shortly before the acute apex. External margin with a fine sharp-topped ridge. Lateral surface with a longitudinal series of about eight setae.

Clypeus and rest of head: Anterior margin weakly convex, sides rectilinear and strongly diverging in posterior direction. Eye-canthus strongly protruding, its anterior margin approximately perpendicular to length axis of head, its lateral margin weakly curved. Margins of clypeus bordered by a sharp semi-circular ridge. Interior slope of the ridge steeply falling down to surface of head, outwardly the ridge sloping to below this level. Along anterior margin of head a transverse series of punctures, each with a more or less erect seta. Eye-canthus with a tuft of about five erect setae. Whole surface of head with dense, coarse, deep, round to transverse punctures of considerably varying diameters; punctures on many places coalescent in several directions over varying distances, anteriorly even forming some long, more or less transverse, coalescent series.

Pronotum: Anterior margin bisinuate, medially weakly subangularly protruding and somewhat swollen, the swelling extending over a limited part of disc. Antero-lateral angles acute and strongly protruding. Lateral margins somewhat curved, strongly divergent in posterior direction: distance between apices of postero-lateral angles somewhat more than twice the distance between apices of antero-lateral angles. Posterior margin considerably sinuate before postero-lateral angles, very weakly concave at both sides of middle; middle very obtusely angulate. Postero-lateral angles subrectangular, but their apices strongly rounded. Anterior margin with a transparent seam and bordered inwardly by a weak, flat, scantily punctate elevation, which is limited by a fine groove posteriorly. Lateral margins serrulate, bordered by a narrow

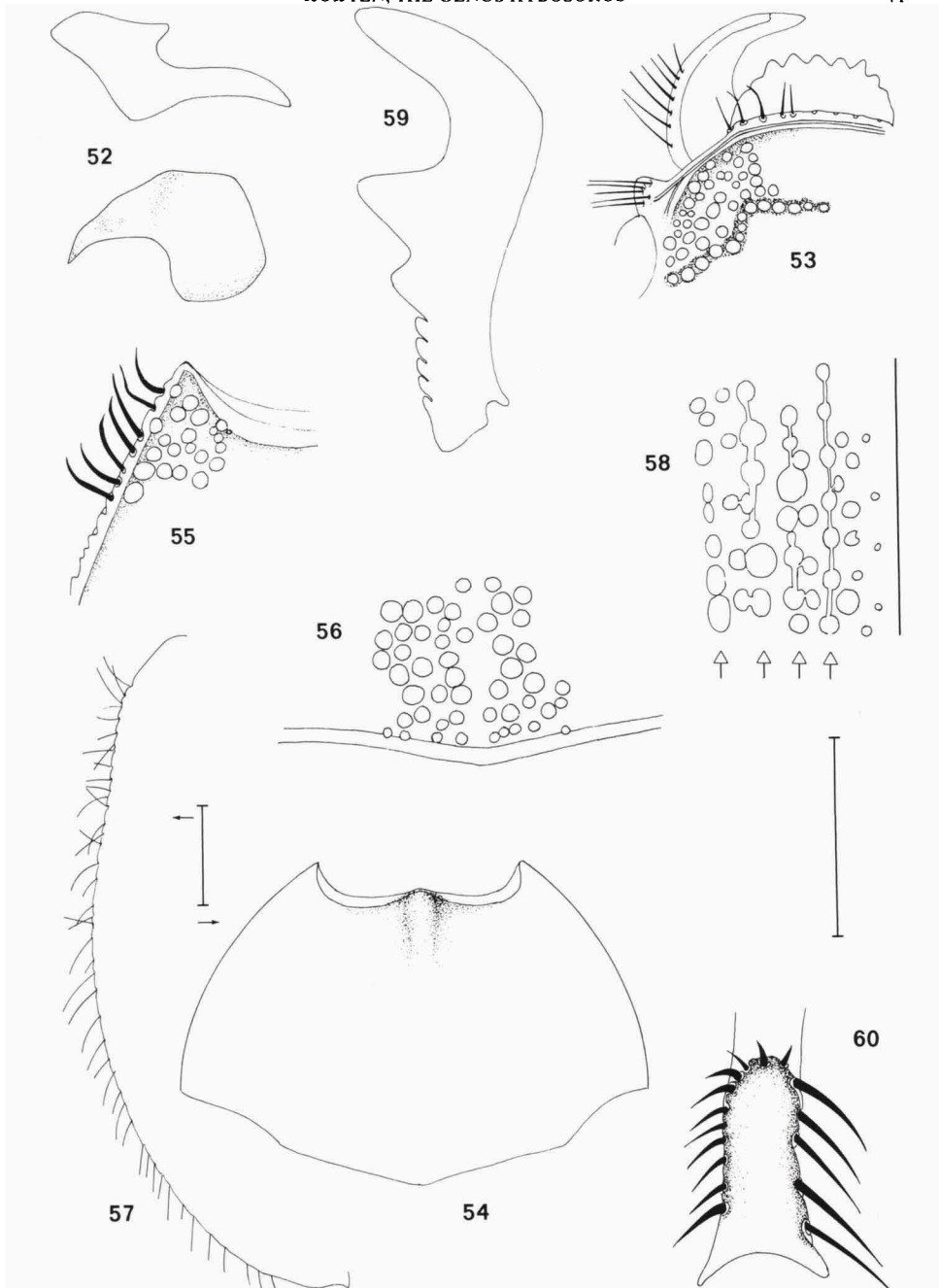
ridge. Lateral part of ridge and external margin of inferior pronotal surface with a fringe of upward curved setae, diminishing in size from anterior to posterior. Posterior margin bordered by an extremely fine, sharp, continuous ridge, and with a distinctly impressed groove along inner side of this ridge. Except for an ill-delimited, irregular, narrow, longitudinal median punctureless zone in posterior half, the surface is densely set with subcircular, deep, partly coalescent punctures of somewhat varying diameters, in general slightly smaller along anterior margin. Derm shining, but to the naked eye appearing rather mat due to the very dense punctation.

Scutellum: Triangular; surface shining with some coarse punctures at base, and finer ones towards apex.

Elytra: Margins weakly curved and slightly diverging in anterior half, strongly convex and converging in posterior half, ending in a weak sutural denticle. Margins bordered by a narrow sharp-topped ridge, gradually lower, narrower and closer to extreme margin in posterior half. Margins subserrulate, with a seta in most incisions; setae anteriorly about as long as the pronotal ones, gradually diminishing to less than half the original length in posterior half, and nearly reaching elytral apex. Nine striae between suture and humeral callus and six or seven incomplete striae between callus and elytral margin. The nine discal striae composed of round, rather deep and coarse punctures of varying size, locally connected by a shallowly impressed groove. Iuxta-sutural stria somewhat more impressed, nearly reaching apex, the other ones partly confluent and obsolete on apical declivity. Punctures of lateral striae hardly with connecting grooves, somewhat less dense and coarse. Iuxta-sutural interstria slightly convex and rather densely punctate, punctures smaller in posterior part; the other interstriae narrower, discally partly somewhat convex, laterally nearly flat. Discal interstriae somewhat roughened by deep small punctures partly confluent with stria punctures, and by many of the stria punctures, which extend far beyond the general course of the stria. Derm shining, but especially dorsally appearing rather dull to the naked eye due to the coarse and dense sculpture.

Pygidium: Subsemicircular; surface glossy, with dense, fine, vermiculate punctures, many transversely coalescent over short distances. Most punctures with a reclining seta; setae gradually longer from base to apex of pygidium. Apical margin with a fringe of setae considerably longer than those of elytral fringe.

Abdominal sternites: Surface shining, laterally with rather dense transverse, often coalescent, setigerous punctures. Along posterior margin of sternites a series of setigerous punctures, connected by a fine undulating groove. Setae variably long, but mostly about equal to the setae of pygidial apex.



Figs. 52–60. *Hybosoroides alluaudi*, Parez ♀. 52, Parameres of Himo ♂; 53, head; 54, pronotum; 55, antero-lateral angle of pronotum; 56, median part of posterior margin of pronotum; 57, lateral margin of left elytron; 58, suture, iuxta-sutural and three discal striae (open arrows) at about middle of left elytron; 59, left fore tibia; 60, posterior half of left hind tibia. Scale lines represent approximately 1 mm. Setosity at real relative length and density; punctuation at real relative diameter and density.

Fore tibia: External margin with three teeth, the apical and median ones large, the basal one much smaller. Margin between teeth entire; basally of the small tooth five to six short, obtuse accessory denticles.

Middle and hind legs: Femora smooth except for some scattered setigerous punctures on upper surface and a series of setigerous punctures along posterior margins of both dorsal and ventral surfaces. Tibiae with a dense apical crown of stout setae, weakly increasing in length towards articulation of tarsus. At about half the length of superior surface of tibiae a strong transverse carina. In hind tibia about 12 rather stout setae on this carina and its prolongation along external margin of tibia; the internal prolongation — much less developed and strongly serrate — bears 5 much longer and more slender setae. Apical spurs in middle tibia slender and slightly acuminate, longer than the stouter, round-topped ones of the hind tibia; the longer spurs in both pairs of legs reaching apex of second tarsal segment.

Variation: Length 8.5–10 mm. Ante-apical protrusion on mandible may be a rather sharp tooth. Teeth of labral serration sometimes very coarse, mostly 9 teeth present; the transverse carina on labral disc may be rather high. Tuft on eye-canthus with 5–8 setae. Ridge bordering clypeal margin may be subtrapezoid. On vertex a small punctureless area may be present. Anterior median protrusion on pronotum may be very weak. Posterior margin of pronotum mostly evenly rounded medially and the iuxta-median parts may be rectilinear. Anterior 1/3 of lateral margin of pronotum may be rectilinear or even very weakly concave. Median impunctate area on pronotal disc variably developed. In most specimens many elytral punctures bear a minute erect seta (50 ×). The fine punctures on scutellum may nearly reach apex. Fore tibia with 5–6 denticles. Hind tibia with 10–12 stout and 4–6 slender setae in apical half. Additionally the usual slight variation in density, coarseness, coalescence etc. of punctation, in development of marginal ridges and grooves and in relative lengths of setosity occurs. Parameres very similar to those of *H. illigeri*. No external sexual dimorphism could be observed.

Type-material. — Lectotype and two paralectotypes (Paris), here designated, all ♀, with labels “Afrique Orle Anglaise, Pori de Séringhédi (de Bura à Tavéta), Ch. Alluaud, i–iv 1904”, white, print; “Museum Paris, Coll. Pic”, blue, print; “Type”, red, print; “*Hybosoroides alluaudi* type, E. Benderitter det.”, white, print and hand combined; my lectotype labels.

Note. — The Pori de Séringhédi is situated in South Kenya, south of the Taita Hills; it has nothing to do with the Seringeti in North-West Tanzania.

Material examined. — Apart from the type-specimens I studied 2 ♂ and 3 ♀ from Himo, Tanzania, x.1902 (Berlin) (near Pori de Séringhédi); 6 ♀ from the Pareh Mountains and Magamba Mountains, Tanzania, 1600–2000



m, i.1905 (Berlin); 1 ♀ from Ikutha, Yatta Plateau, South-East Kenya (Berlin); 12 specimens from Leopard Rock, Meru National Park, Central Kenya, 9.xi.1979, at light (Leiden). From the last mentioned locality and date I also saw many *Hybosorus illigeri*.

KEY TO THE SPECIES OF *HYBOSORUS*, INCLUDING OLD WORLD SPECIES CLOSELY ALLIED WITH THE GENUS OR INCORRECTLY PLACED IN IT

(length = distance between anterior margin of clypeus and a line connecting innermost parts of eyes + length of pronotum + shortest distance from apex of scutellum to apex of elytra.)

1. Anterior margin of clypeus emarginate, antero-lateral angles subrectangular, somewhat protruding forward; external claw of fore tarsus in ♂ finely cleft at about middle and with a rounded basal dilatation; lateral parts of pronotum deplanate in ♂ ..... *Phaeochrous*
- Anterior margin of clypeus rectilinear or slightly convex, antero-lateral angles obtuse, often rounded, not protruding forward; external claw of fore tarsus in ♂ not finely cleft, but often with a more or less developed rounded basal dilatation; lateral parts of pronotum not deplanate ..... 2
2. Derm of pronotum mat by microgranulation; pronotal punctation difficult to see between the microgranules (50 ×), Madagascar. .... *Kuijtenous sparsepunctatus* (Pic)
- Derm of pronotum glossy; pronotal punctation developed in various degrees, but always easily visible ..... 3
3. Last segment of fore tarsus in ♂ dilated, considerably wider than high, its underside concave with a slight, median, longitudinal elevation; fore tibia with more than 10 accessory denticles apart from the large teeth; derm of elytra somewhat less glossy than pronotal derm, Madagascar and satellites ..... *Kuijtenous baliensis* (Brancsik), *K. laeviceps* (Fairmaire) (and *K. tenuepunctatus* (Fairmaire)?)
- Last segment in ♂ fore tarsus not wider than high, not concave ventrally; fore tibia with two to six accessory denticles basally of the large teeth, and exceptionally one or two denticles between the large teeth; derm of pronotum and elytra equally glossy ..... 4
4. Pronotum with pruinose shine; marginal fringe of elytra composed of a few very short setae (length 1/3 to 1/4 of width of iuxta-sutural interstria), and ending before middle of margin; Turkey, Syria ..... *Seleucosorus punctatissimus* (Reiche)
- Pronotum simply glossy, without pruinose shine; fringe denser and mostly

- composed of well developed setae, and ending in posterior half of elytral margin, often shortly before apex of elytron ..... 5
5. Punctuation of dorsal surface very coarse, spaces between punctures often smaller than diameter of punctures, or punctures locally coalescent; dorsal derm glossy, though to the naked eye it appears rather dull by the dense and coarse punctuation; anterior margin of pronotum with a gentle median swelling; East Africa ..... *Hybosoroides alluaudi* Benderitter
- Punctures much finer, more widely spaced, at most weakly coalescent locally in the elytral striae; no median swelling in anterior margin of pronotum ..... 6
6. Groove along posterior margin of pronotum medially interrupted or much less developed; the interruption or obsolescence often as long as the base of the scutellum; marginal fringe of elytra ending considerably before apex, mostly at ca 2/3 to 3/5 of margin; terminal setae of fringe often only approximately 1/10 of length of the humeral ones; 6–11 spiniform setae on external margin of apical half of hind tibiae; 4–7, mostly 4 or 5, long setae on internal margin of hind tibiae; length approximately 6–10 mm, shorter than 9 mm in most specimens; Africa, South Europe, warmer parts of Central Asia, western and central parts of South Asia, southern U.S.A., some Caribbean islands ..... *Hybosorus illigeri* Reiche
- Note. — Not all characters used here are always present in combination in a well developed degree: the combination of two or three, e.g. length, interruption in pronotal groove, and number of tibial setae, will be sufficient to recognize the species.
- Groove along pronotal posterior margin complete, or, rarely, a very short interruption/obsolescence may be found; marginal fringe of elytra often nearly reaching apex of elytra; locality, length, genital characters and tibial setosity may be of additional help ..... 7
7. Length approximately 8.5–10 mm; fringe extending over 5/6 to 6/7 of length of elytral margin, terminal setae of fringe ca 1/3 of the longest, humeral, ones; 10–12 spiniform setae, the 6–9 internal setae very long; parameres identical to those of *H. illigeri*; dry savanna belt from Senegal to Ethiopia ..... *Hybosorus laportei* Westwood
- Mostly longer than 10 mm; species from South-East Asia, or South and East Africa ..... 8
8. Parameres identical to those of *H. illigeri*; length approximately 8–12 mm (the two smallest specimens seen are 8.2 and 8.7 mm); 10–12 spiniform setae on external margin of hind tibia, and 6–10 (mostly 7 or 8) long setae along internal margin of apical half of hind tibia; Pakistan to Indonesia ..... *Hybosorus orientalis* Westwood
- Left paramere with an obtuse or sharp elevation before apex of lower lobe;

9. Median tooth of the serration along anterior margin of labrum equal to the adjacent ones; ante-apical elevation on left paramere obtuse; length approximately 10.5–12.5 mm; 7–9, exceptionally 10 or 12, spiniform external setae, and mostly 4, sometimes up to 6, long internal setae in apical half of hind tibia; setae of marginal fringe of elytra much shorter than width of iuxta-sutural interstria; South Africa ..... *Hybosorus crassus* Klug
- Median tooth of the serration along anterior margin of labrum smaller than the other ones; ante-apical elevation in left paramere sharp; length approximately 10–16 mm; 9–18, mostly 11–13, spiniform setae and 5–10, mostly 6–7, long setae in apical half of hind tibia; elytral fringe composed of variably long setae, but always some setae are equal to or somewhat longer than width of iuxta-sutural interstria; South and East Africa .....  
 ..... *Hybosorus ruficornis* Boheman

## CHECKLIST

Species of *Hybosorus* and synonyms

- (*arator* Illiger, synonym of the new name *H. illigeri* Reiche)  
 (*arator* subspecies *arator* Illiger and subspecies *palearcticus* Endrödi, synonyms of *illigeri* Reiche)  
 (*carolinus* LeConte, synonym of *illigeri* Reiche, nomen oblitum)  
*crassus* Klug  
*illigeri* Reiche, new name for *arator* Illiger, because of homonymy  
*laportei* Westwood, formerly synonym of *illigeri* Reiche, raised to species level in this study  
*nitidus* Lansberge, synonym of *illigeri* Reiche)  
 (var. *nossibianus* Fairmaire, synonym of *illigeri* Reiche)  
 (*oblongus* Dahlbom, synonymized with *illigeri* and *thoracicus* by Westwood (1845: 158–159),  
 with *illigeri* by Gemminger & Harold (1869: 1074), nomen oblitum)  
*orientalis* Westwood  
*pinguis* Westwood, synonym of *illigeri* Reiche, nomen oblitum)  
*roei* Westwood, synonym of *illigeri* Reiche, nomen oblitum)  
*ruficornis* Boheman  
*thoracicus* Westwood, synonym of *laportei* Westwood, formerly synonym of *illigeri* Reiche)

## Species removed to other Hybosorine genera

- (*punctatissimus* Reiche, transferred to new genus *Seleucosorus* in this study)  
 (*baliensis* Brancsik, removed to genus *Kuijtenous* Paulian, 1981)  
 (*laeviceps* Fairmaire, synonym of *baliensis*)  
 (*sparsepunctatus* Pic, removed to *Kuijtenous*)  
 (*tenuepunctatus* Fairmaire, removed to *Kuijtenous*)

## Species removed to other Scarabaeid subfamilies

- (*curtulus* Fairmaire is an *Apogonia*, Melolonthinae)  
 (*incultus* Péringuey, shortly after its description removed to Orphninae by its author)

(*nitidulus* Dufour most probably belongs to the Orphninae)  
 (*latipes* Germar, arranged under *Hybosorus* by Westwood (1845: 159), but according to Arrow (1912) belonging in the Acanthocerinae)

Notes. — The American taxa described as *Hybosorus*, *H. carolinus* excepted, long ago have been removed to other genera, which are beyond the scope of this revision. *Hybosoroides alluaudi* Benderitter is very closely related to *Hybosorus*, hence its inclusion in this revision.

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*Hybosoroides alluaudi* ♀. Pareh Mts; total length approximately 8.5 mm.