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**Autor:** Majer, K.  
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## A Revision of the Genus *Divales* Cast. (Coleoptera, Melyridae, Dasytinae)

by K. Majer

**Abstract:** The genus *Divales* is revised on the basis of morphological analysis. Species are redescribed in compliance with characters of phallus, especially of internal sac; in females according to chaetotaxy of ovipositor and shape of ultimate abdominal segments. *Divales uhligi* n. sp. is described as new. Following new synonyms are proposed: *D. rufitarsis* (Baudi), 1873 (= *D. amplipennis* Baudi, 1873), *D. haemorrhoidalis* (F.), 1798 (= *D. amplipennis* var. *melyroides* Pic, 1896; *D. kraatzi* Schilsky, 1894); *D. cinctus* (Géné), 1839 (= *D. communica* Costa, 1847; *D. tibialis* Mulsant & Rey 1861; *D. flavipennis* Baudi, 1873); *D. bipustulatus* (F.), 1781 (= *D. variegatus* Lucas, 1847).

All diagnostic characters of individual species as well as the schemes of the variability of colour pattern are pictured. Basic supra-, as well as subgeneric phylogenetical relations are outlined.

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## I. Introduction

Among Palaearctic dasytine genera of the family Melyridae the appearance of the genus *Divales* Cast. is unique due to its varicoloured pattern resembling that of the ladybird beetles. Extraordinarily complicated synonymics in interspecific relations originated as a result of describing new taxa based on chromatic characters.

The genus *Divales* evidently is closely related to the genus *Dasytes* (s. str.), which is the type-genus of the subfamily (formerly a family). Relations of the kinship between type-species of both genera are very close, thus with the analytical examination of the genus *Divales* also the cardinal characters of the subfamily Dasytinae are evaluated.

Literature review: The genus *Divales* was established by DE CASTELNAU (1836). Taxa, described successively, have been initially classified still with the genus *Dasytes* (GENÉ, 1839; BAUDI, 1873; LUCAS, 1847; etc.). The later authors already respect the status of the genus (MULSANT & REY, 1868a, 1968b; SCHILSKY, 1894a), their papers are, however, based exclusively on habitus characters, and with each newly issued paper a lot of infrasubspecific taxa increases, too. Nor the key of SCHILSKY (1894b) does not elucidate the complicated taxonomic situation within this genus. The subsequent keys (PORTA, 1929; PORTEVIN, 1931; FAGNIEZ, 1942; etc.) are more or less nothing more than compilations made up of Schilsky's paper. Valuable are some observations in the paper of PEYERIMHOFF (1949) and in KOCHER's (1956) comprehensive courments of Peyerimhoff's paper in his Catalogue.

Acknowledgements: I am obliged with my thanks to Dr M. Uhlig and Dr F. Hieke (Humboldt University Natural History Museum Berlin, GDR), who kindly placed the material from the collection Schilsky at my disposal. My not lesser thanks are due to Dr J. J. Menier (Natural History Museum Paris, France) for the loan of Peyerimhoff's type specimen, to Dr Passerin d'Entrèves (University Museum Torino, Italy) for generous loan of Baudi's type specimens; Dr M. Brancucci and Dr W. Wittmer (Natural History Museum Basel, Switzerland) and Dr J. Jelínek (National Museum Praha, Czechoslovakia) for loan of material deposited in these Institutions. Dr G. Liberti (Milano, Italy) kindly sent me the respective material from his private collection for an examination.

## II. Natural History

I don't know the genus *Divales* from free nature. Basing on paper of CROWSON (1964) I suppose that analogically likewise the genus *Dasytes*, also *Divales* in larval instars are carnivorous, in adult stage polinivorous insects. Adults live on various flowers, e. g. *Cakile maritima* (Brassicaceae) (DEVILLE, 1914), or Asteraceae (*Carduus*, *Centaurea*, *Onopordon*, *Xeranthemum*, etc.) (MULSANT & REY, 1868a, 1968b). *Centaurea calcitrapa* (ROSENHAUER, 1856).

Mimicry: The red colouring of most species is in the family Melyridae a conspicuous apotypic phenomenon, perhaps being mimesis of the family Coccinellidae. The origin of ecomorphae dependent upon intensity of solar radiation may be observed; with decreasing latitude the trend to a light (yellow-red) predominant colouring increases.

Criteria for Species and for Infra- and Supraspecific Groupings: I could not use biological and anatomical criteria for subjective reasons; I evaluate the interspecific relations by means of characters of genitalia (respectively terminalia sensu lato). The supraspecific taxa I did not establish for a strong «wobble» of characters and conspicuous apotypy of the genus on the whole. PEYERIMHOFF (1949) calls attention to an unmaintainable position of the subgenus *Camptolegnum* Schilsky. Nevertheless, the genus *Divales* forms distinct, phylletically objective groups of species.

## III. Material, methods and terminology

I have examined more than 3000 dry preserved specimens. Only a lot about 200 specimens is a part of my own reference collection; the remaining material was loaned (see the following section list of abbreviations).

Dissecting techniques: The dissecting techniques used within this revision I have already described in another paper dealing with revision of the Middle-European species of the genus *Aplocnemus* (MAJER, 1982). The method of mounting terminalia into gelatine – chloral hydrate hard mounting lacquer cement (original formula of WINKLER, 1974) on bluish X-ray foil microsheet (method used in a cited paper) I applied for examination of the material of *Divales*, too, using it also for mounting of totally disarticulated specimens; at least one specimen of each species was completely disarticulated and also a permanent dry



air-medium preparation of the wings (WINKLER, 1975a, 1975b) was done.

A difficult matter is an extraction of internal sac from phallus. In the genus *Divales* the internal sac is more heavily sclerotized than in the genera *Dasytes*, *Enicopus* etc., where it becomes protrusive as a result of boiling of phallus in KOH. In *Divales* often appears necessity to rip the phallus. I practise the extraction of the internal sac through the basal opening.

Measurements: For objectification of terms like «relatively broader» etc. I used the absolute rations of individual bodyparts (see the following section list of abbreviations). I measured the macroscopically most differing 10 males and 10 females of each species, if the number of specimens allowed this practice.

Types: I studied the primary type specimens of following 5 species: *D. amplipennis* (Baudi), *D. rufitarsis* (Baudi), *D. argyrostictus* Peyerimhoff, *D. kraatzi* Schilsky, *D. weisei* Schilsky and probable syntypes of *D. cinctus* (Gené). In the examined material were also some secondary types (homo-, and metatypes), and the «type» material of many infrasubspecific taxa.

I was not successful in obtaining type material of the species *D. densipunctatus* Pic and *D. amplipennis* var. *melyroides* Pic. Types of *D. flavipennis* (Baudi) are missing (letter communication of Passerind'Entrèves). I respect fully the International Code of Zoological Nomenclature; for the work with historical material I applied the work of HORN & KAHLE (1935–1937).

### List of abbreviations

#### Collections examined

- CZEM = National Museum, Entomological department, Praha, Czechoslovakia (Dr J. Jelínek).
- FMUP = Natural History Museum Paris, France (Dr J. J. Menier).
- GEMB = Humboldt University, Natural History Museum, Berlin, GDR (Dr M. Uhlig, Dr F. Hieke).
- GLIB = Gianfranco Liberti, Milano, Italy (private collection).
- ITMU = University Museum Torino, Italy (Dr M. Passerind'Entrèves).

KMAJ = Karel Majer, University of Agriculture, Brno, Czechoslovakia (private collection).

NHMB = Natural Museum History Basel, Switzerland (Dr M. Brancucci).

#### Measurements

AL	= total of lengths of all antennal segments
DE	= maximal diameter of eye
EL	= length of elytra (from humeral line to apex)
EW	= maximal width of elytra (mostly equalling to body breadth)
HW	= maximal distance between outer edges of eye
IOW	= minimal distance between inner edges of eye
Length	= distance from edge of clypeus to apex of elytra
PL	= maximal length of pronotum
PW	= maximal width of pronotum
Width	= maximal body width (mostly coincident with EW)

### IV. Morphological analysis

The following sections are based upon the study of the work of EKIS (1977), are without general description, and are a diagnostic style in an import of relation between the families Melyridae and Cleridae.

#### Head

Cranium (Figs 2–4) dorsoventrally flattened, antennal carina not touching ocular suture, interocular depression not developed. Epicranial acumination moderately vaulted. Submental region distally on sides emarginate, in the middle with projection (Fig. 3). Gular sutures fine and long, gular process lacking. Eyes bare, oval, flatwise vaulted, ocular emargination not developed. Antennifer inserted above epistomal suture, above eyes. All antennal segments (Fig. 8) proximally strangulated: scape ball-shaped, pedicel shortly oval, segments of flagellum transverse, 11<sup>th</sup> segment strangulated proximally as well as distally. Labrum (Fig. 5) elongated, proximally four-times emarginate, distally vaulted, shortly ciliate. Mandible (Figs 6–7) on sides smooth, anterior dens forked. Maxilla (Fig. 10) with short cardo. Basistipes big, quadratic. Palpifer triangular, mediostipes externally emarginate, pass-

ing into slender lacinia. Basigalea quadratic, distigalea cudgel-shaped. Four-segmented maxillary palpus with triangular basal segment, 2<sup>nd</sup> segment somewhat longer and broader than the 3<sup>rd</sup>, one, ultimate segment broadest in the middle. Mentum (Fig. 9) strongly transverse, palpiger connate, this complex is conical, distally with 4 setae. Ligula very finely and shortly ciliate. Three-segmented labial palpus with short and robust segments.

### **Thorax**

Prothorax (Figs 11–12) transverse, laterad rounded, distally more narrowing than proximally. Pronotum (Fig. 11) regularly punctuated and pubescent, distally as well as proximally emarginate on the periphery with fine rim. Prosternum (Fig. 12) with very short intercoxal process, cryptosternum roundedly denticulated. For mesoscutellum see figure 15. Mesosternum (Fig. 16) several times emarginate, transverse, mesepimeron slender. Metendosternite (Fig. 14) with slender furcal arm, lamina and stalk. Elytra (Figs 17–19) with short epipleurae, suture distinctly ridged in a posterior half (Fig. 17). For wings see figure 23, at the same place also a terminology of wing structures.

### **Legs**

Basitarsus longer than following tarsomere. 2. to 4. tarsomeres same, 5. tarsomere longer than preceding two tarsomeres, in the middle with onychium (Figs 20–22), claws dilated, in males assymetrical (Figs 27–28).

### **Abdomen**

Sternites without depressions, all segments free (Fig. 16). Pygidium (Figs 24, 26) basally as well as apically rounded, with distinct basal corners. Sternum II. to VI., apically nearly straight, sternum VII. feebly emarginate in both sexes (Fig. 16). Sternum VIII. in males (Fig. 29) apically emarginate, notch covered with a membranule. Sternum VIII. in females (Fig. 35) crescent, medio-basally with very long, tape-like spiculum, which is not proximally connate, but tightly membranously attached. Spicular fork in males (Fig. 25) trifid, without interspicular plate.

### **Reproductive organs**

Male (Figs 30–34): Phallus (Figs 32–34) is a bent tube, dilated at basis, apical opening dorsally takes nearly a half of the length of the

phallus. Internal sac (Fig. 33) apically with a flat fork, hardly protrusible. Spines are situated in its basal half, with tips directed to the base of phallus. Tegmen (Figs 30–31) in direction of basis conically narrowing, parameres connate in a tegmen, phallobasis undifferentiated (predominant type in the family Melyridae). Apex of tegmen differentiated into two rounded and ciliated lobes. Side face of tegmen ventrally vaulted, lobes dipped obliquely down (Fig. 31).

Female: Ovipositor (Figs 36–37) of a cleroid type, ventral and dorsal lamina not developed. Coxites on all the surface with sparse, for individual species peculiar chaetotaxy, coxital stylus apically sparsely ciliate with central seta, reaching the average length of the whole stylus. Proctigeral bacculi not approximated, nearly parallel. Apical opening of ovipositor on the periphery shortly and densely ciliate.

## V. Systematics

### Genus *Divales* Castelnau

Type-species: *Hispa bipustulata* Fabricius, 1781.

*Divales* CASTELNAU, 1836: 31; MULSANT & REY, 1886a: 291, 1868b: 55; SEIDLITZ, 1874: 345, 1889a: 487, 1889b: 520; SCHILSKY, 1894a: 229, 1894b: A; ACLOQUE, 1896: 311; JACOBSON, 1911: 700; SCHAUFUSS, 1916: 388; FAIRMAIRE & PLANET, 1913: 294; HOULBERT, 1922: 254; PIC, 1917: 2; 1924a: 54, 1924b: 542; PORTA, 1929: 113; PORTEVIN, 1931: 445; KOCHER, 1956: 57(nota 1); FAGNIEZ, 1946: 19; PEYERIMHOFF, 1949: 270; LOHSE, 1979: 76.

*Dasytes* partim: DUVAL, 1861: 181, 192.

*Divales* (*Camptolegnum*) SCHILSKY, 1894b: 9a; SCHILSKY, 1897: A; PEYERIMHOFF, 1949: 270 – **n. syn.**

Catalogues: JACOBSON, 1911: 704; DEVILLE, 1921: 213–214; ESCALERA, 1924: 243; WINKLER, 1925: 549–550; PIC, 1937: 56–61; KOCHER, 1956: 57–59.

Combination of varicoloured pattern, sexual dimorphism in the shape of the claws, inflation of elytra on a level of epipleurae, spinosity of apex (sometimes also on innerside), tibiae, uniform structure of sternites, and generally robust bodyshape resembling the genus *Aplocnemus* habitually determines most of the representatives of the genus *Divales*.

Shape: Parallel, robust, strongly vaulted, extremities short and stout (see Figs 1, 53).

Colour: Autapotypic colour of the majority of species (Figs 38, 39, 48, 65, 66, 72, 78) is composed of tints and combinations of yellow, red, brown and black. Exceptionally unicoloured (black) specimens occur.

**Integumental setae:** Body surface covered with double vestiture: fine, close fitting, light (in some species e. g. on elytra little distinct), and large, more or less standing apart black, pubescence (Figs 1, 17, 18, 53, 67, 74, 86, 87).

**Head:** Between eyes feeble impressions may occur, antennal segments transverse, only exceptionally quadratic, 11<sup>th</sup> segment oval in outline, at least on innerside emarginate. Mandible distally forked (Fig. 6), dentes cut off, in *D. mauritanicus* (Lucas) (Fig. 79) and *D. rufitarsis* (Baudi) the lower dens continually forked, so that the mandible apically trifid.

**Thorax:** Pronotum strongly vaulted (see Figs 1, 53) (always much more than *Dasytes* s. l.), on the sides of its surface smooth (Figs 1, 11) or with furrows (Figs 74, 87) or ribs (Figs 41, 51, 53) (phenomenon usual in related genera). Mesoscutellum (Fig. 15) always rounded, sometimes more distinctly tetra-, or pentagonal. Metendosternite with tendons (Fig. 40) or without them (Figs 14, 80), proportions of metendosternite in correlation with body build. In the bipustulatus-group the tendons lacking only in *D. bipustulatus* (F.) (Fig. 14), for a type of metendosternite of all representatives of *haemorrhoidalis*-group see figure 80.

**Elytron:** On the level of epipleurae elytra on the edges at least slightly flattened (from humerus to the very apex), (Figs 1, 18, 53, 67), in *D. mauritanicus* and *D. rufitarsis* a groove developed (Figs 72, 74, 78, 86, 87).

**Abdomen:** Emargination of the sterna VII. and VIII. (Figs 16, 29, 89), in contradistinction of *Dasytes* s. l., where these bodyparts in males appreciable modified.

**Wings** (Figs 23, 81): As a species character faintly, but perceptibly peculiar, chiefly in shape of radial cell. In *D. mauritanicus* (Lucas) (Fig. 81) the vein Cu<sub>2</sub> bifurcate.

**Legs:** Tibiae and tarsi nearly approximately of the same length (Figs 20–22, 73, 82); in *D. haemorrhoidalis* (F.) the posterior tibiae with stout flat thorn-like hairs, in other species of this group distinctly spinulose (Figs 73, 82).

**Male genitalia:** Phallus (Figs 32, 34, 42, 50, 54, 62, 63, 68, 92) much more robust than in *Dasytes* s. l. Internal sac (Figs 33, 43, 49, 55, 64, 69, 75, 93) with two shape-types of spines: Short spines, word for word thorn-shaped, with rounded base, occur in *D. cinctus* (Gené) (Fig. 49) and *D. uhligi* n. sp. (Fig. 55). Spines more of a shape of an arrow with bifid base are developed in various modifications in all other spe-

cies (Figs 33, 43, 64, 69, 75, 93), in *D. uhligi* n. sp. (Fig. 55) abreast with those mentioned first. It is impossible to diagnose the shape of spines generically in relation to *Dasytes* s. l. till now. Tegmen (Figs 30, 31, 91), spicular fork (Figs 25, 84) and other segments as in *Dasytes* s. l.

Female genitalia (Figs 36, 37, 44, 47, 56, 59, 71, 77, 88): For the sake of unfamiliarity with characteristics within the framework of the subfamily Dasytinae I avoid the description.

Shape variability: Shape of pronotum and individual antennal segments is constant in many species.

Structural variability: Punctuation, chiefly that of pronotum in many cases as specifically diagnostic quite inapplicable.

Chromatic variability: Only *D. uhligi* n. sp. (Fig. 53), males of *D. weisei* and *D. rufitarsis* are unicoloured black. (If the chromatic stability in these species on the base of scanty material can be concluded).

I give a compass and arithmetical mean of all measured parameters:

Length/AL = 3.46–5.50 (4.48); EL/EW = 1.44–2.00 (1.72); EL/PL = 2.20–3.23 (2.72); EW/PW = 1.07–1.44 (1.26); PW/PL = 0.90–1.48 (1.19); PW/HW = 1.34–1.90 (1.62); IOW/DE = 1.62–3.20 (2.41); Length = 2.7–7.7 mm (5.2 mm); Width = 1.14–3.2 mm (2.17 mm).

### Key to species

Derivatio nominis: δῦαλος, Greek, δι = twice, ὕαλος = transparent; bearing upon a peculiar colouring of most the species (MULSANT & REY, 1868a, 1868b).

Distribution: Circum-Mediterranean (Fig. 101).

1. Anterior and middle tibiae shortly spinulose and double-haired (Figs 73, 82) ..... 5
- Anterior and middle tibiae only double-haired (Figs 20–22, 53) ..... 2
2. Surface of pronotum on sides smooth (Figs 1, 11) (only exceptionally in teratological specimens with reduced, curved furrow). ♂. Internal sac with 3–6 short, arrow-shaped spines (Fig. 33). 1. **D. bipustulatus** (F.)
- Surface of pronotum on sides with narrow keels (Figs 41, 51, 53) ..... 3
3. Pubescence black, as well as light, sparse, the light one obliquely standing apart, colouring (always ?) black, length

- over 4.2 mm (Fig. 53). ♂. Internal sac with double type of spines (Fig. 55). ♂. Pygidium (Fig. 58). 4. **D. uhligi** n. sp.
- Black pubescence sparse, the light one more dense, close-fitting, often concentrated locally, colouring variable (Figs 39, 48), length over / to 4.2 mm. ♂. Internal sac with one type of spines (Figs 43, 49). ♀. Pygidium (Figs 45, 52) . . . . . 4
  - 4. Length to 4.2 mm, white pubescence sometimes feebly concentrated in the proper place of macules. Variability (Fig. 48). ♂. Internal sac with double size of spines; totally 20–30 (Fig. 49). 3. **D. cinctus** (Gené) <sup>1</sup>
  - Length over 4.2 mm, white pubescence conspicuously concentrated on apical margins of red macules or in proper place, if they are not developed (Fig. 39). ♂. Internal sac with 2–4 short, arrow-shaped spines (Fig. 43).
  - 2. **D. quadrimaculatus** (Oliv.)
  - 5. Surface of pronotum on sides without furrows. (exceptionally in teratological specimens with reduced furrow). ♀. Setae of coxites conspicuously reaching beyond coxital stylus (Fig. 59). 5. **D. haemorrhoidalis** (F.)
  - Surface of pronotum on sides with curved furrow. (Figs 74, 87). Setae of coxites do not reach to apex of coxital stylus (Figs 71, 77, 88) . . . . . 6
  - 6. ♂. Elytra on sides with fine, parallel rib (Figs 67, 97), colouring black, elytra inflated in posterior third. ♀. Parallel rib on elytral margin little distinct . . . . . 7
  - ♂. Elytra on sides groove-like, nearly parallel (Figs 74, 78, 86, 87). ♀. Groove on the edge of elytron very flat, distinct, however, body more parallel . . . . . 8
  - 7. Elytra in anterior third with transverse strip composed of white setae; anterior half of body with admixed white setae. Elytra in posterior half slightly inflated, side-ribs of elytra very fine. Furrows on pronotum not reaching pronotal apex (Fig. 97). Internal sac with 3 spines (Fig. 98). ♀. Unknown.
  - 6. **D. argyrostictus** Peyerim.
  - Elytra in anterior third without transverse strip, body pubescence composed from black setae only. Elytra in posterior half strongly inflated, side-ribs of elytra conspicuous. Fur-

<sup>1</sup> The species *D. densepunctatus* Pic, unknown to me, belongs here. It probably will be synonymized with *D. cinctus*.



rows on pronotum reaching pronotal apex (Fig. 67). Internal sac with 8–11 spines. ♀. Outline of body nearly guttate, beneath humerus usually with a characteristic red macule (Fig. 66).

7. **D. weisei** Schilsky

8. Black pubescence of elytra in a lateral view standing apart, light pubescence indistinct (Fig. 74). ♂. Groove on the edge of elytron in a lateral view not parallel (Fig. 74), internal sac (always ?) with 5 spines (Fig. 75), colouring (always ?) black. ♀. Sternum VIII entirely black (Fig. 76).

8. **D. rufitarsis** (Baudi)

- Black pubescence of elytra in a lateral view close fitting, light pubescence dense (Fig. 87). ♂. Groove on the edge of elytron in a lateral view  $\pm$  parallel (Fig. 87), internal sac with 7–10 spines (Fig. 93), colouring variable (Fig. 78). ♀ Sternum VIII in the middle light (Fig. 90).

9. **D. mauritanicus** (Lucas)

### The bipustulatus-group

Is defined by tibiae on outside non-spinulose, *D. bipustulatus* is of an isolated position for the sake of the sides of its pronotum without keels. *D. quadrimaculatus* is convergent with *D. bipustulatus* by shape of spines in internal sac and to *D. cinctus* by concentrated light pubescence. *D. uhligi* is convergent to *haemorrhoidalis*-group by presence of elongated arrow-shaped spines in internal sac.

#### 1. *Divales bipustulatus* (Fabricius)

Figs 1–38.

*Hispa bipustulata* FABRICIUS, 1781: 82 (type-species); 1801: 59; PANZER, 1797: 17; 1805: 93; GMELIN, 1790: 1733.

*Melyris bimaculata* ROSSI, 1790: 38, t. 7., f. 14.

*Dasytes bipustulatus*, FABRICIUS, 1787: 47; 1792: 71; CASTELNAU, 1840: 281; KÜSTER, 1850: 16; DUVAL, 1861: 181, t. 44., f. 220; KIESENWETTER, 1863: 631; BAUDI, 1873: 294; REDTENBACHER, 1874: 30; SEIDLITZ, 1889a: 488, 1889b: 520; STIERLIN, 1889: 101; FAUCONNET, 1892: 290; STIERLIN, 1893: 387; PIC, 1894: 111.

*Divales bipustulatus*, Mulsant & REY, 1868a: 294, t. 2., f. 6–12, 1868b: 58, t. 2., f. 6–12; SCHILSKY, 1894a: 228; ACLOQUE, 1896: 311, f. 81D, B; SCHILSKY, 1897: C; JACOBSON, 1912: t. 41., f. 2; KUHNT, 1913: 460; PORTA, 1929: 116; PORTEVIN, 1931: 447, f. 483; FAGNIEZ, 1946: 22; LOHSE, 1979: 76.

ab. *ater* PORTA, 1931: 447; PORTEVIN, 1931: 447.

var. *Baudii* PIC, 1937: 57.

var. *Portai* PIC, 1937: 57.

var. *quadrimaculatus* SCHILSKY, 1897: C; PORTA, 1929: 116.

var. *quadrisignatus* ESCALERA, 1914: 243.

*Dasytes variegatus* LUCAS, 1847: 196, 514, t. 19., f. 4; KIESENWETTER, 1863: 632 (nota 1) – **n. syn.**



*Dasytes erythromelas* Küster, 1852: 80.

*Dasytes quadrimaculatus* BAUDI, 1873: 294; SCHILSKY, 1894a: 229; FAUCONNET, 1892: 290.

*Dasytes variegatus* var. *nigromaculatus* LUCAS, 1847: 197.

*Divales variegatus*, SCHILSKY, 1894b: 10, 1897: C; PORTA, 1929: 116; PEYERIMHOFF, 1949: 269, f. v (penis).

var. *angustejunctus* PIC, 1937: 5.

var. *aturesensis* PIC, 1937: 5.

var. *atrocinctus* PIC, 1937: 5.

var. *basinotatus* PIC, 1937: 6.

var. *bilineatus* PIC, 1937: 5.

var. *bleusei* PIC, 1937: 5.

var. *cruentus* PIC, 1893: 46.

var. *erythromelas*, SCHILSKY, 1894a: 226, 1894b: 10; PORTA, 1929: 116.

var. *fallax* SCHILSKY, 1894b: 10, 1897: C; PORTA, 1929: 116.

var. *mediodisjunctus* PIC, 1937: 5.

var. *mediomaculatus* PIC, 1937: 5.

var. *nigromaculatus* SCHILSKY, 1894b: 10, 1897: C; PORTA, 1929: 116.

var. *quadrimaculatus* PIC, 1937: 5.

var. *rufulus* SCHILSKY, 1894a: 226, 1894b: 10, 1897: C; PORTA, 1929: 116.

var. *subobliteratus* PIC, 1937: 5.

var. *sulcicollis* SCHILSKY, 1897: C; PORTA, 1929: 116.

Large, parallel species, easily recognizable accordingly surface of pronotum being on sides smooth. Sexual dimorphism little developed. ♂. Phallus in a lateral view strongly crooked, apically rounded with short tip, internal sac with 3–6 small spines (Figs 32–34). ♀. For ovipositor see figures 36–37.

♂. Shape parallel, transversely strongly vaulted (Figs 1, 38). Colour (Fig. 38) extraordinarily variable, chromatic variability involves also ventral bodyside and extremities. Head, palpi, scapus, apices of antennae, scutellum, metasternum, femora and claws (always ?) black.

Head with feeble impressions or without them, penultimate segments of antennae strongly transverse, 11<sup>th</sup> segment shorter than 9. and 10. together (Figs 2–4, 8).

Pronotum (Figs 11–12) in outline oval to rounded, regularly vaulted. Basis broader than apex, in the middle elongated in a posterior direction, apex shallowly emarginate. Surface of pronotum without furrows, lustrous, regularly and coarsely punctuated, intervals smooth, on the average little broader than pits. Pubescence black, standing apart, on the sides sometimes also light and close fitting pubescence may be seen.

Mesoscutellum (Fig. 15) semicircular to quadratic, faintly transverse, finely wrinkled, with light pubescence.

Elytron (Figs 17–19), in post-humeral part, often depressed, sides of elytra on the level of humeri parallel, on the level of epipleurae gra-

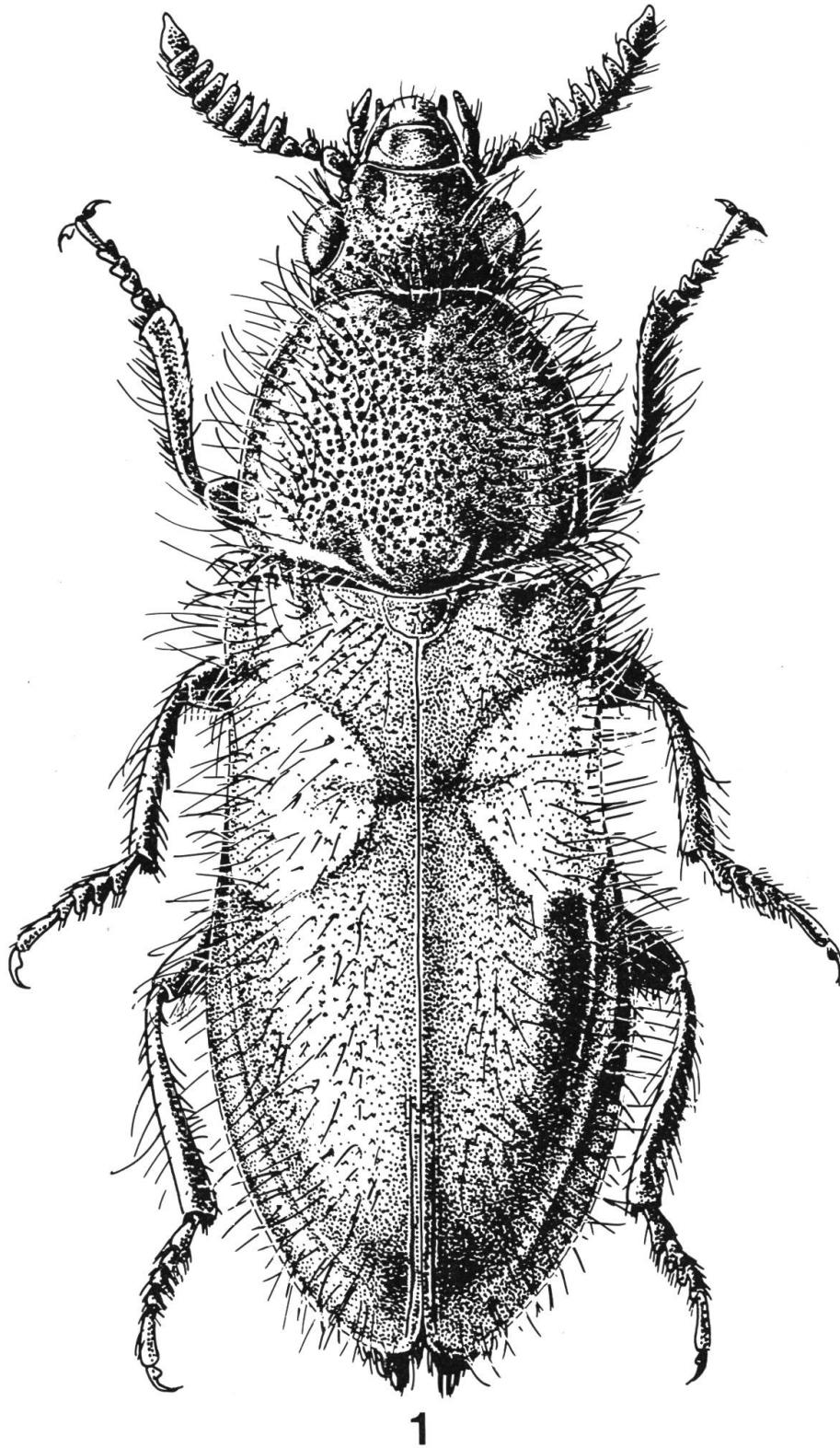
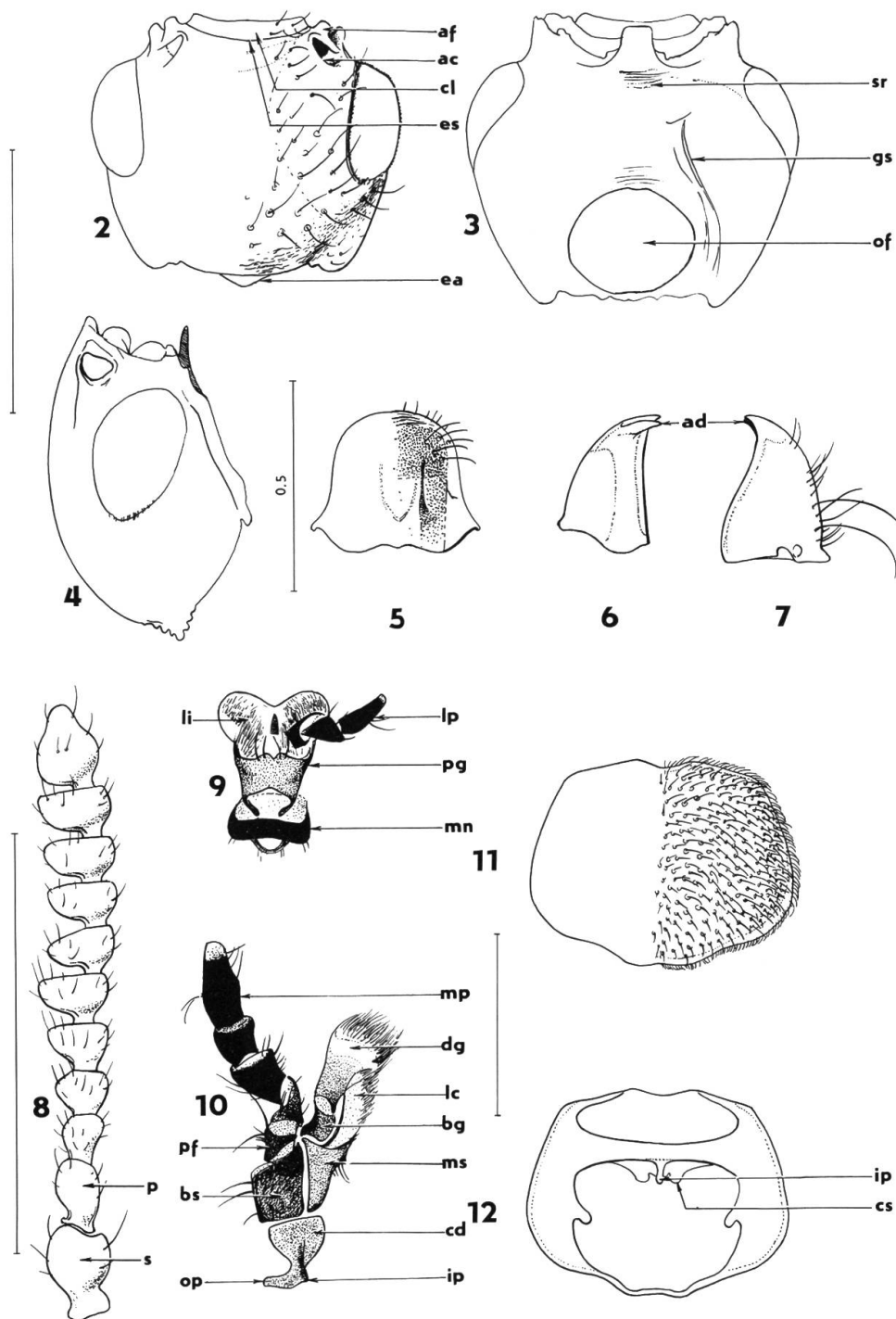


Fig. 1: *Divales bipustulatus* (F.), general view. Length 7 mm.



Figs 2–12: *Divales bipustulatus* (F.): 2, cranium, dorsal view (af = antennifer, ac = antennal carina, cl = clypeus, es = epistomal suture, ea = epicranial accumulation). 3, cranium, ventral view, (sr = submental region, gs = gular sutures, of = occipital foramen). 4, cranium, lateral view; 5, labrum. 6, mandible, dorsal view. 7, mandible, ventral view (ad = anterior dens). 8, antenna (p = pedicel, s = scapus). 9, labium (li = ligula, lp = labial palpus, pg = palpiger, mn = mentum). 10, maxilla (mp = maxillary palpus, dg = distigalea,

dually feebly inflated to the apex. Surface of elytra very lustrous, punctuation fine and shallow, pits mostly not confluent in transverse wrinkles. Intervals among pits entirely smooth or with fine microsculpture, broader than pits. Pubescence black, light vestiture little conspicuous, but more distinct than that of pronotum.

Legs (Figs 20–22) long, tibiae and tarsi of the same length. Abdomen: Pygidium (Fig. 26) in a shape of a rounded semicircle, sternum VII (Fig. 16) distinctly broadly emarginate, notch of sternum VIII (Fig. 29) variable-shallow to deeply triangular.

Genitalia: Phallus (Figs 32, 34) in a lateral view nearly angle-like crooked, apex rounded, with short tip. Internal sac (Fig. 33) with 3–6, usually, however, with 4–5 minute, arrow-shaped spines.

Measurements: Length/AL = 4.26–4.80; EL/EW = 1.74–1.92; EL/PL = 2.16–2.50; EW/PW = 1.13–1.19; PW/PL = 1.05–1.16; PW/HW = 1.52–1.80; IOW/DE = 1.56–2.04; Length = 4.6–7.2 mm; Width = 1.5–2.4 mm.

♀. Shape inflated in posterior direction, vaulted more flatwise. Colour like in the male. Head more transverse, 11. segment of antennae at apex bilaterally emarginate. Pronotum more transverse, vaulted more flatwise, notch of basis as well as apex little distinct. Elytron, in posterior third, distinctly inflated, on the level of humeri and epipleurae vaulted more flatwise, light pubescence more conspicuous, sometimes arranged into longitudinal rows<sup>2</sup>. Legs shorter than in male. Abdomen: Pygidium (Fig. 24) apically rounded to truncated, sternum VII straight, sternum VIII crescent (Fig. 35). Genitalia: For ovipositor see figures 36–37.

Measurements: Length/AL = 4.64–5.13; EL/EW = 1.50–1.76; EL/PL = 2.93–3.23; EW/PW 1.20–1.36; PW/PL = 1.32–1.48; PW/HW = 1.65–1.73; IOW/DE = 1.72–2.10; Length = 4.2–5.2 mm; Width = 2.0–2.6 mm.

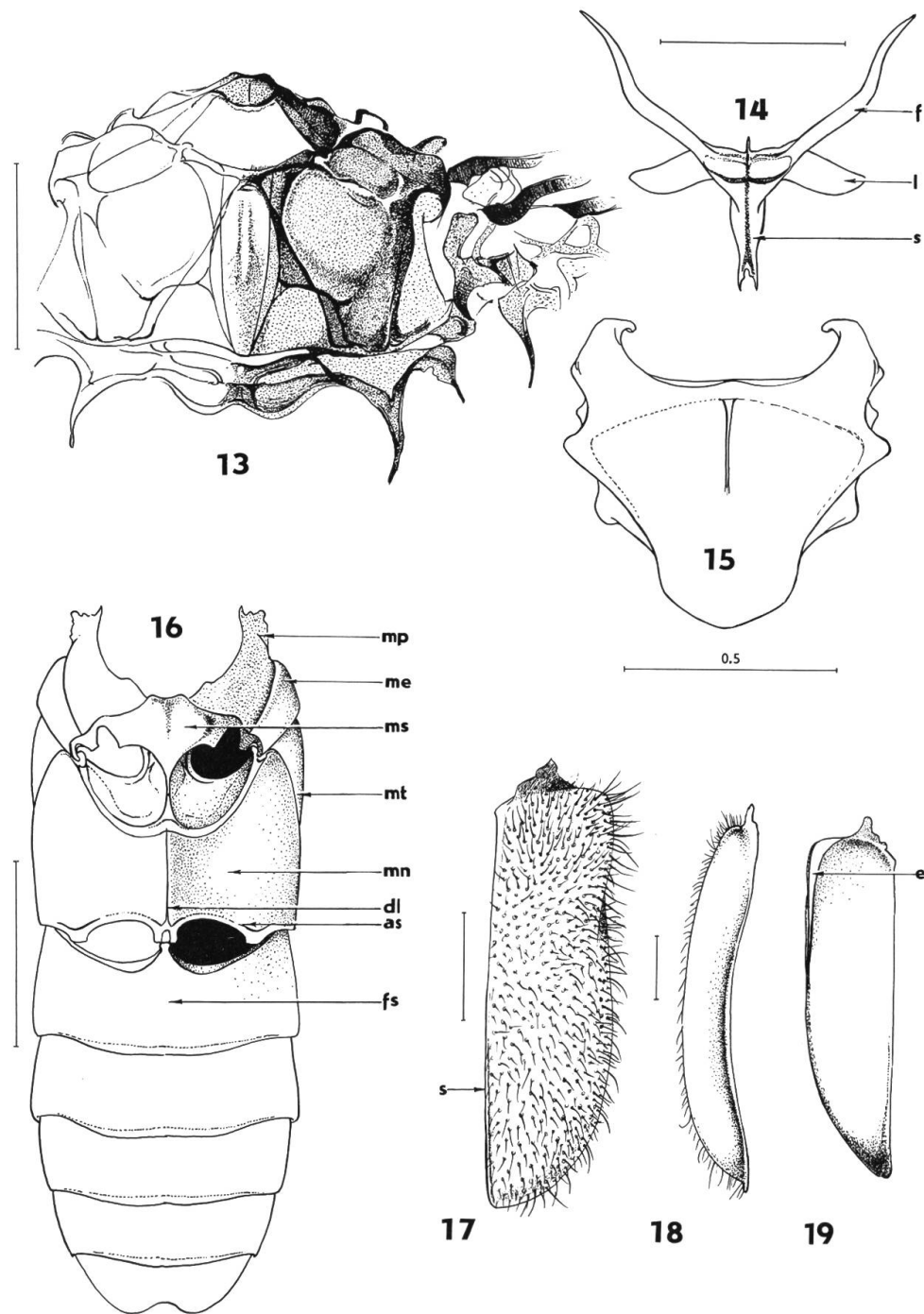
Structural variability: Proportions and punctuation of pronotum inconstant likely light pubescence which may be not perceptible at all.

Chromatic variability: See figure 38.

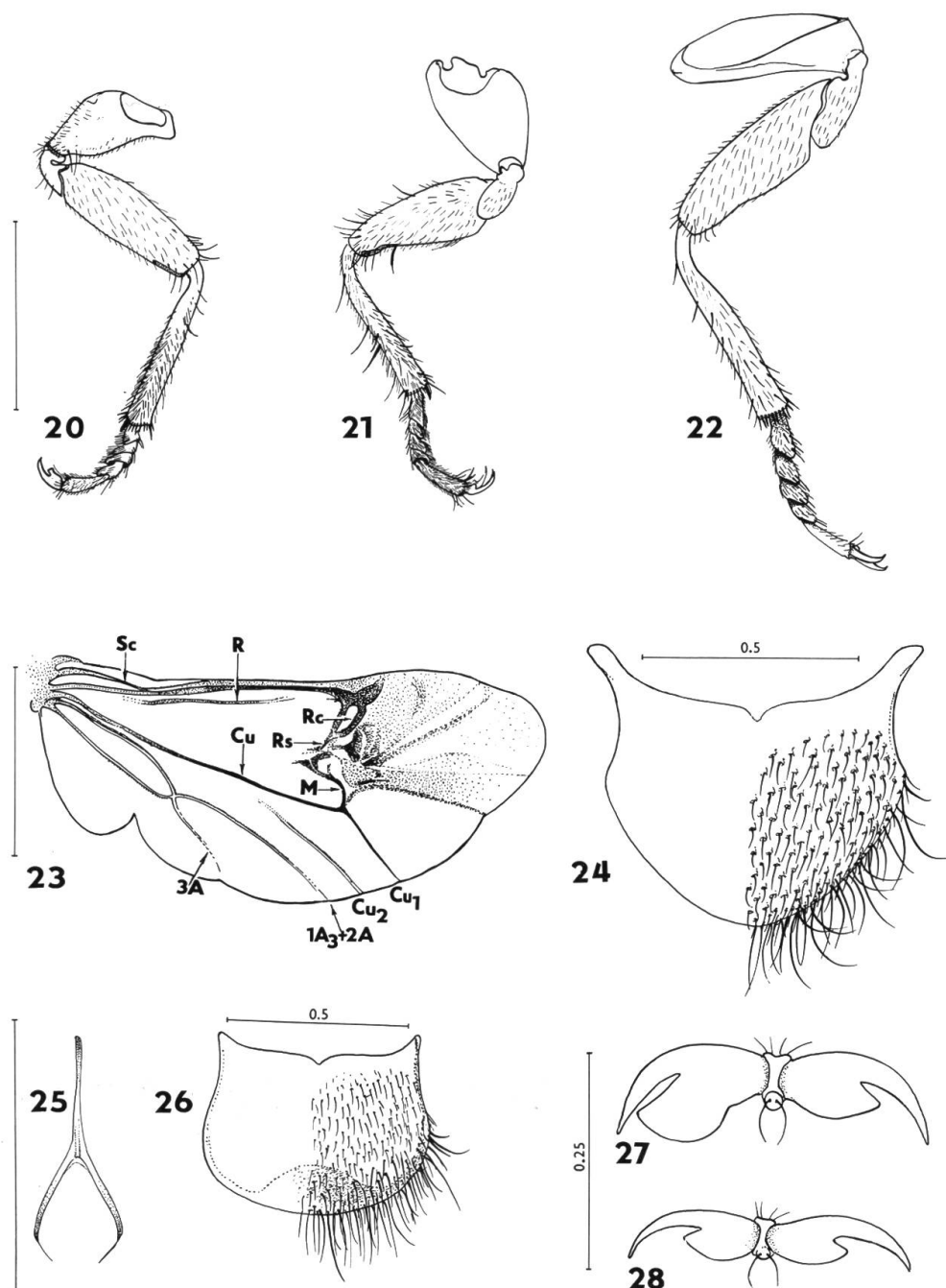
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<sup>2</sup> This phenomenon is also in males of *D. mauritanicus* Luc

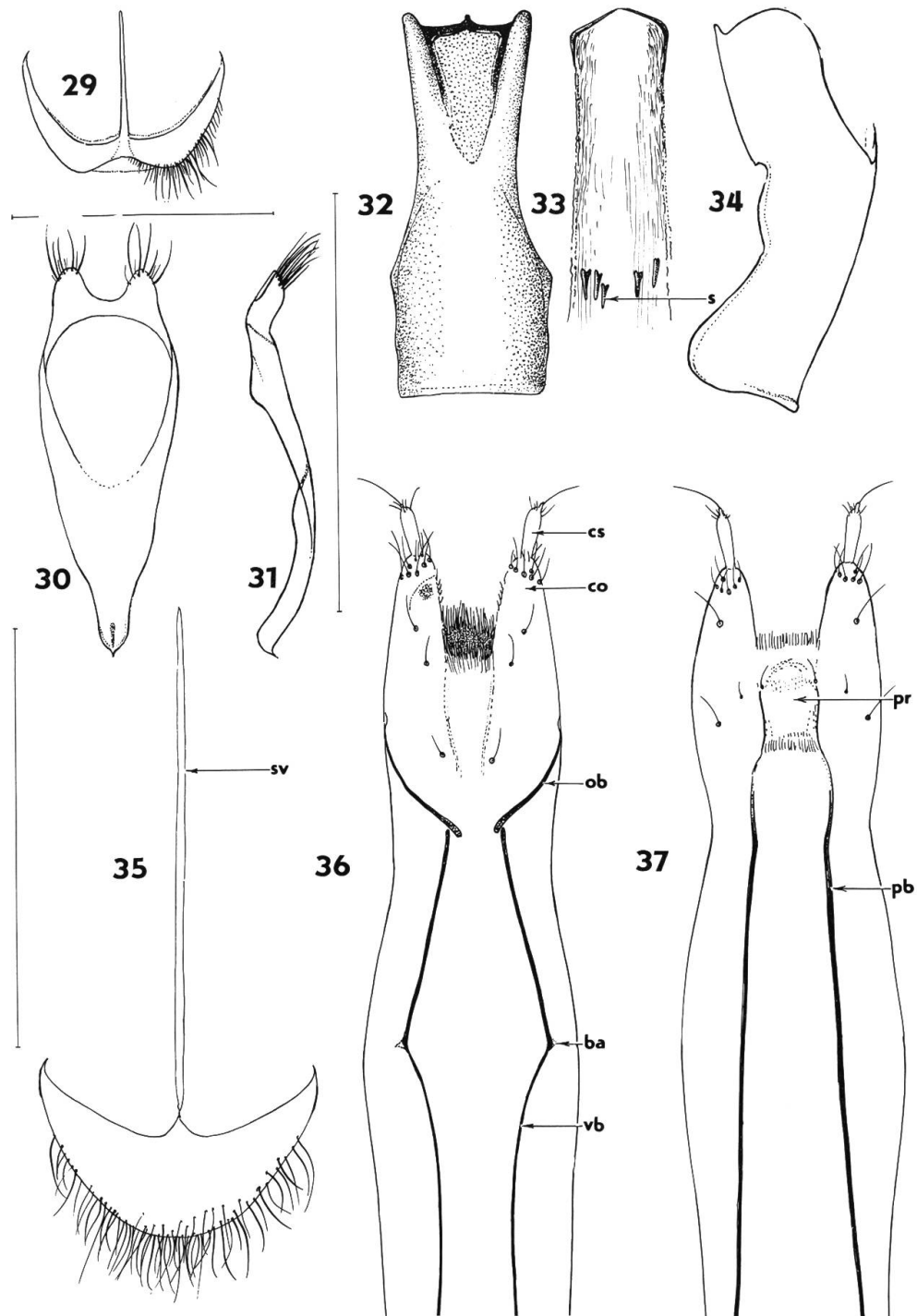
lc = lacinia, bg = basigalea, pf = palpifer, ms = mediostipes, bs = basigalea, cd = cardo, op = outer cardal process, ip = inner cardal process). 11, pronotum. 12, prosternum (ip = intercoxal process, cs = cryptosternum). (Scale = 1 mm).



Figs 13–19: *Divales bipustulatus* (F.): 13, metanotum. 14, metendosternite (f = furcal arm, l = lamina, s = stalk). 15, mesoscutellum. 16, mesothorax, metathorax and abdomen (mp = mesepisternum, me = mesepimeron, ms = mesosternum, mt = metepisternum, mn = metanotum, dl = discrimininal line, as = antecoxal suture, fs = first visible sternum). 17, elytron, dorsal view. 18, elytron, lateral view. 19, elytron, ventral view (e = epipleura). (Scale = 1 mm).



Figs 20–28: *Divales bipustulatus* (F.): 20, front leg. 21, middle leg. 22, hind leg. 23, wing (rc = radial cell). 24, female pygidium. 25, spicular fork. 26, male pygidium. 27, male claws. 28, female claws. (Scale = 1 mm).



Figs 29–37: *Divales bipustulatus* (F.): 29, male abdominal sternum VIII. 30, tegmen, ventral view. 31, tegmen, lateral view. 32, phallus, dorsal view. 33, internal sac. 34, phallus, lateral view. 35, female abdominal sternum VIII (sv = spiculum ventrale). 36, ovipositor, ventral view (cs = coxital stylus, co = coxite; ob = oblique bacculus, ba = baccular accumulation, vb = ventral bacculus). 37, ovipositor, dorsal view (pr = proctiger, pb = proctigeral bacculus). (Scale = 1 mm).

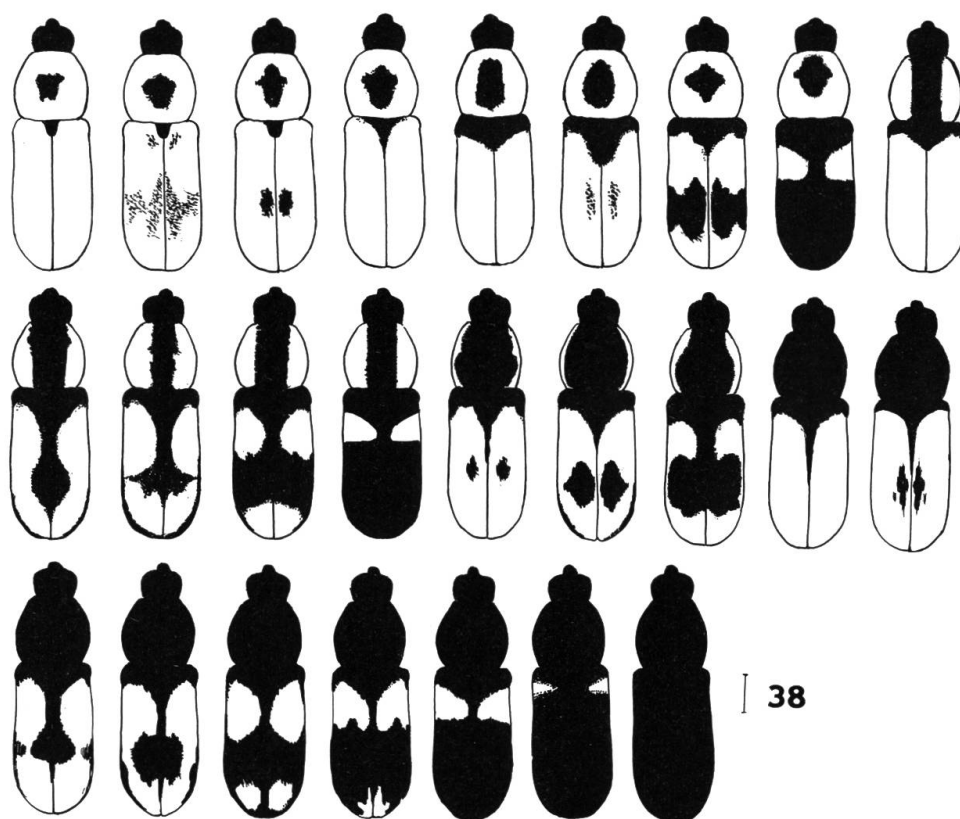


Fig. 38: *Divalès bipustulatus* (F.), colour pattern. (Scale = 1 mm).

Material examined: about 600 specimens, dissected 20 ♂ and 10 ♀. Algeria: Biskra (Pesruchers) GEMB; Env. d. Biskra (Vauloger) SWIM; Grande Cabilia, A. Ati (Busulini) GLIB; Laverdure (Heyrovský) CZEM; Medjez-Amar (Pesruchers), GEMB; Mt. Aurès, Aïn Zaatout (Horák et Hoffer), KMAJ; Tabessa (Obenberger), CZEM; Ten. el Haad (Korb) GEMB. Tunis: Aïn Draham (Jureček), CZEM, KMAJ.

Morocco: Marakesh (Quedenfeldt), GEMB. Spain: «Andalusia» (Staudinger), GEMB. France: Agay, Var (Obenberger, Všetečka), CZEM, KMAJ; Agay, Estérel (Jedlička), SWIM; Angles, KMAJ; Drôme (Reitter), SWIM; Frèjus (Sláma), KMAJ; Les Lecques (Pádr), KMAJ; Sant Raphaël (Sláma), KMAJ.

Italy: Puglie, Palagiano (Fiori), GEMB; Puglie, Bisceglia (Fiori), GEMB; Viareggio (Grenier), GEMB; Valombrosa (Purkyně) CZEM; Genova (Bucciarelli), GLIB; Ronca, GLIB; Castellano (Bittner), GEMB; Bazzano (Hicker, Sekera), SWIM; Agrigento (Marin), GLIB; La Sila, La Cecita (Busulini, Liberti), GLIB; Cuneo (Balbi), SWIM; Lombardia, V. D.'Este (Frontini), GLIB; I. Genua (Natterer), SWIM; Campo Basso, GLIB; Milano, Trenno (Leonardi), GLIB; Piemonte, Orta, CZEM; Monza (Fabiani), GLIB; Tarent (Bittner), GEMB; Rom, Forum, CZEM; Roma, Aventino (Migliaccio), GLIB; Castelvetro Mariani (Fiori), GEMB; Toscana, CZEM; Verona, GEMB; Rom (Kläger, Grenier), GEMB. Sicily: Catania (Kouřil), CZEM, KMAJ; Girgenti (Sydow) GEMB; Palermo, Bosca Ficuzza (Aliguo), GLIB; Taormina, SWIM. Sardinia: «Sardinia», CZEM. Greece: Athos (Schatzmayr), SWIM; Kaesariani, Attica (Mařan et Štěpánek), CZEM; Olymp, CZEM.

Bulgaria: Bulgaria mer. occ., Stara Kresna, VII. 1981 (P. Pacholátka), KMAJ.

USSR: «Rossia mer.» (Staudinger), CZEM.



Remarks: Already SCHILSKY (1894) advised upon difficult distinction of *D. variegatus* from *D. bipustulatus*; his only character is a vaulting of pronotum. That I consider as quite fictional. The features of internal sac turning to me like a definitive clue led me unambiguously to the synonymization of *D. variegatus* Lucas without necessity to see the describer's type material.

The describing of aberrations of the colour pattern was especially in case of this species fully formal; the variability is nearly analogous to the ladybird beetle *Adalia bipunctata* (L.). The pictures of variability are selective only.

The discontinual distribution of this species, jointly with some morphological characters (metendosternite without tendons, spines in internal sac, etc). indicated the symplesiotypy. The typical form is distributed probably only in continental Europe.

Distribution: North Africa, South Europe, Italy, Corsica, France (Pic, 1937). «Bulgarien: Kritschin (Hilf) MFM.; Macedonien: Athos (Schatzmayr) MFM.; Südschweiz: Tessin (Stöcklein) MFM; Zaupenberg (Krauss); Rheinprovinz (Fuss).» (Horion, 1954; 126).

## 2. *Divales quadrimaculatus* (Olivier)

Figs 39–46.

*Melyris quadrimaculata* OLIVIER, 1790: 10, t. 1., f. 2a–b.

*Hispa quadripustulata* FABRICIUS, 1798: 116, 1801: 59.

*Enicopus quadripustulatus*, STEPHENS, 1830: 317.

*Aplocnemus quadripustulatus*, STEPHENS, 1839: 195.

*Dasytes quadrimaculatus*, REICHE, 1863: 132; BAUDI, 1873: 294; FAUCONNET, 1892: 290.

*Dasytes quadripustulatus*, CASTELNAU, 1840: 281; KIESENWETTER, 1857: 630 (nota 1); ABEILLE, 1867: 71; FAUCONNET, 1892: 290.

*Divales quadripustulatus*: Mulsant & Rey, 1868: 63; SCHILSKY, 1894a: 229, 1894b: 14; ACLOQUE, 1896: 311; FAIRMAIRE & PLANNET, 1913: 294; PIC, 1917: 3, 1924a: 58, 84, 1924b: 546, 572; PORTA, 1929: 117; PORTEVIN, 1931: 447; FAGNIEZ, 1946: 22.

var. *similis* SCHILSKY, 1894b: 14, 1897: E; PORTA, 1929: 117; FAGNIEZ, 1946: 22.

var. *semiornatus* SCHILSKY, 1894b: 14, 1894a: 228, 1897: E; PORTA, 1929: 117; FAGNIEZ, 1946: 22.

var. *decoloratus* SCHILSKY, 1894a: 228, 1894b: 14, 1897: E; PORTA, 1929: 117; FAGNIEZ, 1946: 22.

var. *Méquignoni* FAGNIEZ, 1946: 22.

Elytra with 4 red macules (in various degrees of reduction) (Fig. 39), at their apices clusters of light pubescence; that forms a conspicuous variance with *D. cinctus* (Géné) and *D. uhligi* n. sp. Sexual dimorphism of habitus hardly discernible. ♂. Phallus (Fig. 42) in a lateral view sharply angle-like crooked, apically regularly narrowed and pointed, in-

ternal sac (Fig. 43) with 2–4 short spines as in *D. bipustulatus* (F.) ♀. For ovipositor see figure 44.

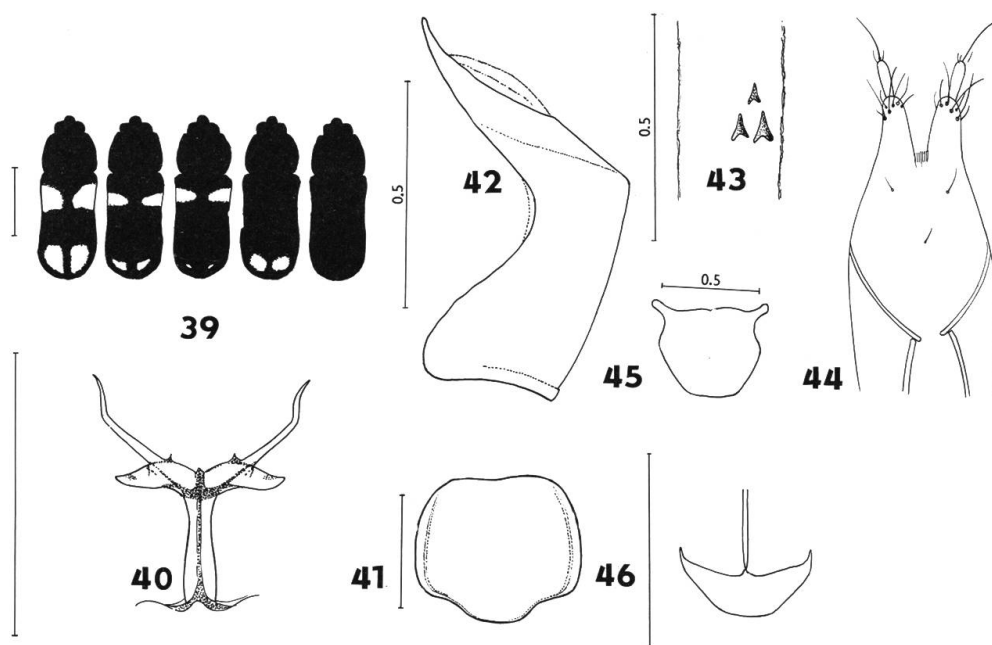
♂. Shape parallel, feebly vaulted. Colour black, extremities sometimes in part lighter (brownish to reddish), elytra with 4 red macules which are variously reduced or lacking at all (Fig. 39).

Head with paired impressions near basis of antennae, frons with coarse punctuation, pits inside granulated, area between vertex and temporae wrinkle-like granulated, partly with microsculpture. Maxillary palpi slender. Antennal segments feebly transverse, 11<sup>th</sup> segment short, faintly strangulated.

Pronotum (Fig. 41) rounded quadratic, in front direction faintly narrowed, on the sides off apex to the very basis with keels joined to the basal rim of pronotum. Surface of pronotum irregularly flatwise punctuated, intervals among pits approximately of the same width as pits. Pubescence double, light close-fitting pubescence of the basis directed forwards.

Mesoscutellum semicircular, finely granulated, with dense and close-fitting light pubescence.

Elytron parallel, faintly inflated on the level of epipleurae, on the surface very finely and shallowly punctuated, pits here and there con-



Figs 39–46: *Divales quadrimaculatus* (Oliv.): 39, colour pattern. 40, metendosternite. 41, male pronotum. 42, phallus, lateral view. 43, internal sac. 44, ovipositor, dorso-ventral view. 45, female pygidium. 46, female abdominal sternum VIII. (Scale = 1 mm).

fluent in transverse wrinkles, intervals with fine microsculpture. Pubescence double, light pubescent condensed at apices of macules or in their proper place. For metendosternite see figure 40.

Legs: Ratio of length of tibiae and tarsi of hindlegs about 1.11.

Abdomen: Pygidium semicircular, sternum VII very broadly and shallowly emarginate; sternum VIII emarginate identically, apically with double pubescence.

Genitalia: Phallus (Fig. 42) in a lateral view in the middle sharply angle-like crooked, from the crook to the very apex regularly narrowed into sharp point. Internal sac (Fig. 43) with 2 to 4 short, minute, arrow-like spines of a similar shape as in *D. bipustulatus* (L.).

Measurements: Length/AL = 3.62–4.28; EL/EW = 1.75–1.76; EL/PL = 2.47–2.61; EW/PW = 1.22–1.28; PW/PL = 1.15–1.25; PW/HW = 1.43–1.52; IOW/DE = 1.78–1.87; Length = 4.1–5.3 mm; Width = 1.4–1.8 mm.

♀. Shape in apical third somewhat more inflated, more flat. Colour as in the male. Head: Impressions near basis of antenna little distinct, antennal segments more transverse. Pronotum feebly transverse, in front direction more distinctly narrowed. Mesoscutellum as in the male. Elytron on the level of epipleurae in the apical third more inflated than in the male. Abdomen: Pygidium very variable in shape, semicircular to roundedly hexagonal (Fig. 45). Sternum VII straight, sternum VIII (Fig. 46) apically truncated, pubescence single. Genitalia: For ovipositor see figure 44.

Measurements: Length/AL = 3.83–4.51; EL/EW = 1.59–1.72; EL/PL = 2.60–2.81; EW/PW = 1.20–1.29; PW/PL = 1.23–1.30; PW/HW = 1.38–1.50; IOW/DE = 1.90–1.93; Length = 4.0–5.9 mm; Width = 1.4–2.3 mm.

Structural variability: Little variable, I have seen considerably robust, very lustrous and sparsely pubescent specimens, however, extreme ecomorphae, probably secondarily rubbed off were the matter.

Chromatic variability: Restricted to loss of all the four macules, their confluence is improbable.

Material examined: about 500 specimens, dissected 10 ♂ and 10 ♀.

France: Agay, Var (Oberbenger), CZEM (about 300 specimens); Gr. Cañon d. Verdon (Hozman), KMAJ; St. Martin Vésubie (Všetečka), KMAJ; Esterel (Balthasar), KMAJ; Ste. Baume (Wittmer), SWIM; Plan d'Aren (Puel), SWIM; La Ciotat, SWIM; Gaveau-Hyères, SWIM; «Pyren.», SWIM; Drôme (Reitter), SWIM; Marseille (Fischer), SWIM; Digne (Mulsant /?!/), GEMB; Jornac (Bouchet), GEMB. Italy: Liguria. Oneglia (Fiori), GEMB; Piana di Andorra / sopra Conna / 400 m, 30.V.1966 (Liberti), GLIB; Giacalone PA (Aliquo), GLIB.

Remarks: Species of a distinct habitus, specimens therefore usually well identified – otherwise a rare case in *Divales*-species.

Distribution: Italy, Sicily, France: Provence (PIC, 1937).

### 3. *Divales cinctus* (Gené)

Figs 47–52.

*Dasytes cinctus* GENÉ, 1839: 17, 46, t.2., f.4, 1839b: 37, t.2., f.4; KÜSTER, 1849: 22; KIESENWETTER, 1863: 630 (nota 2); 1871: 83.

*Dasytes communimacula* COSTA, 1847: 142; KIESENWETTER, 1874: 82 – **n. syn.**

*Dasytes flavipennis* BAUDI, 1873: 296 – **n. syn.**

*Dasytes lateralis* KÜSTER, 1850: 22.

*Dasytes bipustulatus* var. *ater* SCHILSKY, 1888: 189.

*Dasytes Reyanus* GOZIS, 1881: 135; FAUCONNET, 1892: 290.

*Dasytes tibialis* MULSANT & REY, 1861: 10, **n. syn.**

*Divales cinctus*, SCHILSKY, 1897: D, 3; PORTA, 1929: 116; PORTEVIN, 1931: 447; FAGNIEZ, 1946: 21.

var. *affinis* SCHILSKY, 1897: D, 3a; PORTA, 1929: 117.

var. *apicatus* SCHILSKY, 1897: D, 3; PORTA, 1929: 117.

var. *atratus* SCHILSKY, 1897: D, 3; PORTA, 1929: 117.

var. *discendens* SCHILSKY, 1897: D, 3a.

var. *ephippiatus* SCHILSKY, 1897: D, 3a.

var. *4-notatus* SCHILSKY, 1897: D, 3a; PORTA, 1929: 117.

*Divales communimacula*, SCHILSKY, 1894b: 16, 1894a: 229, 1897: D; PORTA, 1929: 117.

var. *ater* SCHILSKY, 1897: E; PORTA, 1929: 117.

var. *gemellatus* SCHILSKY, 1897: E; PORTA, 1929: 117.

*Divales flavipennis*, PORTA, 1929: 117.

*Divales Reyanus*, SCHILSKY, 1897: D, 1894b: 15; FAGNIEZ, 1946: 22.

var. *conjunctus* SCHILSKY, 1894b: 15; FAGNIEZ, 1946: 22.

var. *notaticollis* SCHILSKY, 1894b: 15; FAGNIEZ, 1946: 22.

*Divales tibialis*, MULSANT & REY, 1868: 67; KIESENWETTER, 1871: 83; ACLOQUE, 1896: 311; PORTA, 1929: 117; PORTEVIN, 1931: 447.

var. *notaticollis*, PORTA, 1929: 117; PORTEVIN, 1931: 447.

var. *conjunctus*: PORTA, 1929: 117; PORTEVIN, 1931: 447.

The smallest representative of the genus *Divales*, not longer than 4.2 mm, pubescence distinctly double, light vestiture sometimes feebly condensed in the proper place of macules, never so distinct as in *D. quadrimaculatus* (OL.), chromatic variability extraordinarily ample (Fig. 48). Sexual dimorphism rather distinct. ♂. Internal sac with numerous minute word for word thorn-shaped spines of two sizes (Fig. 49). ♀. Pygidium (Fig. 52), ovipositor (Fig. 47).

♂. Shape. Parallel, in posterior direction slightly inflated, feebly vaulted. Colour unusually variable (Fig. 48); head, metasternum, basis of elytra and femora always dark, however.

Head without impressions, finely and shallowly punctuated (more minutely than pronotum), lustrous, ultimate segment of antennae elongated oval, distally strangulated.

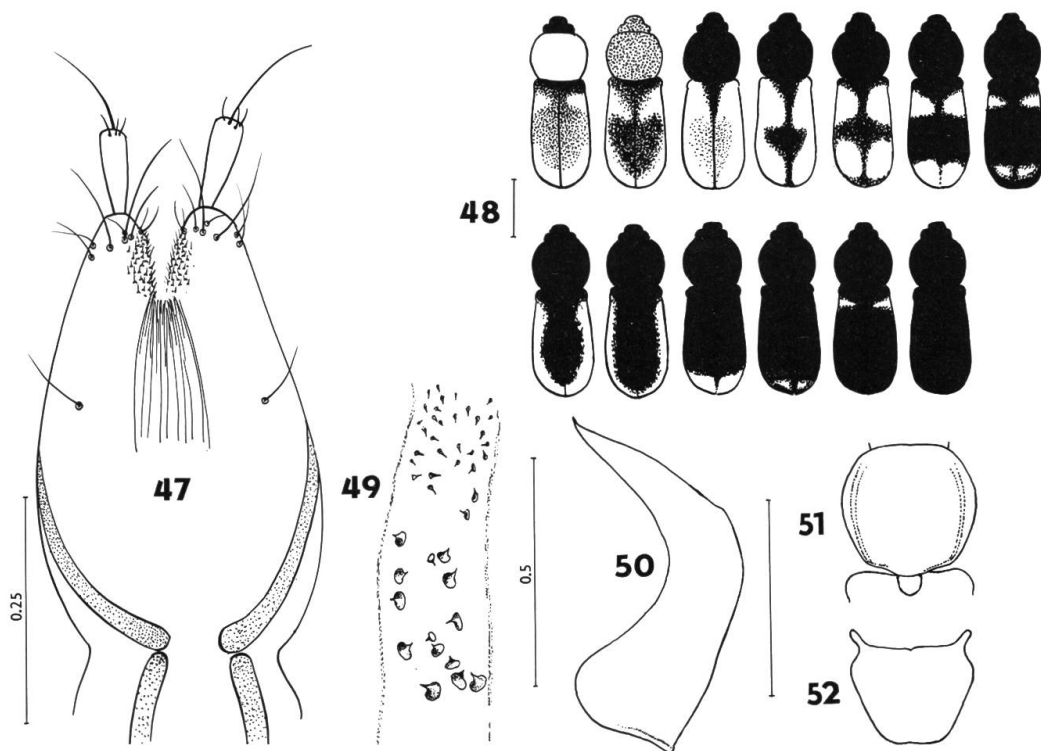
Pronotum (Fig. 51) of a rounded contour, PW near the middle, longitudinally as well as transversely strongly vaulted, basis in the middle elongated, apex very shallowly emarginate. Surface of pronotum strongly punctuated, pits and intervals of the same breadth. Pubescence double, light vestiture covers all the surface, the black one chiefly the edges. Sides bear fine keels being extinct in an immediate proximity of apex, proximally turning into basal rim of pronotum.

Mesoscutellum rounded, pentagonal.

Elytron, in a lateral view, feebly vaulted, on the level of humerus narrowed in basal third, on level of epipleurae feebly inflated in apical third. Punctuation regular, finer than that of pronotum, pits tend to have a structure of transverse wrinkles. Pubescence the same as that of pronotum, light vestiture sometimes a bit condensed in the proper place of macules.

Legs short, tibiae of the same length as tarsi.

Abdomen: Pygidium semicircular. Sternum VII very broadly and shallowly emarginate. Sternum VIII deeply emarginate.



Figs 47–52: *Divales cinctus* (Gené): 47, ovipositor, dorso-ventral view. 48, colour pattern. 49, internal sac. 50, phallus, lateral view. 51, male pronotum. 52, female pygidium. (Scale = 1 mm).

Genitalia: Phallus in a lateral view rectangulary crooked, distally pointed (Fig. 50), internal sac (Fig. 49) with numerous minute «thorn-shaped» spines of two sizes, with rounded bases. The number of large spines is about 10 to 15, of small ones about 20.

Measurements: Length/AL = 3.46–3.87; EL/EW = 1.70–1.90; EL/PL = 2.2–2.5; EW/PW = 1.07–1.14; PW/PL = 1.10–1.23; PW/HW = 1.34–1.45; IOW/DE = 1.62–1.63; Length = 2.8–4.1 mm; Width = 1.2–1.4 mm.

♀. Shape. Less parallel, in the apical third more inflated. Colour as in the male. Head: Antennal segments less transverse, the ultimate one shorter. Pronotum more transverse, on the sides less rounded, more faintly vaulted. Elytron more inflated in the apical third. Abdomen laterad apically nearly straight. Sternum VII straight, sternum VIII crescent, pygidium (Fig. 52). Genitalia: For ovipositor see figure 47.

Measurements: Length/AL = 3.78–4.00; EL/EW = 1.60–1.92; EL/PL = 2.6–3.0; EW/PW = 1.24–1.39; PW/PL = 1.26–1.35; PW/HW = 1.37–1.39; IOW/DE = 1.60–1.73; Length = 2.7–4.1 mm; Width = 1.3–1.8 mm.

Structural variability: Individual antennal segments varying in proportions, intensity of the punctuation of pronotum inconstant, contour of pronotum not always perfectly rounded. Pale pubescence of elytra may be locally condensed. Male: Number of spines in the internal sac with variation of  $\pm 5$ ; the small spines chiefly in small specimens are observable with difficulties and thus internal sac displays seemingly only one size of spines. Female: Shape of pygidium is not quite constant, nevertheless in comparison with *D. uhligi* n. sp. and *D. quadrimaculatus* (ol.) usable as a character.

Chromatic variability: See figure 48.

Natural history: On the flowers of *Cakile maritima* (Brassicaceae) (DEVILLE, 1914).

Material examined: about 300 specimens, dissected 15 ♂ and 10 ♀. Capri: Capri (Hájek), CZEM, KMAJ; (Flach), SWIM, GEMB. Corsica: Corsica (Croissandeau, Grenier, Kläger, Konow), GEMB; Vizzavona (Champion), GEMB. Elba: M. Capanne, M. Calamite (Liberti), GLIB. Sardinia: Sardinia (Kiesenwetter), SWIM; (Kläger, Schaufuss, Staudinger), GEMB; Cagliari, U. Lostia (Fiori), GEMB; (Schneider), GEMB; «*Dasytes suturalis* Sand. Dahl / *D. (Divaes Lap.) cinctus* Gené Sardin. Génè 32496» – ? Syntype [!!], 1 ♂, GEMB; «*cinctus* sard. Genè» – Syntypes [!!], 4 ex., GEMB; «*D. (Divaes) cinctus* var. ?? Gené Sardin. Génè / 32 497» – ? Syntype [!!], 1 ♂, GEMB. Sicily: Sicilia (Ragusa, Kläger, Konow), GEMB; Messina (Reitter), KMAJ, SWIM, GEMB, CZEM; (Vitale) SWIM; (Aliguo), GLIB; (Kreissl), SWIM; M. Palegrino (Metschnigg), SWIM; (Bischoff), GEMB; Taormina SWIM, GEMB; Ficcuza SWIM; Girgenti CZEM.

Germany: «Elsass» (Stussiner), GEMB.

Spain: «Hispania» CZEM, SWIM.

Italy: Calabria: Monte Pollino (Liberti), GLIB; Paola (Fiori), GEMB. Basilicata: Vultura, Baldini (Fiori), SWIM. Emilia: Rimini (Reitter), CZEM; Ventosa (Fiori), GEMB; Basalchio (Fiori), CZEM, GEMB. Lazio: M. Circeo (G. Doria), GEMB. Liguria (Chiavari, (Manari), GLIB; Moneglia (Rossi), GLIB. Napoli: Neapel (Gangelbauer), GEMB; Pozzuoli CZEM, GEMB; Ischia (Merkl), CZEM. Toscana: Foce (Frontini), GLIB; Grosseto Merina (Liberti), GLIB; Vallombrosa (Fiori), GLIB; Is. del Giglio-Vel Ortona, Vel S. Antonio (Liberti), GLIB, KMAJ; Is. di Gianutri (Liberti), GLIB; Is. Capraia (Liberti), GLIB<sup>3</sup>.

Remarks: This species represents the utmost case of variability in the genus *Divales*, the shape of phallus and the structure of spines in the internal sac led me unambiguously to the synonymization of many former species. When examining large series of material, one may find habitually very apart extremes of variability. An idea of recent dilapidation of *D. cinctus* (Gené) into several biological species, morphologically for the time being not defined, cannot be excluded. Analysis of individual ecomorphae would be a subject of an extensive ecological study. The species *Dasytes flavipennis* Baudi I synonymized with *D. cinctus* (Gené) only in virtue of the zoo-geographical elimination method.

Distribution: Capri, Corsica, Elba, Italy, Sardinia, Sicily, Tirol (Pic, 1937).

### 3a. *Divales densepunctatus* Pic, 1903.

*Divales densepunctatus* Pic 1903: 177.

«Modérément allongé, brillant, noir à reflets cuivreux, orné d'une pubescence grise couchée et poils obscurs dressés, base des antennes et pattes testacées; tête robuste, densément ponctuée, antennes assez épaisses, foncées avec les premiers articles testacés; prothorax modérément convexe, un peu plus large que long, presque droit sur les côtés, à ponctuation forte, espacée sur le disque et sillon latéral marqué; élytres assez longs, subcylindriques, atténués au sommet, assez finement et distinctement pubescents, subruguleusement et densément ponctués, non impressionnés ni largement explanés latéralement, étroitement roussâtres au sommet; pattes robustes, entièrement testacées. Long. 3.5 mm environ. Algérie: Oran (coll. Zürcher). Cette espèce se reconnaîtra facilement à sa ponctuation élytrale jointe à la coloration entièrement

<sup>3</sup> As Horn & Kahle (1936) did not quote the manuscript of Gené and I did not consider for necessary to obtain the type material of this species, deposited probably in ITMU, the type value of this material is problematic. In spite of these facts I designed all these specimens with a red label «? Syntypus» as their historical value is undoubtful.



claire des pattes. Peut se placer dans le voisinage de *D. communimacula* Cast.»

Remarks: As evident from the description, and as given by the describer himself, this species, unknown to me, would belong to relationship of *D. cinctus* (Géné). Description otherwise is logically worthless and any conclusion cannot be drawn from it.

I was surprised I met no species with lateral keels of pronotum when revising numerous material from North Africa. It is not excluded that a locality confusion may be considered, and *D. densepunctatus* Pic once will be synonymized with *D. cinctus* (Géné).

#### 4. *Divales uhligi* n. sp.

Figs 53–58.

? *Divales communimacula* var. *ater* SCHILSKY, 1888 (partim).

Conspicuously resembling *D. cinctus* (Géné), but differing from it chiefly by larger size, more transverse, on the sides less transverse, at basis broader than at apex, for pronotum see figure 53. Pubescence black, light, very sparse and obliquely standing apart. Sexual dimorphism little developed. ♂. Phallus (Fig. 54) in a lateral view apically, emarginate with a short point, internal sac (Fig. 55) with two kinds of spines. ♀. Peculiar shape of pygidium (Fig. 58) and chaetotaxy of ovipositor (Fig. 56) differ from *D. cinctus* (Géné).

♂. Shape as in *D. cinctus* (Géné), more robust, however (Fig. 53). Colour black, tarsi partly rusty.

Head (Fig. 53) without impressions, coarsely and condensedly punctuated, little lustrous. Segments of antennae little distinct.

Pronotum somewhat transverse, PW in front of basis, basal corners distinct but broadly rounded. Shallow and short impression in front of basis a. Surface of pronotum rather regularly punctuated (pits as broad as intervals), regularly and sparsely pubescent, with black, stout and long hairs. Pubescence on the sides of apex light, fine, close-fitting.

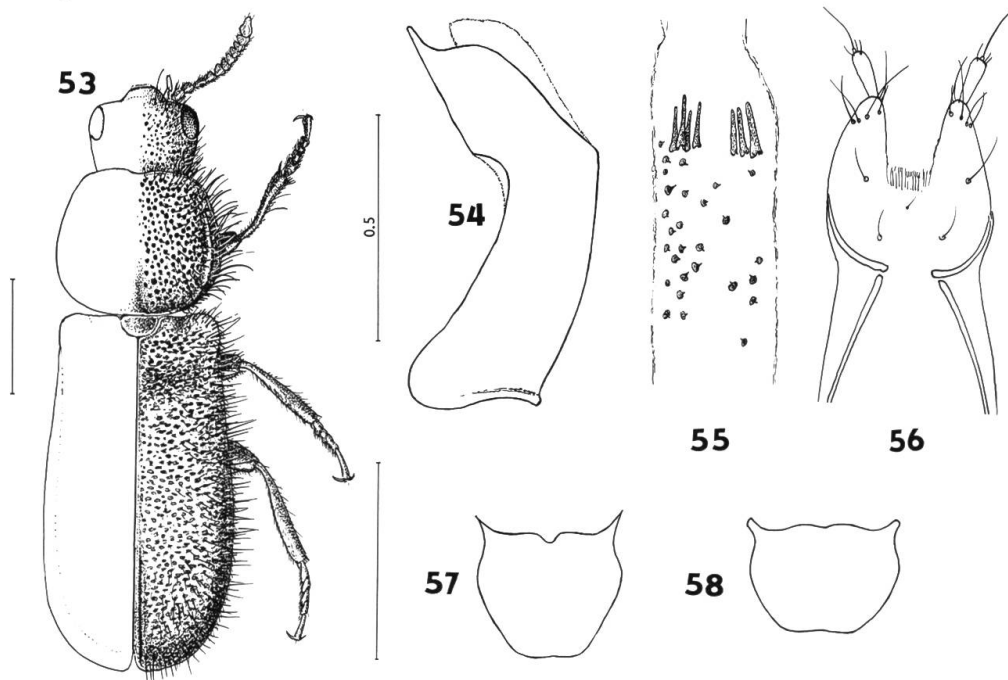
Mesoscutellum slightly transverse, rectangular but with rounded corners, finely punctuated and wrinkled, pubescent, with sparse close-fitting light setae.

Elytron (Fig. 53) as in *D. cinctus* (Géné), but more strongly transversely vaulted, with protruding humerus and feeble post-humeral impression. Edge of elytra hardly visible beyond second-third, suture margined in posterior third. Apices broadly rounded. Punctuation fine, regular, finer than that of pronotum, in the place of post-humeral im-



pression confluent in transverse wrinkles. Intervals with reticulated microsculpture, that is why elytra faintly lustrous. Pubescence double-light and black. The light vestiture stout, nearly upright standing apart. Both kinds of vestiture regularly cover all the surface of elytra.

Abdomen: Pygidium (Fig. 57) apically nearly straight. Sternum VII emarginate from side to side, notch slightly anglewise, covered with a membranule. Notch of sternum VIII and spicular fork of a common shape.



Figs 53–58: *Divales uhligi* n. sp.: 53, general view (holotype, semischematic picture). 54, phallus, lateral view (holotype). 55, internal sac (holotype). 56, ovipositor, dorso-ventral view. 57, male pygidium. 58, female pygidium. (Scale = 1 mm).

Genitalia: Phallus (Fig. 54) in a lateral view feebly anglewise crooked, at termination with a short denticle. Internal sac (Fig. 55) with 7 elongated spines of the type of *D. mauritanicus*, etc., and with a number of small spines of the same type as in *D. cinctus* (Gené).

Measurements of all males: Length/AL = 4.11–4.31; EL/EW = 1.79–2.00; EL/PL = 2.44–2.52; EW/PW = 1.20–1.30; PW/PL = 1.12–1.19; PW/HW = 1.51–1.58; IOW/DE = 1.83–1.93; Length = 4.6–4.8 mm; Width = 1.6–1.8 mm.

♀. Shape, in the posterior third, more inflated. Colour black, in one case elytra apically with a common rusty macule. Head: Antennal seg-

ments more transverse. Pronotum more transverse and less vaulted. Mesoscutellum more transverse. Elytron, in the posterior third, more inflated, humerus more protruding, post-humeral impression more conspicuous.

Abdomen: Pygidium (Fig. 58) in shape distinctly differing from *D. cinctus* (Gené). Sternum VII, VIII and spiculum of usual shape. Genitalia: For ovipositor see figure 56.

Measurements: Length/AL = 4.68–4.76; EL/EW = 1.71–1.84; EL/PL = 2.87–2.96; EW/PW = 1.26–1.37; PW/PL = 1.27–1.31; PW/HW = 1.52–1.57; IOW/DE = 1.72–1.78; Length = 4.3–4.7 mm; Width = 1.6–1.9 mm.

Variability of paratypes: Structural variability. With the reserve of scanty material being examined I state that except for the intensity of punctuation of pronotum, and faint variations in its proportions, *D. uhligi* n. sp. does not display usual variability. The number of large spines in internal sac 5 to 9, of small ones about 20.

Chromatic variability: Inconspicuous apical macule in one case is the only aberration of colouring hitherto known.

Derivatio nominis: The denomination of this new species in honour of Dr. Manfred Uhlig, Entomologist of the Natural History Museum of Humboldt University (Museum für Naturkunde an der Humboldt Universität), Berlin, GDR.

Type material: Total 4 males and 6 females, dissected 4 males and 3 females: Holotype ♂ (GEMB): Specimen mounted on white card / «Abruzzo G. Sasso, 15.VII.86, A. Fiori» (white label with a black margin) / «vide Schilsky» (green label) / «*Divales* ♂ *uhligi* n. sp. K. Majer det. 1981 HOLOTYPE» (white label) / «Holotypus» (red label with a black margin). Paratypes: Same locality as holotype (1 ♂ and 3 ♀, GEMB); «*communimacula* Costa» (typewritten, specimen with defect pronotum) (1 ♂, GEMB); «Abruzzo, Berchio [? Reschio], Leoni, A. Fiori» (1 ♂, KMAJ); «Abruzzo, Paganica, 16.VII.86, A. Fiori» (1 ♀, KMAJ); «Abruzzo, G. di Gioro, 26.VII.900, A. Fiori» (1♀, GEMB); «Campania, Napoli, Abattas, 982» (1 ♀, GEMB).

Remarks: It is probable that this species has been in part comprehended as *D. communimacula* var. *ater* Schilsky even when the type material did not involve any specimen bearing label with Schilsky's manuscript. Along the new synonymic complex of *D. cinctus* (Gené) in a new conception, *D. uhligi* n. sp. may be as a species well defined in accordance with internal sac and some other habitus characters. As an alone

species within the genus it displays in the internal sac both shape-types of spines coincidentally.

### The haemorrhoidalis-group

It is well defined by tibiae being on the outer side spinulose, and long arrow-shaped spines in the internal sac. The shape of the edge of elytra forms a phyletic lineage – from simple inflation in *D. haemorrhoidalis* (F.) till to the formation of a groove in *D. mauritanicus* (Lucas) and *D. rufitarsis* (Baudi).

#### 5. *Divales haemorrhoidalis* (Fabricus)

Figs 59–65.

*Lagria haemorrhoidalis* FABRICIUS, 1798: 118, 10–11.

*Dasytes haemorrhoidalis*: FABRICIUS, 1801: 72; ROSENHAUER, 1856: 162.

*Divales haemorrhoidalis*, SCHILSKY, 1897: Nachtrag (without pagination), 1894a: 225.

*Divales maculipennis* SCHILSKY, 1894b: 11.

var. *carbonarius* SCHILSKY, 1894: 11.

var. *4-signatus* SCHILSKY, 1894b: 11.

var. *Rosenhaueri* SCHILSKY, 1894b: 11.

*Divales Kraatzi* SCHILSKY, 1894b: 12 – **n. syn.**

var. *lineatocollis* SCHILSKY, 1894b: 12.

var. *signatus* SCHILSKY, 1897: C.

*Divales ? amplipennis* var. *melyroides* PIC, 1896: 47; KOCHER, 1956: 58 [Note] – **n. syn.**

In the group of species with tibiae on the outer side spinulose it is noted for a parallel body, pronotum smooth on the sides, and elytra on the periphery only in an usual way inflated, without rib or groove. Sexual dimorphism distinct. ♂. For phallus see figures 62, 63. ♀. Ovipositor: Setae of coxites very long, reaching over coxital stylus (Fig. 59), pygidium as well as sternum VIII with conspicuous double pubescence (Figs 60, 61).

♂. Shape. Parallel, elongated, transversely strongly vaulted. Colour (Fig. 65), extremities brownish to black.

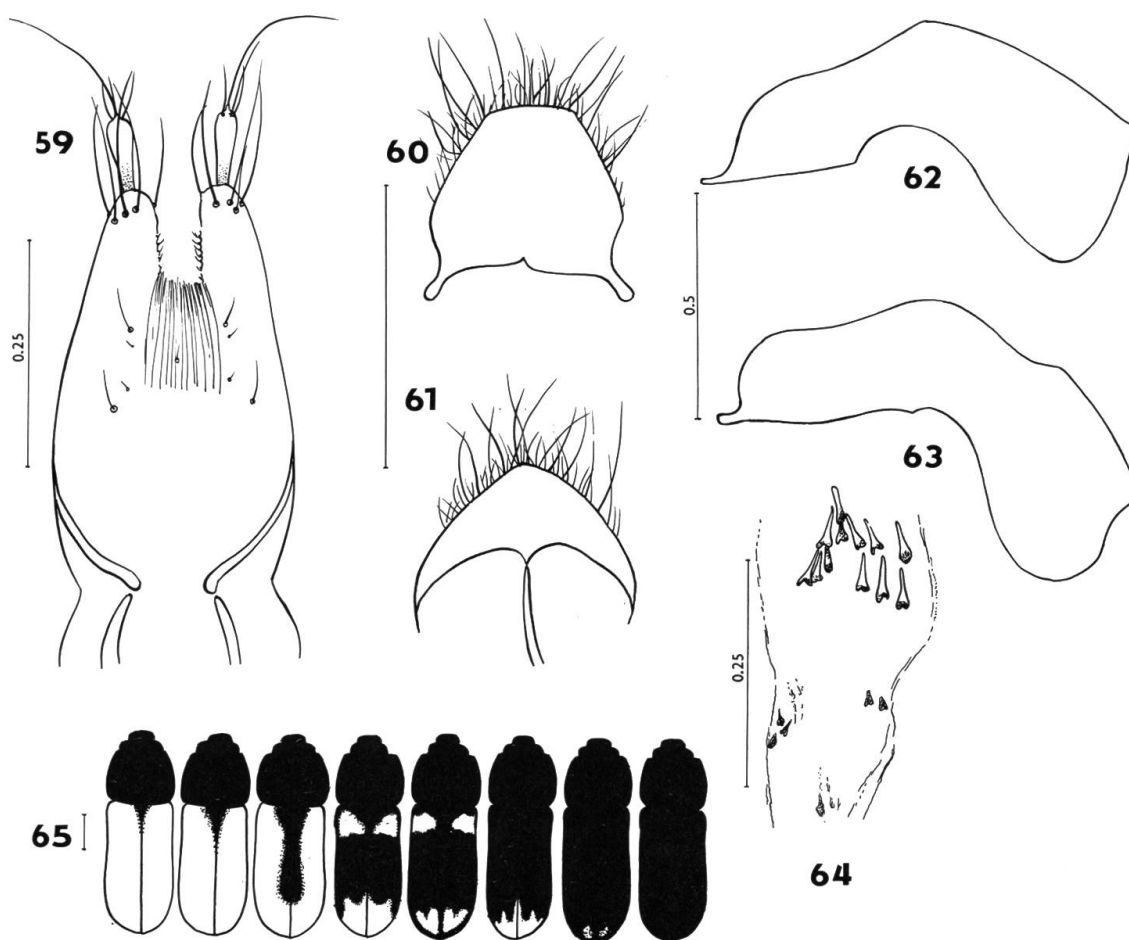
Head flat, without impressions, punctuation variable, regular, however, segments of antennae transverse, 3<sup>rd</sup> segment longer than broad.

Pronotum faintly transverse to oval, on the sides without furrows, at basis, in front of scutellum, a short impression often indicated. Surface densely and coarsely punctuated, intervals among dots nearly

smooth, of the same size or smaller than pits. Black pubescence standing apart, light pubescence imperceptible.

Mesoscutellum rounded, quadratic, finely wrinkled, light hairy.

Elytron, on the level of humerus, parallel, in posterior direction slightly narrowing at all the length, on the level of epipleurae moderately inflated to the very apex. On the very edge of elytra in the apical third a fine small rib indicated, never so distinctly as in *D. Weisei*. Punctuation finer than that of pronotum, intervals nearly smooth, broader than dots. Punctuation sometimes confluent in indistinct furrows. All the



Figs 59–65: *Divales haemorrhoidalis* (F.): 59, ovipositor, dorso-ventral view. 60, female pygidium. 61, female abdominal sternum VIII. 62, 63, phallus, lateral view. 64, internal sac. 65, colour pattern. (Scale = 1 mm).

simple bears the upright black sparse, and hardly perceptible fine, more close-fitting, pubescence.

Legs: Middle and posterior tibiae of the same length as tarsi, anterior tibiae distinctly longer, anterior-, and middle tibiae externally dense-

ly and shortly spinulose and double-pubescent and longly spinulose, the spines have rather a feature of flat hairs, however.

Abdomen: Pygidium nearly semicircular, sometimes apically truncated, on the periphery externally double-pubescent, with short and dense pubescence as in the most species of the genus *Divales*, and in addition to it long and stout hairs (Figs 60, 61). Sternum VII very broadly and shallowly emarginate, notch covered with a membranule. Sternum VIII of common shape, pubescent as strikingly as pygidium.

Genitalia: For phallus see figures 62 and 63. Internal sac (Fig. 64) with elongated arrow-shaped spines, whose number fluctuated between 5 and 13. Nearby this cluster of spines proximally several additional scattered tiny spines occur.

Measurements: Length/AL = 3.73–4.66; EL/EW = 1.67–1.78; EL/PL = 2.00–2.30; EW/PW = 1.16–1.29; PW/PL = 1.06–1.15; PW/HW = 1.47–1.55; IOW/DE = 1.95–2.00; Length = 4.2–6.0 mm; Width = 1.50–2.28 mm.

♀. Shape less transversely vaulted, in the posterior third more inflated. Colour as in the male (Fig. 65), the aberrations of colour patterns are more frequent, however.

Head more transversely than in the male, segments of antennae more transversely.

Pronotum more transverse.

Elytron beneath humerus narrowing, in posterior third inflated. Legs shorter than in the male.

Abdomen: Pygidium (Fig. 60) rounded to pentagonal, sternum VII and VIII (Fig. 61) of a common shape, as strikingly pubescent as in the male.

Genitalia: Ovipositor (Fig. 59): Setae of coxites conspicuously reaching over coxital stylus.

Measurements: Length/AL = 4.36–5.14; EL/EW = 1.67–1.70; EL/PL = 2.70–2.95; EW/PW = 1.24–1.41; PW/PL = 1.33–1.38; PW/HW = 1.45–1.62; IOW/DE = 1.70–2.30; Length = 4.0–5.6 mm; Width = 1.65–2.82 mm.

Structural variability: Habitus variability is analogical to the species *D. cinctus* (Gené).

Chromatic variability: See Fig. 65.

Natural history: ROSENHAUER (1856) gives this species from *Centaurea calcitrapa* (Asteraceae).

Type material of *Divales kraatzii* Schilsky (GEMB): Lectotype male: «Marokko, Settatt, Quedenfeldt S.» (blue label) / «Settat» (white label) /

«Type» (red label) / «Lectotypus» (red label with a black margin) / «*Divales kraatzi* Schilsky syn. nov. for *D. haemorrhoidalis* (F.), K. Majer det. 1981» (white label). Paralectotypes: The same locality as in the lectotype, 1 ♂, 1 ♀; «Mogador, Heyeden», 4 ♂ and 2 ♀.

Type material of *Divales maculipennis* Schilsky (GEMB): Lectotype male: «Plason 1886 Marocco» (white label) / «Lectotypus» (red label) / «*maculipennis* Schils.» (white label) / «*Divales* ♂ *haemorrhoidalis* (F.), K. Majer det. 1981» (white label).

Other material examined: about 150 specimens, dissected 10 ♂ and 10 ♀. Spain: «Hispania» (Konow, Staudinger, Dahl, Kläger), GEMB; Andalusia (Staudinger, Rosenhauer), GEMB; Sartorius 1876 (Ganglbauer), GEMB; «c. Epplsh. Steind. d.» (Rosenhauer), GEMB; Algeciras (Champion), GEMB. Tanger: (Staudinger, Pic, Walker), GEMB; (Váca), SWIM.

Algeria: Oran (Hicker), SWIM. Italy: «Zig. Ital.», GEMB.

Morocco: «Maroc», 7.III.1923 (E. Handschin), SWIM; 1886 (Plason), GEMB; (Rolph), SWIM; (Reitter), GEMB, SWIM; Casablanca, O. Melab, V.1948 (Kocher), SWIM; Volubilis, 14.IX.1935 (C. Koch), SWIM; Skhirat, VI.1948 (Kocher), SWIM; Mehydia, 30.V.1928 (Théry), SWIM; Rabat, VI.1948 (Lindberg), SWIM; Knitra, Mamora, 2.V.1928 (Lindberg), SWIM; Gr. Atlas Sud, Aït et Hadj (Alluaud), SWIM; Marrakech, Oued Tensiff, 12.V.1974 (J. Moravec), KMAJ; Moulay Idriss, 27.II.1977 (Z. Táboriský), KMAJ; Fez, 18.IV.1930 (W. Eichler), SWIM; V. du Sous, Agadir (Alluaud), SWIM; Chella (Surcout), SWIM.

Remarks: KOCHER (1956) drew attention to a probable identity of *D. kraatzi* Schilsky and *D. haemorrhoidalis* (F.); my examinations verified his supposition. Species in extreme limits of variability are of a very different habitus, the forma *kraatzi* Schilsky habitually resembles *D. bipustulatus* (F.), *D. haemorrhoidalis* (F.) in Schilsky's conception displays a distinctly transverse pronotum. Ecological variability is analogical to the species *D. cinctus* (Gené). I synonymized *D. amplipennis* var. *melyroides* Pic on the strength of KOCHER's (1956) note only.

Distribution: Morocco, Southern Europe, Sicily, Spain, Algeria (PIC, 1937).

## 6. *Divales argyrostictus* Peyerimhoff

Figs 94–99.

*Divales argyrostictus* PEYERIMHOFF, 1949: 268.

From the related species *D. weisei* Schilsky differing by admixed white reclinate setae, chiefly on pronotum and anterior third of elytra; curved line on the sides of pronotum not reaching pronotal apex, slightly inflated elytra in posterior third of their length, and very fine flat rib on their margin.

♂. Shape (Fig. 97) parallel, not very strongly vaulted, in posterior third only slightly inflated. Colour black, tarsi and bases of antennal

segments brownish. Integument densely, on elytra much more sparsely, punctuated, the ground light reclinate pubescence more dense in anterior corners of pronotum and posthumeral region. Black, short pubescence obliquely projecting.

Head: Punctuation finer than that of pronotum, without distinct impressions. Antennae with scape on innerside with 5 conspicuous, long, black setae, segments 2<sup>nd</sup> to 5<sup>th</sup> also with black setae being gradually smaller, all antennal segments with fine, short white pubescence.

Pronotum densely and coarsely punctuated (more coarsely than in *D. weisei* Schilsky), intervals among dots smooth, as broad as dots. Pronotum on sides of its surface with curved furrow not reaching pronotal apex.

Elytra more densely and finely punctuated than pronotum, on the surface with an indication of irregular, longitudinal, flat small ribs. Margin of elytra much more slightly inflated behind, and the flat small rib much finer than in *D. weisei* Schilsky. Posthumeral depression feeble.

Legs: Anterior tibiae on innerside distally spinulose; spinulation of middle tibiae distinct, posterior tibiae pubescent with stout dense setae. Frontclaws appendages much more extended than in middle- and hindclaws.

Abdomen: Pygidium (Fig. 96) regularly rounded, sternum VII broadly and shallowly emarginate, notch of sternum VIII flat (Fig. 94).

Genitalia: For spicular fork see Fig. 95, for tegmen Fig. 99. Phallus (Fig. 98) of similar shape as in *D. weisei* Schilsky, internal sac with only 3 spines, however.

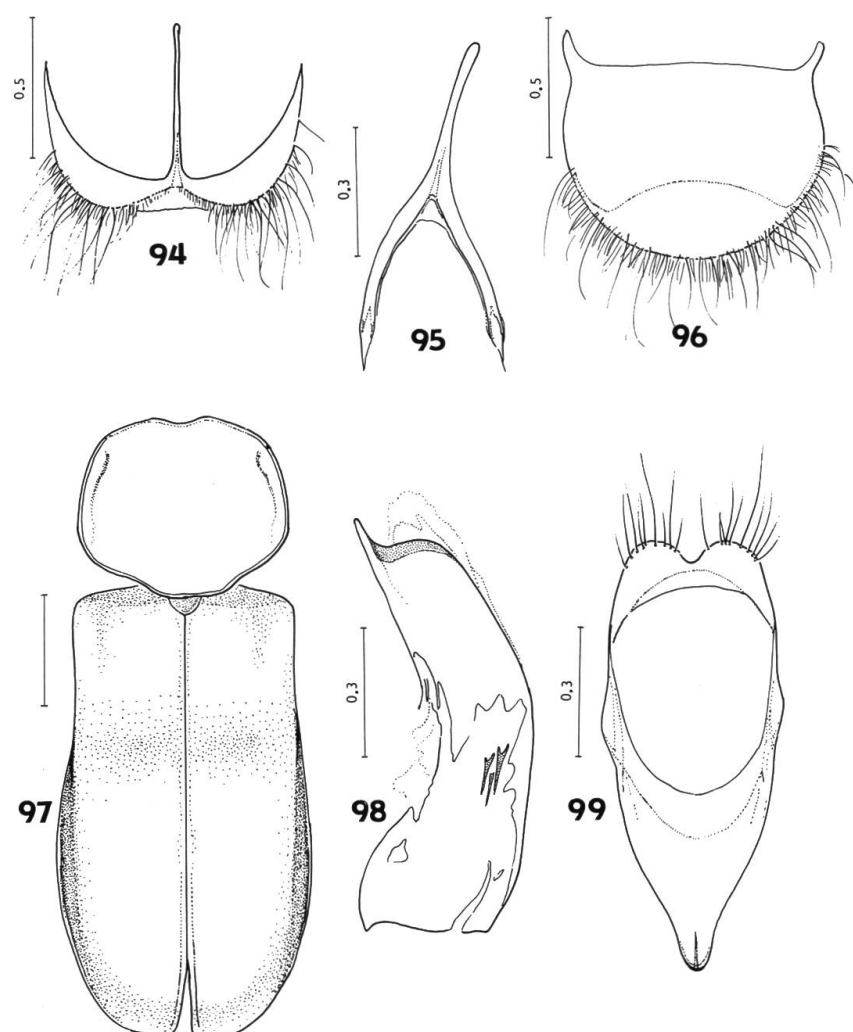
Measurements: Length/AL = 4.24; EL/PL = 2.39; EW/PW = 1.14; PW/PL = 1.07; IOW/DE = 1.95; Length = 5.46 mm; Width = 2.08 mm.

♀. Unknown.

Type material of *Divales argyrostictus* Peyerimhoff (FMUP): Holotype male: Specimen on a white card (right middle tarsus lacking) / «Lechkhab, Djebala Maroc, 25.VI.1930, VIII, 2150 m, R. Maire» (white label, Peyerimhoff's manuscript) / «*Divales argyrostictus* Peyerh. TYPE uniq.» (white label, Peyerimhoff's manuscript) / «Holotypus» (red label with a black margin, printed) / «*Divales ♂ argyrostictus* Peyerimhoff, 1949, K. Majer det. 1983, HOLOTYPE» (white label) /.

Remarks: PEYERIMHOFF (1949) gives although he dissected the phallus without detriment, nevertheless it was deformed. This statement is not based on facts, the dissected phallus was proximally sizably damaged, nevertheless this damage did not thwart the possibility to evaluate





Figs 94–99: *Divales argyrostictus* Peyerimhoff, holotype male: 94, male abdominal sternum VIII. 95, spicular fork. 96, pygidium. 97, pronotum and elytra, dorsal view (all setae omitted). 98, phallus, lateral view. 99, tegmen, ventral view. (Scale = 1 mm).

it. By means of boiling in KOH and mounting in gelatine-chloral hydrate balsam it was sufficiently restored and the internal sac fortunately remained saved for examination.

As this specimen was placed at my disposal too late, practically in the time when the paper was completely finished and submitted to the Editor, I was not able to include the species into the cladogram (Fig. 100), mention it on many places in the text, and I could picture it only as the last one.



Its phylogenetic position ensues from the close relationship with the species *D. weisei* Schilsky, the presence of white pubescence is analogous to many species of the genus *Divales*.

Distribution: Morocco (range of Rif).

## 7. *Divales weisei* Schilsky

Figs 66–71.

*Divales weisei* SCHILSKY, 1894b: 13, ♀; 1897: 2, ♂.

*Divales rufitarsis* (BAUDI), PEYERIMHOFF, 1949: 270; KOCHER, 1956: 57 (Note).

Pubescent with black, standing apart hairs (Fig. 67), pronotum on the sides with a bent furrow reaching to its apex. Suture of elytra ridged at all its length, edges of elytra with flat ribs, (Fig. 67) in females little distinct. Sexual dimorphism very strongly developed. ♂. Black, slender, only black-pubescent, near the edges of elytra distinct parallel ribs (Fig. 67), legs long. ♀. With a red humeral macule (Fig. 66), light pubescence perceptible, parallel rib little distinct, pronotum transverse, extremities short.

♂. Shape. Parallel, slender, transversely strongly vaulted. Colour black, scape black, 2<sup>nd</sup> to 4<sup>th</sup> segments of antenna sometimes brownish, other segments black, antenna sometimes entirely black. Tarsi brown-red to black. Elytra in an alone case with a minute rusty humeral macule.

Head: flat, little lustrous, without impressions, sparsely and regularly punctuated, densely and longly black-pubescent. Antennae serrate, inner sides of segments strongly vaulted, 11<sup>th</sup> segment cylindrical, distally emarginate.

Pronotum longitudinally as well as transversely very strongly vaulted, basis broadly rounded, sometimes on the sides emarginate and in the middle elongated, apex vaulted, in the middle at least finely emarginate. Surface of pronotum at least with an indication of longitudinal impression near the basis, punctuation very variable, intervals with reticulate microsculpture or without it, pubescence black, dense, regular, standing apart.

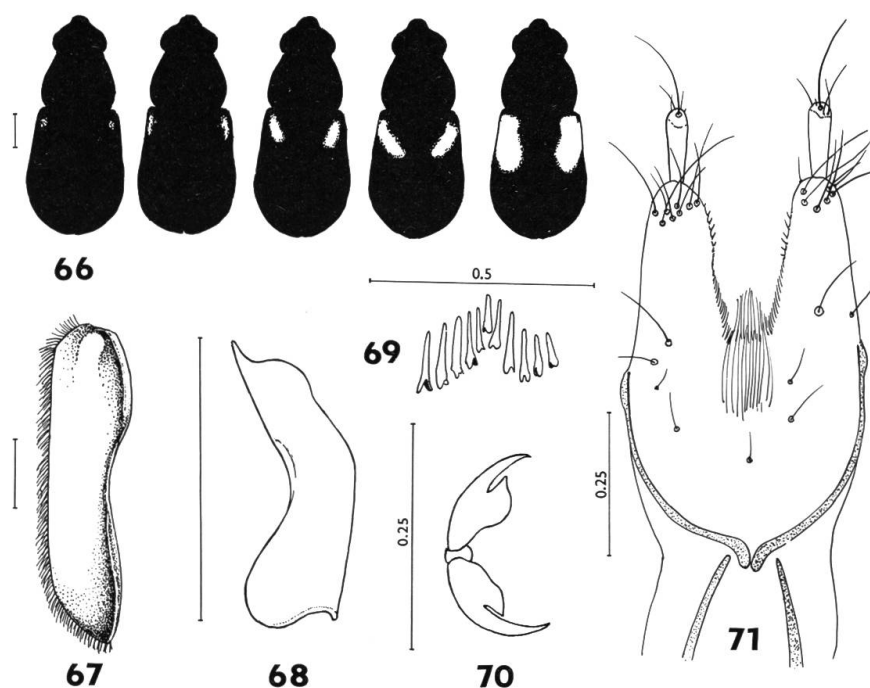
Mesoscutellum feebly transverse, sometimes nearly pentagonal, wrinkle-like punctuated, dull.

Elytron (Fig. 67) strongly transversely vaulted, beneath humerus slightly narrowing, humerus distinct, post-humeral impression faint, broadest in the apical third. Edge of elytra below humera gradually inflated, there with a flat fine parallel rib, distinct from above as well as in a lateral view. Surface of elytra of a variable structure: punctuation

fine and sparse to flat, transversely wrinkled, intervals with a conspicuous reticulate microsculpture or smooth.

Legs long, slender, ratio of the length of posterior tibia to the length of tarsus equals 1.11. Tibiae externally sparsely and shortly spinulose and double-pubescent.

Abdomen: Pygidium apically straight to slightly emarginate, sternum VII broadly and shallowly emarginate, notch of sternum VIII deeply triangular.



Figs 66–71 *Divales weisei* Schilsky: 66, colour pattern. 67, male elytron, lateral view. 68, phallus, lateral view. 69, internal sac. 70, male claws. 71, ovipositor, dorso-ventral view. (Scale = 1 mm).

Genitalia: For phallus see figure 68, internal sac (Fig. 69) with 8 to 11 long, arrow-shaped, spines.

Measurements: Length/AL = 4.0–4.27; EL/EW = 1.58–1.80; EL/PL = 2.32–2.89; EW/PW = 1.16–1.33; PW/PL = 1.12–1.20; PW/HW = 1.56–1.68; IOW/DE = 2.0–2.10; Length = 5.7–7.3 mm; Width = 2.3–3.0 mm.

♀. Shape. Of a nearly guttate outline (Fig. 66). Colour beneath humerus a red oblique macule of a peculiar contour, exceptionally indistinct (Fig. 66).

Head with inconspicuous paired impression, regularly sparsely punctuated, sparsely pubescent, lustrous. Ultimate segment of antennae distinctly shorter than both preceding ones together, conically narrowed, faintly strangulated.

Pronotum transverse, broadly transversely vaulted. Basis vaulted, sides in front direction narrowed. PW in basal third, apex as vaulted as basis. On the sides of surface a curved furrow, surface regularly densely punctuated (intervals smooth, on the average of the same size as pits) with indicated median longitudinal impression. In a black standing pubescence also the light, fine vestiture is hardly perceptible.

Mesoscutellum roundly semicircular, with fine condensed punctuation, faintly lustrous.

Elytron strongly transversely vaulted, more flatwise than in the male, however, broadest in the posterior third. Humerus distinct, post-humeral depression sometimes conspicuous, otherwise indistinct. On the sides beneath humerus elytra gradually inflating, this surface narrow and deflexed, with parallel rib, less distinct than in male, at least in a lateral view perceptible, however. Surface of elytra in larger specimens with indication of longitudinal flat ribs, with microsculpture, finely condensely punctuated, pits confluent in transverse wrinkles. Black sparse pubescence in the apical third directed obliquely backwards, in the basal half upright, on the basis sometimes obliquely forwards.

Fine sparse white pubescence sometimes distinct on the sides of elytra, another time imperceptible at all.

Legs shorter than in the male, ratio of the length of tibiae and tarsus the same.

Abdomen: Pygidium of a common semicircular shape. Sternum VIII the same as in female of *D. mauritanicus* (Lucas) (Fig. 90), but unicoloured dark.

Genitalia: For ovipositor see figure 71.

Measurements: Length/Al = 4.53–5.50; EL/EW = 1.36–1.70; EL/PL = 2.88–3.11; EW/PW = 1.33–1.40; PW/PL = 1.37–1.44; PW/HW = 1.52–1.83; IOW/DE = 1.92–2.00; Length = 4.5–7.4 mm; Width = 2.1–3.2 mm.

Structural variability: No substantial variability observed.

Chromatic variability: See figure 66.

Type material of *Divales weisei* Schilsky (GEMB): Lectotype female: «Hispan.» (Weise's manuscript, white label) / «D. Weise» (white label) / «Weisei\* Schils.» (Schilsky's manuscript, white label with a black margin) / «*Divales* ♀ *weisei* Schilsky, 1894, K. Majer det. 1981, LECTOTYPUS»

(white label) / «Lectotypus» (red label with a black margin). Paralectotypes: «Algier, Théry», 2 ♂♂, 2 ♀♀; «Algerie, A. Théry», 1 ♀.

Other material examined: about 40 specimens, dissected 10 ♂ and 10 ♀. Algeria: «Algeria» (Reitter), CZEM, KMAJ, SWIM, GEMB; Prov. El-Gharb (G. Lewis), SWIM; Saida (Kouřil), CZEM, KMAJ, GLIB. Morocco: Teniet el Had. (Reitter), CZEM; (Pic, Pesruchers), GEMB; M. Atl.-Pas el Ma (Théry), GEMB. Spain: «Hispan.», GEMB.

Remarks: The species was synonymized by PEYERIMHOFF (1949) with *D. rufitarsis* (Baudi). This was proven after my examination of the type material to be erroneous. See also the section «Remarks» on *D. rufitarsis*. *D. weisei* Schilsky is a species of a conspicuous habitus, the females are in view of a colouring sometimes confused with *D. bipustulatus* (F.).

Distribution: Algeria, Morocco, Spain (Pic, 1937).

#### 8. *Divales rufitarsis* (Baudi)

Figs 72–77.

*Dasytes rufitarsis* BAUDI, 1873: 296 (described a male erroneously considered for a female).

*Divales (Camptolegnum) rufitarsis*: SCHILSKY, 1897: 1.

*Dasytes amplipennis* BAUDI, 1873: 295 (Note 3), ♀ – **n. syn.**

*Divales weisei* SCHILSKY, PEYERIMHOFF, 1949: 270; KOCHER, 1956: 57 (Note).

Black pubescence dispersed on whole body surface, in a lateral view perpendicularly standing apart (Fig. 74). Sexual dimorphism very strongly developed. ♂. Very glossy, black, margin of elytra behind humera groove-like, in a lateral view not parallelly, set apart (Fig. 74). Internal sac with 5 spines (Fig. 75). ♀. Sternites and legs black. Sternum VIII black (Fig. 76).

♂. Shape parallel, broad, rather flattened. Colour black, bases of antennal segments and tarsi reddish.

Head. Glossy, regularly coarse and dense punctuated, with shallow impressions. Ultimate segment of antennae distally very faintly stragulated.

Pronotum flatwise vaulted, basis feebly emarginate. PW in the middle. Surface very glossy, in the middle with a faint longitudinal impression, regularly densely punctuated, intervals smooth, smaller than pits. Black pubescence upright standing apart (Fig. 74), the light one not perceptible.

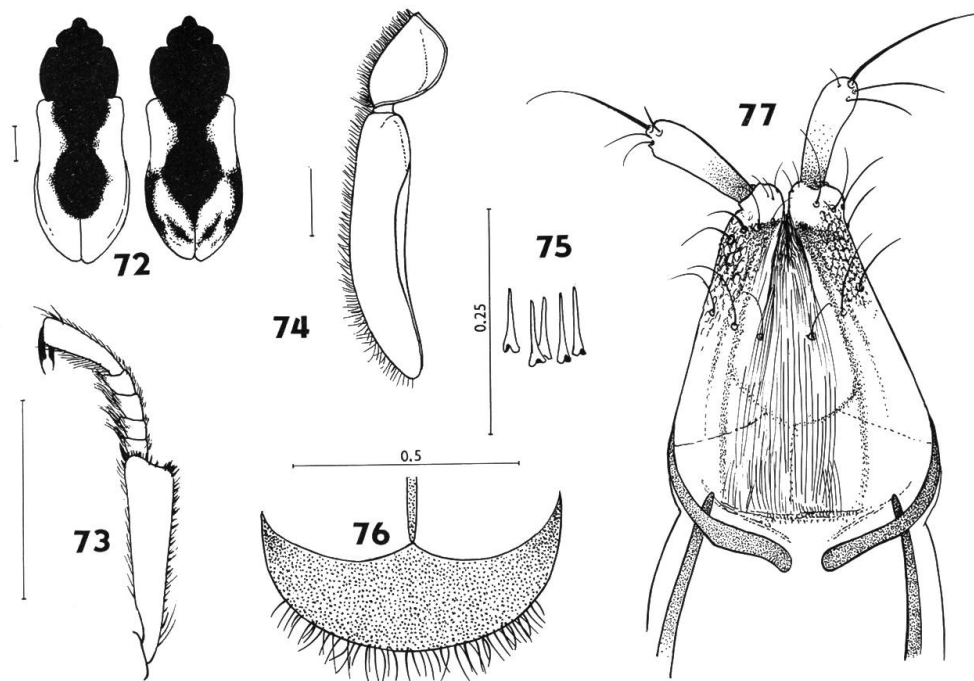
Mesoscutellum transverse, roundedly quadrangular, granulated, little lustrous.

Elytron (Fig. 74) parallel, broadly and flatwise vaulted, in a lateral view behind femora concave. On the level of humerus elytra narrowed

in the middle, on the level of epipleurae parallel, groove-like set apart, the groove in a lateral view feebly bent, terminating in a considerable distance from the apices of elytra, shorter than in *D. mauritanicus* (Lucas). Surface of elytra very glossy, without indication of longitudinal ribs. Dense pits confluent in transverse wrinkles, intervals without microsculpture. Black pubescence, perpendicularly standing apart, in a lateral view conspicuous on whole line of elytra, light pubescence, if present, close-fitting.

Legs (Fig. 73) short, tibiae nearly twice longer than tarsi, externally shortly spinulose and pubescent.

Abdomen: Pygidium semicircular without apical emargination. Sterna VII, VIII, and spicular fork the same as in *D. mauritanicus* (Lucas).



Figs 72–77: *Divales rufitarsis* (Baudi): 72, female colour pattern. 73, male front tibia and tarsus. 74, male pronotum and elytron, lateral view. 75, internal sac. 76, female abdominal sternum VIII. 77, ovipositor, dorso-ventral view. (Scale = 1 mm).

Genitalia: Phallus as in *D. mauritanicus* (Lucas), internal sac with 5 spines (Fig. 75).

Measurements: Length/AL = 5.07–5.37; EL/EW = 1.44–1.50; EL/PL = 2.20–2.60; EW/PW = 1.23–1.44; PW/PL = 1.24–1.30; PW/HW = 1.60–1.90; IOW/DE = 3.20; Length = 5.4–7.7 mm; Width = 2.5–3.2 mm.

♀. Shape backwards evenly inflated. Antennae from 2<sup>nd</sup> segment reddish, to the termination again darkened. Legs and sternites brown to black, tarsi reddish, spines of tibiae always black. For colour pattern of elytra see figure 72.

Head little glossy, proximally more coarsely punctuated than distally.

Pronotum as in *D. mauritanicus* (Lucas), but the black pubescence ampler and evenly dispersed on whole surface, light pubescence little distinct on the sides.

Elytron broadly vaulted, somewhat flattened, humerus slightly prominent, post-humeral depression lacking, elytra beneath humerus only imperceptibly narrowing, more parallel than in *D. mauritanicus* (Lucas). Pubescence as in the male (Fig. 74). Flattening of margins narrower than in *D. mauritanicus* (Lucas), thus resembling *D. weisei* Schilsky, without any spur of a longitudinal rib, however.

Legs short, tibiae somewhat longer than tarsi.

Abdomen: Pygidium of a semicircular contour, sternum VIII entirely black (Fig. 76), narrower than in *D. mauritanicus* (Lucas).

Genitalia: For ovipositor see figure 77.

Measurements: Length/AL = 4.88–4.94; EL/EW = 1.52–1.54; EL/PL = 2.85; EW/PW = 1.31–1.43; PW/PL = 1.45–1.55; PW/HW = 1.65–1.75; IOW/DE = 1.92–2.15; Length = 5.7 mm; Width = 2.7–3.0 mm.

Structural variability: The occurrence of light pubescence may fluctuate from lacking to fully distinct, other variability not observed.

Chromatic variability: For varying colour pattern of female see figure 72.

Material examined totals 6 specimens, dissected 4 males and 2 females.

Type material of *Divales rufitarsis* (Baudi) (ITMU): Neotype male: «*Divales ♂ rufitarsis* (Baudi), NEOTYPUS, K. Majer det. 1981» (red label) / «Mus. Zool. Univ. Torino Italia – 6. 488» (white label, typewritten). Historical specimen: «*Divales ♀ amplipennis* (Baudi) syn. n. for *D. rufitarsis* (Baudi), HISTORICAL SPECIMEN, K. Majer det. 1981» (yellow label) / «Mus. Zool. Univ. Torino Italia – 6.487» (white label, typewritten).

Other material examined, dissected 3 ♂ and 2 ♀. Algeria: Algier, 1 ♂, SWIM, 1 ♀, KMAJ; Oran, 1 ♀, SWIM; (A. Otto), 1 ♂, GEMB; (Desbrochers), 1 ♂, GEMB.

Remarks: After Baudi's description *D. rufitarsis* is a female, the groove-like inflation of elytra is given, however, thus a male was most probably a virtual object of his study.

As a type material two males were sent to me; one of them was *D. rufitarsis* in Schilsky's (as well as Baudi's?) conception, the second one represented a black form of *D. mauritanicus* (Lucas). The historical value of these specimen was undoubtful, but they lacked any other designation except for inventory number of ITMU, LIBERTY (1979), however, gives the compound labels of Baudi's types. Thus I have in specimens which were at Baudi's disposal an indirect demonstration, even when very probable.

PEYERIMHOFF (1949) gives that he had the type of *D. rufitarsis* on loan, and this one was a female specimen identical with *D. weisei* Schilsky. In compliance with description of Baudi the idea occurred to me that the statement of Peyerimhoff is improbable, or a marshalling misdeal may be taken into consideration; it is not excluded that the type material of the species *D. amplipennis* (Baudi) was sent to him.

In spite of the fact that Schilsky had not the type of *D. rufitarsis* at his disposal, his conception is identical with one out of two males which I received as type material.

As a type of *D. amplipennis* (Baudi) was sent to me a female evidently bearing upon a description of Baudi, but analogically lacking designation, representing therefore as a type of Baudi also an indirect demonstration only, in this specimen I recognized a female of *D. rufitarsis*, Schilsky did not recognize one female (GEMB) of *D. rufitarsis*, and identified it as *D. mauritanicus* (Lucas).

*D. rufitarsis* (Baudi), *D. amplipennis* (Baudi) and *D. weisei* Schilsky have been in various collections when identified by various authors (Pic, Hicker, etc.) seized in various combinations and alterations:

*D. rufitarsis* (Baudi), male, neotype (N<sup>o</sup> 6.488, ITMU):

= Male of *D. rufitarsis* sensu Schilsky

= Male of *D. mauritanicus* sensu Schilsky, partim

= Female of *D. amplipennis* (Baudi), historical specimen (N<sup>o</sup> 6.487, ITMU)

not *D. rufitarsis* sensu Peyerimhoff et Kocher

not *D. rufitarsis* (Baudi), historical specimen

not *D. amplipennis* (Baudi), det. Pic, Hicker in var. coll. (= *D. weisei* Schilsky)

not *D. rufitarsis* (Baudi), det. Pic, Hicker in var. coll. (= *D. weisei* Schilsky)

not *D. amplipennis* var. *melyroides* Pic (= *D. haemorrhoidalis* F.)

Distribution: Algeria (PIC, 1937).



**9. *Divales mauritanicus* (Lucas)**

Figs 78–93.

*Dasytes mauritanicus* LUCAS, 1847: 196, t.19., f. 5a–d; ROSENHAUER, 1856: 162.*Divales (Camptolegnum) haemorrhoidalis* (F.), SCHILSKY, 1894b: 4.var. *nigripennis* SCHILSKY, 1894b: 10, 1897: A.var. *rufiventris* SCHILSKY, 1894b: 10, 1897: A.*Divales (Camptolegnum) mauritanicus* (Lucas), SCHILSKY, 1897: A, 1897: Nachtrag (without pagination); PEYERIMHOFF, 1949: 269, f. 9 m (phallus).var. *apex* SCHILSKY, 1897: A.

Black pubescence in a lateral view standing obliquely, inconspicuous. Sexual dimorphism very strongly developed. ♂. Little glossy, colouring variable (Fig. 78), elytra in a lateral view set apart nearly parallel (Fig. 87), internal sac with 7–9 spines (Fig. 93). ♀. Sternites and legs light, sternum VIII in the middle light (Fig. 90).

♂. Shape (Fig. 78). Parallel, transversely strongly vaulted. Colour: Scape black, pedicel light, following segments gradually darker, 10., and 11. segments black. Knees and tarsi light. For colour pattern of elytra see figure 78.

Head glossy, irregularly coarse and sparsely punctuated, with shallow impressions or without them. Ultimate segment of antennae distally strangled. For mandible see figure 79.

Pronotum (Fig. 87) longitudinally as well as transversely strongly vaulted, basis near scutellum straight, on the sides faintly emarginate, PW around the middle. Surface faintly glossy, in the middle sometimes a longitudinal impression, irregularly densely punctuated with coarse pits, intervals smooth, on the average somewhat larger than pits. Black pubescence slightly standing apart, on the basis sometimes also pale pubescence perceptible.

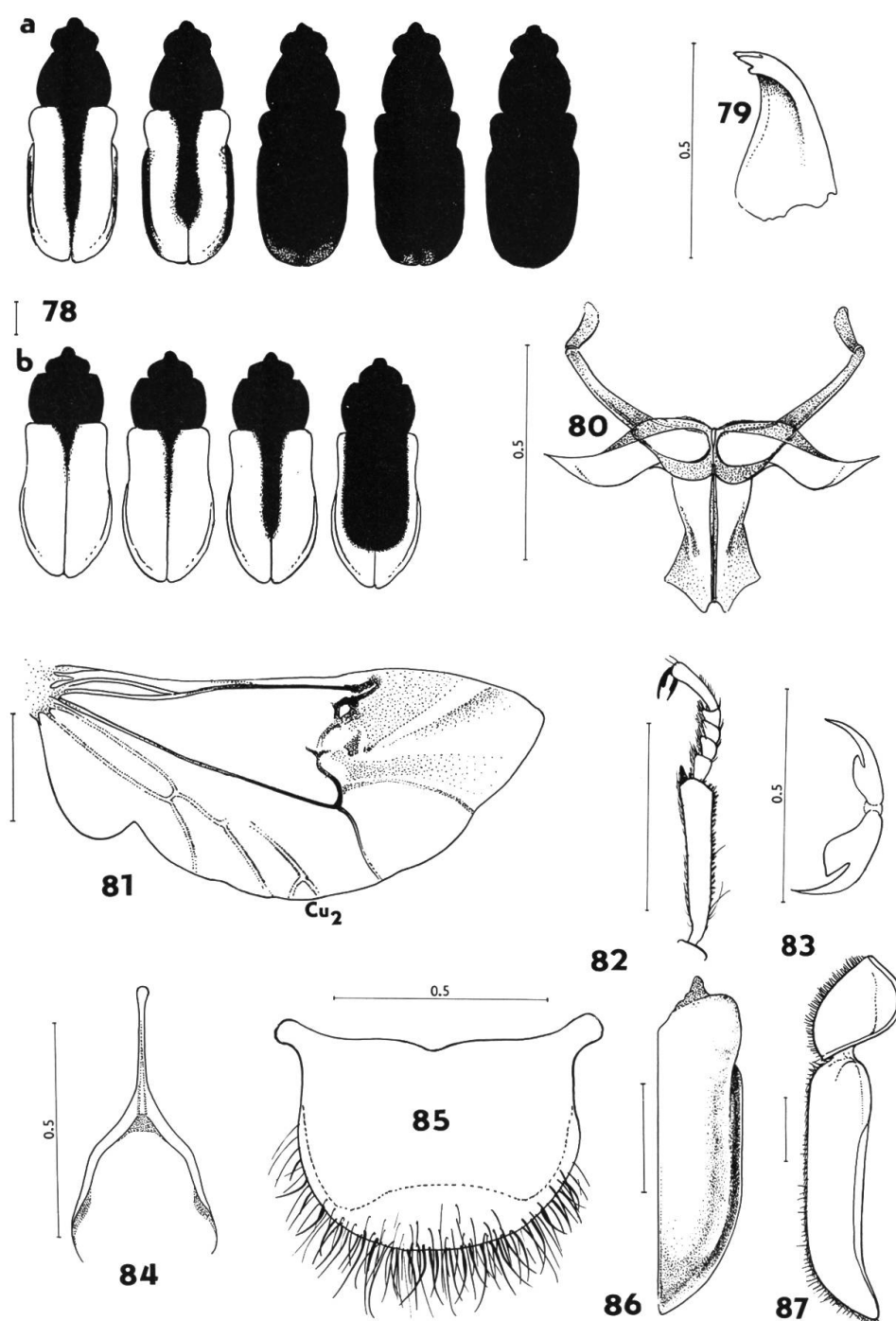
Mesoscutellum feebly transverse, sometimes nearly pentagonal, distally rounded, condensedly punctuated, dull.

Elytron (Figs 86, 87) parallel, transversely strongly vaulted, in a lateral view parallel. Groove-like set apart area nearly parallel, terminating at the very apex of elytron. Surface of elytra dull, mostly with indications of longitudinal ribs. Dense pits confluent in transverse wrinkles, intervals with reticulate microsculpture. Obliquely standing apart black pubescence in a lateral view perceptible on two-thirds of the length of elytra, light pubescence always present, mostly conspicuous and dense, scarcely little distinct.

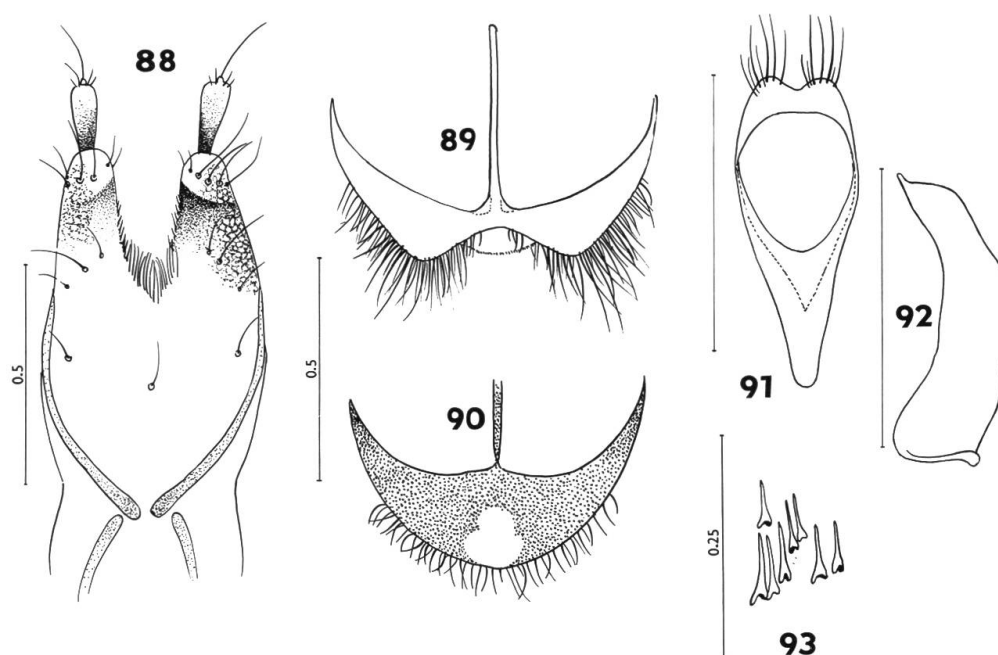
Metendosternite robust, see figure 80.

Wings with bifurcate vein  $Cu_2$  (Fig. 87).

Legs: Tibiae short, about one third longer than tarsi (Fig. 82), for claws see figure 83.



Figs 78–87: *Divales mauritanicus* (Lucas): 78, colour pattern (a = male, b = female). 79, mandible, ventral view. 80, metendosternite. 81, wing. 82, male tibia and tarsus. 83, male claws. 84, spicular fork. 85, male pygidium. 86, male elytron, dorsal view. 87, male pronotum and elytron, lateral view.



Figs 88–93: *Divales mauritanicus* (Lucas): 88, ovipositor, dorso-ventral view. 89, male abdominal sternum VIII. 90, female abdominal sternum VIII. 91, tegmen, ventral view. 92, phallus, lateral view. 93, internal sac.

Abdomen: Pygidium (Fig. 85) semicircular, sometimes in the middle finely emarginate. Sternum VIII (Fig. 89) distally broadly and shallowly emarginate, notch covered with a membranule. For spicular fork see figure 84.

Genitalia. For phallus see figure 92. Internal sac (Fig. 93) with 7–9 spines. For tegmen see figure 91.

Measurements: Length/AL = 3.68–4.40; EL/EW = 1.65–1.75; EL/PL = 2.10–2.20; EW/PW = 1.18–1.31; PW/PL = 0.90–1.22; PW/HW = 1.68–1.78; IOW/DE = 2.83; Length = 5.60–7.2 mm; Width = 2.28–2.71 mm.

♀. Shape (Fig. 78) backwards regularly inflated. Colour: Antennae as in the male, legs and abdominal segments light, spines of outer side of tibiae black, for colour pattern of elytra see figure 78. Head glossy, regularly densely punctuated. Pronotum as in the male, vaulting more flatwise, however. Elytron, Broadly vaulted, humerus prominent, post-humeral depression distinct. elytra beneath humerus narrowed, never, however, groove-like as in the male. Pubescence of elytra same as in the male (Fig. 87). Legs short, tibiae approximately as long as tarsi. Abdomen: Pygidium of a semicircular contour, sternum VIII (Fig. 90) broad,

apically with a blunt point and in this spot paler, eventually sternum VIII entirely light. Genitalia. For ovipositor see figure 88.

Measurements: Length/AL = 3.90–4.65; EL/EW = 1.50–2.03; EL/PL = 2.61–3.04; EW/PW = 1.29–1.50; PW/PL = 1.32–1.42; PW/HW = 1.64–1.71; IOW/DE = 2.30; Length = 4.0–6.7 mm; Width = 2.0–3.0 mm.

Structural variability: Light pubescence sometimes little distinct, another time arranged into longitudinal rows.

Chromatic variability: see figure 78.

Natural history: ROSENHAUER (1856: 162) gives this species on *Centaurea calcitrapa* (Asteraceae) from Algeciras and Granada (Spain).

Historical specimen of *Divales rufitarsis* Baudi, male, deposited in ITMU: «*Divales ♂ mauritanicus* (Lucas) marshalled as *D. rufitarsis*, Neotypus, HISTORICAL SPECIMEN, K. Majer det. 1981» (yellow label).

Material examined: 15 specimens, dissected 9 ♂ and 6 ♀. Algeria: «Algiers» (Grenier), GEMB; El Kantara (Oberthür), GEMB, CZEM; Bou Saada (Heyden), GEMB; Djebel Aurès (Oberthür), SWIM; Aïn Zaatout, Mt. Aurès (Hoffer et Horák), KMAJ.

Remarks: The most conspicuous representative of the genus *Divales*, the males instantaneously recognizable conformably to groove on the margin of elytra (unless they are not mistaken for *D. rufitarsis*).

Distribution: North Africa, Spain (PIC, 1937).

## VI. Phylogenetics and Zoogeography of *Divales*

### Intergeneric Relationship

The aim of the present paper is not to deal with major taxonomy, nevertheless the intergeneric relationships must be briefly commemorated. The major taxonomy of the family is until now limited to the statements of individual subfamilies by CROWSON (1964).

The conventional suprageneric taxa within the subfamily Dasytinae run as follows: Dasytini, Danaceini and Enicopini<sup>4</sup>). The mentioned tribes are indefinite and in many ways unnatural, their taxonomic values are mutually in an entire unbalance. By means of wing-venation characters and with a reserve of utterly provisional arrangement I placed the genus *Divales* to one group together with following

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<sup>4</sup>Enicopini is correct spelling as *Henicopus* is an unjustifiable emendation.

genera: *Dasytes* s. l. (only palaearctic species), *Psilothrix* Redtb., *Dolichosoma* Steph., *Dolichophron* Kiesw. and the tribe Enicopini Escalera, 1936.

This group had conserved in itself an appreciate number of symplesiotypic characters, the genus *Divales* displays jointly with the tribe Enicopini the uniform structure of sternites and the same wing-venation. Enicopini exhibit the extremities and integument of an autapotypic build: *Divales* is of an autapotypic colour, partly (in the *haemorrhoidalis*-group) possessing also autapotypically spinulose tibiae and groove-like structure edges of elytra. The asymmetry of claws is a synapotypy (cfr. *Danacaea* *Dolichosoma* partim, *Leptovectura*, *Enallonyx*, *Pseudallonyx*, etc. – BLAISDELL, 1939).

Furrows or ribs on the sides of pronotum are an evolutionary parallelism in many related genera. The correlation of the shape of metendosternite with the presence of ribs on the sides of pronotum in the genus *Divales* is evident. Whether the same phenomenon appears also in other genera, remains questionable for the present.

Furrows on the sides of pronotum are, however, neither a particular taxonomic importance nor exerting influence upon the shape of metendosternite.

### Relationships among the species group

Entirely heterogenous, rather manipulatory than natural the *bipustulatus*-group is older than homogenous, apotypic *haemorrhoidalis*-group (Fig. 100).

#### Relationships within the *bipustulatus*-group:

An entirely isolated position within this group represents *D. bipustulatus* (F.) bearing maximum of plesiotypic characters within the genus *Divales* on a whole. Pronotum laterad is without furrows, or costae, metendosternite is without tendons. Its distribution is discontinuous (Fig. 101), it is convergent with *D. quadrimaculatus* (Olivier) as regards the arrangement of spines in the internal sac. *D. cinctus* (Gené) and *D. uhligi* n. sp. are very related species, *D. uhligi* displays by the shape of spines a certain convergence with the *haemorrhoidalis*-group.

#### Relationships within the *haemorrhoidalis*-group:

The representatives of this group form a rising evolutionary row as

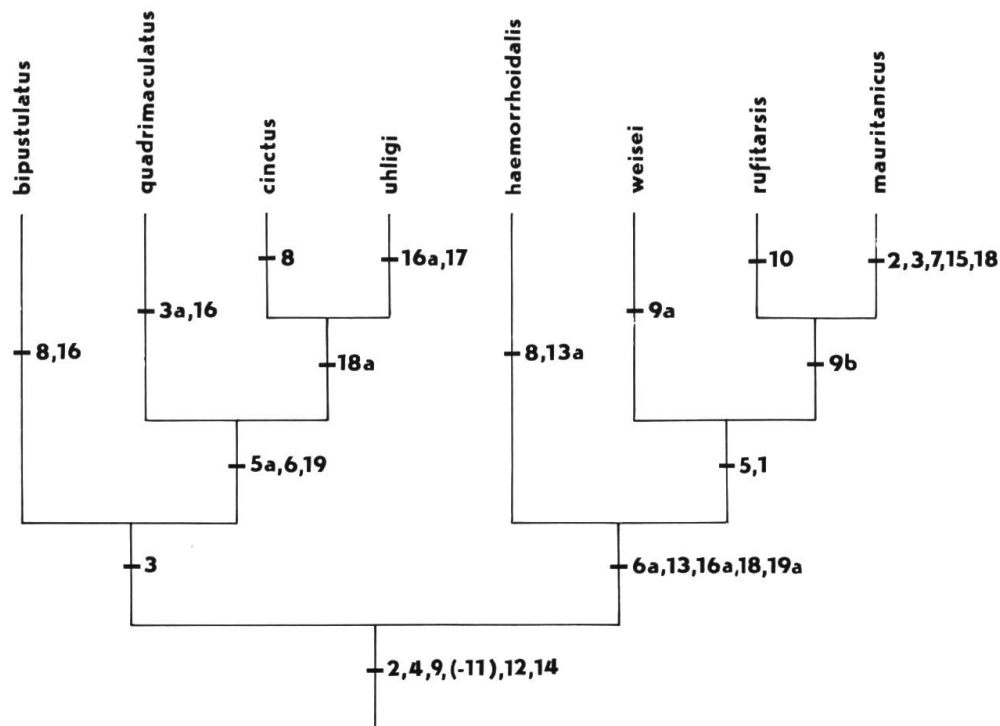


Fig. 100: Cladogram of the genus *Divales* (numbers refer to apotypic character states listed in Tab. 1).

regards the build of elytral edge. The homogeneity of group is firmly rooted in externally spinulose tibiae, shapes of metendosternite and spines in the internalsac.

Also in a chorological viewpoint the group displays many apotypic characters – its distribution is continuous (Algeria, Morocco, Spain).

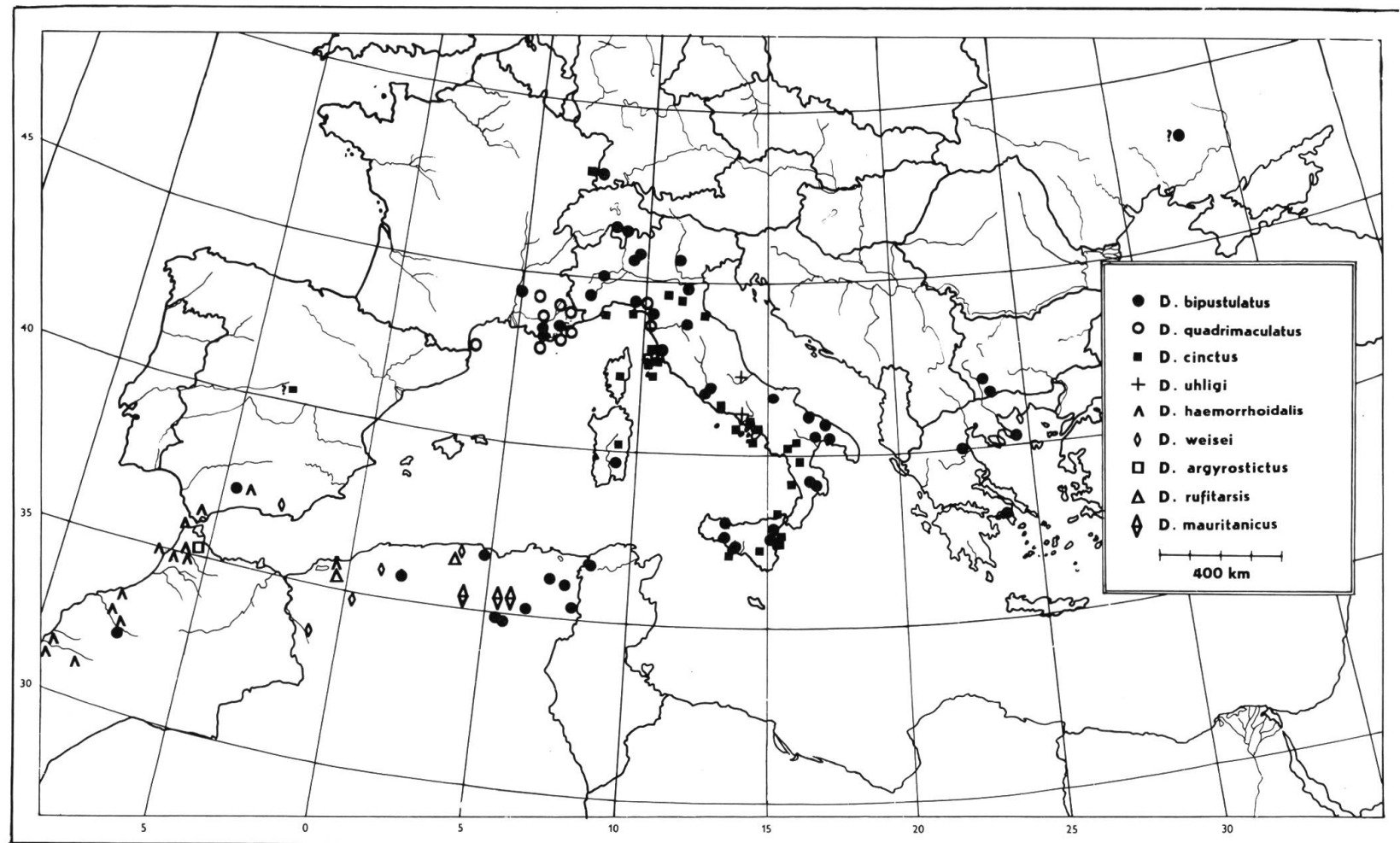


Fig. 101: Distribution map of the genus *Divales* Cast.



Number	Character	CHARACTER STATE	
		plesiotypic	apotypic
1	Sexual dimorphism	inconspicuous	conspicuous
2	Colour	unicoloured	variegated
3	Body pubescence	indistinctly double	distinctly double
3a	ditto light	even	condensed
4	Antennal segments	oblong	transverse
5	Thorax on the sides	smooth	with furrows
5a	ditto		with ribs
6	Metendosternite	without tendons	with tendons
6a	ditto	slender	stout
7	Wings: wing-vein Cu <sub>2</sub>	simple	dilated
8	Elytron, colouring	± constant	variable
9	ditto, edge	not inflated	inflated
9a	ditto		with a rib
9b	ditto		with a groove
10	Elytron, inflation in a lateral view	straight	bent
11	Abdomen, sternites	uniform	modified
12	Legs, apex of tibia	not spinulose	spinulose
13	Tibia, outer side	not spinulose	spinulose
13a	ditto		hind tibiae thickly pubescent
14	Tarsal claws: males	symmetrical	asymmetrical
15	Pygidium: females	unicoloured	light in the middle
16	Internal sac: spines, their shape	thorn-shaped	arrow-shaped
16a	ditto		longly arrow- shaped
17	Spines, type	one type	two types
18	ditto, number	3–6	7–12
18a	ditto		20–30
19	Zoo-geographical range	Europe + Africa	only Europe
19a	ditto		only Africa and south of Spain

Tab. 1: Plesiotypic and apotypic character states used in figure 100.

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Author's address:

Karel Majer  
Faculty of Forestry  
University of Agriculture  
Zemědělská 3  
662 66 Brno, ČSSR