

**A new *Stictotarsus* (Insecta: Coleoptera: Dytiscidae)
from the Sahara and observations on
Stictotarsus sensu NILSSON & ANGUS, 1992**

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Abstract

A new species of *Stictotarsus* sensu ZIMMERMANN, 1919 is described from Morocco and Algeria. Characters which allow separation of the new taxon from the other two species of *Stictotarsus* sensu ZIMMERMANN are examined and figured. The systematic position of *Stictotarsus* sensu lato is discussed. This taxon appears to be highly heterogeneous and might include different monophyletic clades. On the other hand, the three species of *Stictotarsus* sensu ZIMMERMANN appear to form a well defined monophyletic group, with *Stictotarsus bertrandi* (LEGROS, 1956) as its sister taxon.

Key words: Dytiscidae, *Stictotarsus maghrebinus*, *Stictotarsus bertrandi*, new species, Algeria, Morocco.

Zusammenfassung

Eine neue Art der Gattung *Stictotarsus* sensu ZIMMERMANN, 1919 aus Marokko und Algerien wird beschrieben. Merkmale, die die Abtrennung des neuen Taxons von den zwei anderen *Stictotarsus*-Arten sensu ZIMMERMANN ermöglichen, werden untersucht und dargestellt. Die systematische Stellung von *Stictotarsus* sensu lato wird diskutiert. Dieses Taxon erscheint sehr heterogen und könnte verschiedene monophyletische Gruppen enthalten. Die drei Arten von *Stictotarsus* sensu ZIMMERMANN indessen, bilden eine gut definierte monophyletische Gruppe, mit *Stictotarsus bertrandi* (LEGROS, 1956) als Schwestertaxon.

Introduction

Stictotarsus was created by ZIMMERMANN (1919), as a subgenus of *Deronectes* SHARP, for SHARP's group 2 of *Deronectes* SHARP (1882), composed of the species *D. duodecimpustulatus* (FABRICIUS) and *D. duodecimmaculatus* (RÉGIMBART). SHARP (1882) separated this group from the other three in the genus on the basis of "the hind coxae distinctly separated by a partition projecting backwards beyond the coxal cavities; hind tibiae densely and finely punctured in their infero-external aspect (...); prosternal process remarkably broad and flat, without central carina; colour of surface variegate". These same characters were essentially used by ZIMMERMANN (1919) in its diagnosis of *Stictotarsus*, with the addition of the asymmetrical shape of the aedeagus.

GUIGNOT (1933) assigned generic status to *Stictotarsus* and, later (1946), selected *Dytiscus duodecimpustulatus* FABRICIUS, 1972 as the type species.

In their work on the reclassification of the *Deronectes*-group of genera, NILSSON & ANGUS (1992) considered *Stictotarsus* as a wider genus characterized by metaepisternum punctate

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and metafemur with ventral face punctate. Thus the genus, traditionally dibasic and Palearctic, has been extended to a large number of species, most of which are Nearctic: almost all the species of Nearctic *Deronectes* (sensu ZIMMERMAN & SMITH, 1975) and the Palearctic species *duodecimpustulatus* (FABRICIUS), *procerus* (AUBÉ), *bertrandi* (LEGROS), *griseostriatus* (DE GEER), *macedonicus* (GUEORGUIEV), *multilineatus* (FALKENSTRÖM) and *otini* (GUIGNOT) are now considered as *Stictotarsus*. The same authors divide the genus into three species groups: *griseostriatus*-group, *roffi*-group and *duodecimpustulatus*-group. This last group is characterized by the metatibiae with anterior face punctate and includes the Palearctic species *bertrandi* (LEGROS), *duodecimpustulatus* (FABRICIUS), *procerus* (AUBÉ) and the Nearctic *grammicus* (SHARP), *minipi* (LARSON), *neomexicanus* (ZIMMERMAN & SMITH) and *titulus* (LEECH). Little importance is given to the peculiar characters of *Stictotarsus* sensu ZIMMERMANN.

We think that the solution proposed by NILSSON & ANGUS (1992) is not completely satisfying, since their *Stictotarsus* appears to be a very heterogeneous group, which might include more than one monophyletic clade. The recent discovery of a new species, described in this paper, has therefore stimulated us to revise the species of *Stictotarsus* sensu ZIMMERMANN and to reexamine the problem of their systematic position.

Stictotarsus sensu ZIMMERMANN is characterized by the following combination of characters: a) prosternal process flat, not bordered and without longitudinal carina, covered by erect brush-like hairs (Fig. 5); b) median lobe of aedeagus strongly asymmetrical, with lateral expansions, and parameres more or less unequal (Figs. 12, 13, 14, 16, 17, 18); c) female gonocoxosternites trilobate (Figs. 20, 21, 22); d) area formed by posterior part of metasternum and metacoxal processes in ♂♂ weakly concave (Fig. 24); e) metatibiae with anterior face punctate; f) genae, behind the eyes, covered by a dense punctation and postocular ridge not visible at all; g) interlaminal ridge of metasternal process exposed; h) male mesotibiae distinctly arcuated inward. The first three characters are exclusive of *Stictotarsus* sensu ZIMMERMANN, while the others are also found in a few other genera or species groups of the *Deronectes* group of genera.

Stictotarsus sensu ZIMMERMANN actually includes three species with a western Palearctic distribution, which can be identified using the following key.

Key to the species of *Stictotarsus* sensu ZIMMERMANN, 1919

- 1 Lateral sides of pronotum sinuate at the base (Fig. 1); ♂♂ with anterior claws subequal (Fig. 7) and apical third of protibiae, seen from above, distinctly widened (Fig. 10). Aedeagus as in Figure 12, pointed at the apex. Parameres as in Figure 16. Length 5.5 - 6 mm. Central and western Europe, from Finland to Spain and Italy *S. duodecimpustulatus* (FABRICIUS)
- Lateral sides of pronotum regularly rounded, without sinuation at the base (Figs. 2, 3); ♂♂ with anterior claws unequal, the inner distinctly shorter than the outer (Figs. 8, 9) and protibiae, seen from above, regularly widened from base to apex, without a strong dilation in their apical third (Fig. 11) 2
- 2 Aedeagus as in Figure 13, long and pointed at the apex. Corsica, Sardinia, Sicily and Mediterranean coast of western North Africa *S. procerus* (AUBÉ)
- Aedeagus as in Figure 14, short and rounded at the apex. Morocco, Algeria (Tassili) *S. maghrebinus* sp.n.

Acknowledgements and Abbreviations

The material used for this study is deposited in the following collections (abbreviations are used to refer to collections in the text):

AMM	coll. Andres Millán, Murcia	MNHN	Muséum National d'Histoire Naturelle, Paris
ASR	coll. Antonio Schizzerotto, Rovereto	MSNV	Museo Civico di Scienze Naturali, Verona
BML	The Natural History Museum, London	MTB	coll. Mario Toledo, Brescia
CHB	coll. Carlos Hernando, Barcelona	MZB	Museu de Zoologia de Barcelona
FAF	coll. Fernando Angelini, Francavilla Fontana	NMW	Naturhistorisches Museum, Wien
FPR	coll. Fernando Pederzani, Ravenna	PAB	coll. Pedro Aguilera, Barcelona
GWV	coll. Günther Wewalka, Wien	PMB	coll. Paolo Mazzoldi, Brescia
HFB	coll. Hans Fery, Berlin		
IRB	coll. Ignacio Ribera, Barcelona		

We thank: David Bilton, Plymouth University, for linguistic revision of the text and our colleagues Hans Fery, Günther Wewalka, Andres Millán, Carlos Hernando, Pedro Aguilera, Ignacio Ribera, Fernando Pederzani and Antonio Schizzerotto who helped us in various ways.

Stictotarsus duodecimpustulatus (FABRICIUS, 1792)

Dytiscus duodecimpustulatus FABRICIUS, 1792: 197.

Hydroporus duodecimpunctatus (FABRICIUS): STEPHENS 1828: 51.

Deronectes duodecimpustulatus (FABRICIUS): SHARP 1882: 424.

Deronectes (Stictotarsus) duodecimpustulatus (FABRICIUS): ZIMMERMANN 1919: 186.
ZIMMERMANN 1920: 121. ZIMMERMANN 1932: 110. BALFOUR-BROWNE 1940: 223.

Deronectes duodecimpustulatus (FABRICIUS) ab. *Sydowi* SCHOLZ, 1923: 182.

Deronectes duodecimpustulatus (FABRICIUS) var. *Heeri* JACQUET, 1925: 41.

Stictotarsus duodecimpustulatus (FABRICIUS): GUIGNOT 1933: 458. GUIGNOT 1947: 141.
SCHAEFLEIN 1971: 49. FRANCISCOLO 1979: 445. ANGELINI 1984: 76. RICO, PERES & MONTES 1990: 109.

Stictotarsus (sensu NILSSON & ANGUS 1992) *duodecimpustulatus* (FABRICIUS): NILSSON & ANGUS 1992: 276. NILSSON & HOLMEN 1995: 81.

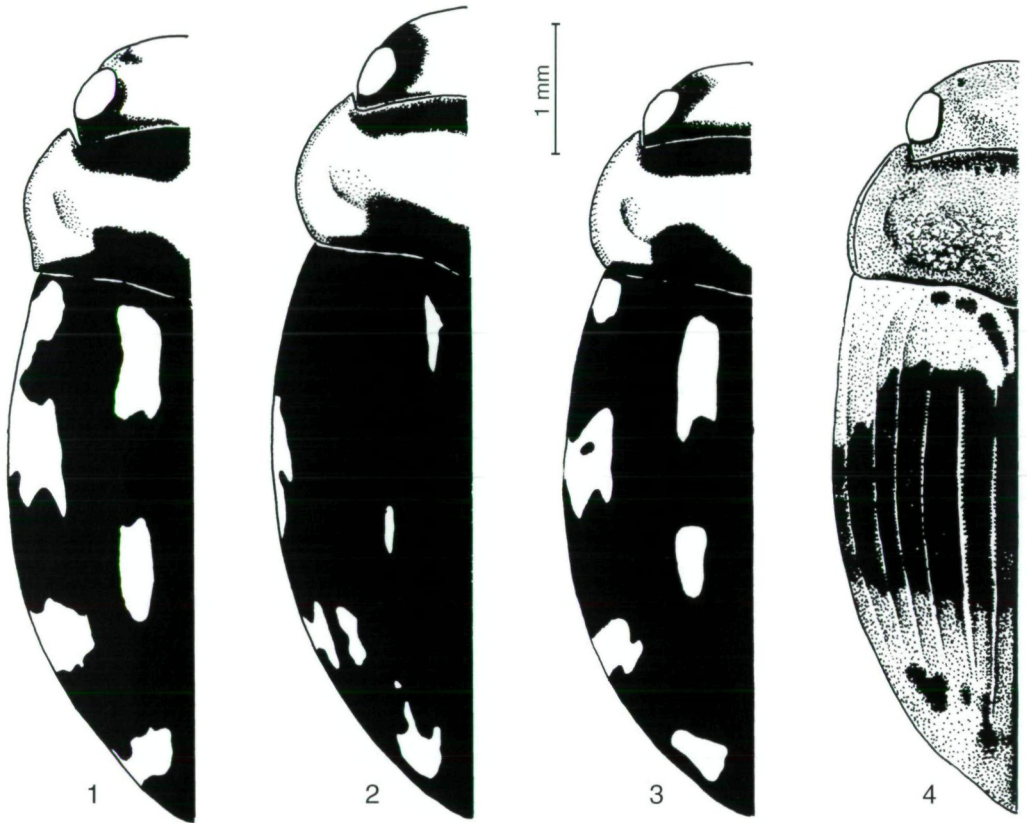
Type material: the type, which according to the original description, should have been in coll. Bosc, is usually considered to be lost.

Material examined: Italy: Lombardia: Brescia prov., S.Paolo, Scarpizzolo, ditch near Cascina del Laghetto, 16.10.1993 & 17.4.1993, leg. P.Mazzoldi, 21 exs (PMB). Liguria: Ventimiglia, mouth of river Roja, 19.7.1991, leg. P.Mazzoldi & M.Toledo, 21 exs (PMB & MTB).

Type locality: unknown (not mentioned in the original description).

Diagnosis: Length 5.5 - 6 mm. Since the morphology of this species is very well known, and it has been adequately described by various authors, we refer to GUIGNOT (1933, 1947), BALFOUR-BROWNE (1953), FRANCISCOLO (1979) and NILSSON & HOLMEN (1995) for its description; it can be easily distinguished from the other two species of *Stictotarsus* sensu ZIMMERMANN (1919) by the lateral sides of the pronotum sinuate at the base, by the subequal claws (Fig. 7) and by the protibiae of ♂♂ strongly dilated at the apex (Fig. 10). The shape of the aedeagus and the strongly unequal parameres are also very characteristic (Figs. 12, 16). ♀♀ are often a little duller than ♂♂, with gonocoxosternites as in Figure 20.

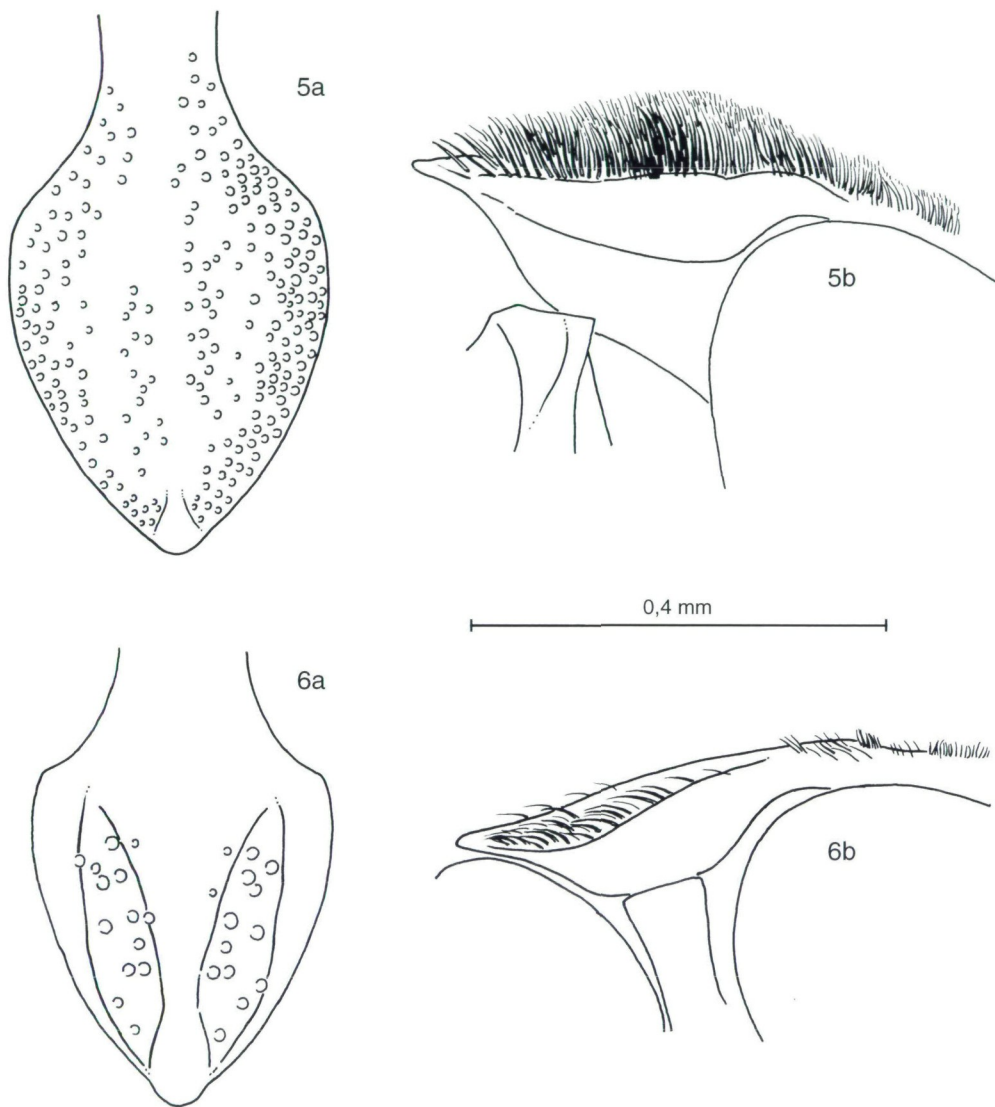
Two colour varieties of this species were described: one, *heeri* JACQUET, is very light coloured, with black marking strongly reduced, the other, *sydowi* SCHOLZ, on the con-



Figs. 1 - 4: Habitus of (1) *Stictotarsus duodecimpustulatus*, (2) *S. procerus*, (3) *S. maghrebinus* sp.n., (4) *S. bertrandi*.

trary, has extended black marking and yellow spots strongly reduced. In our opinion, these varieties represent only the extremes in a continuous series of variations and therefore have no systematic importance.

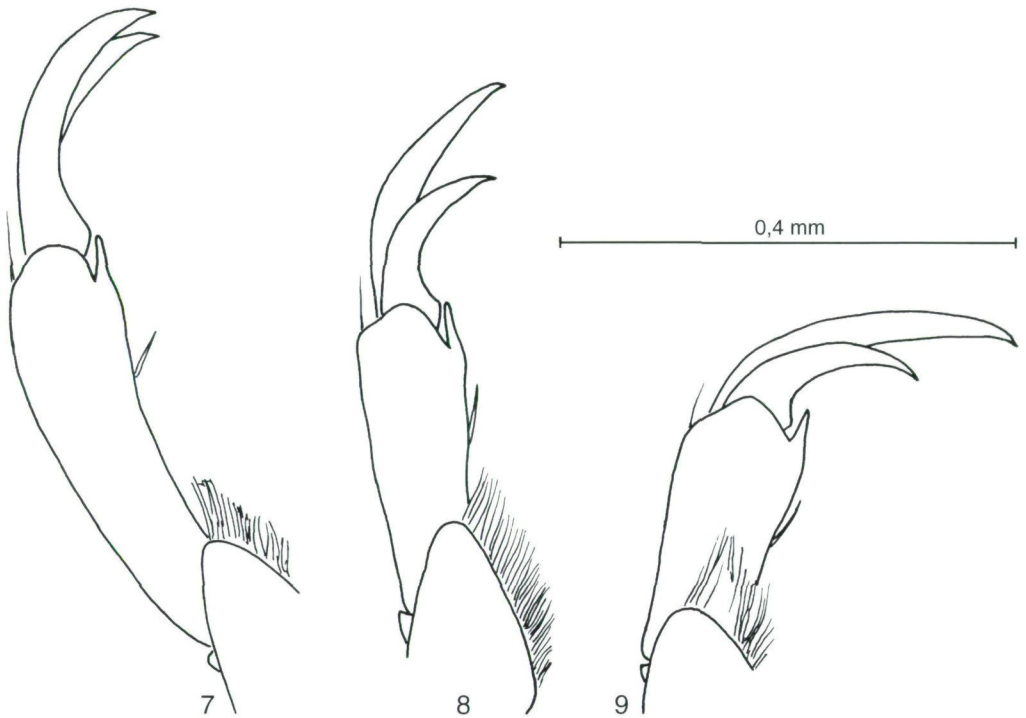
Distribution: A typical European species: Fennoscandia (NILSSON & HOLMEN 1995), Great Britain (BALFOUR-BROWNE 1940, 1953), Netherlands (NIEUKERKEN 1992), Germany (SCHAEFLEIN 1971), Belgium and France (GUIGNOT 1933, 1947), Austria (SCHAEFLEIN & WEWALKA 1982), Spain and Portugal (RICO, PEREZ & MONTES 1990), Italy (FRANCISCOLO 1979; ANGELINI 1984, 1993), ?Croatia (GUEORGUIEV 1971) (Fig. 25). This species has been reported in Sicily and Sardinia (ANGELINI 1984, 1993), where it would coexist with *S. procerus*, but the records for Sardinia are based on misidentifications: we have been able to examine the specimens from Lotzorai, Rio Pramera and Quartu S. Elena determined by Angelini, and they were all *S. procerus*; we think therefore that the species is not present in Sardinia. The situation is uncertain for Sicily, since the record of Balestrate, river Calatubo, reported by ANGELINI (1984) was based also on a misidentification and must be referred to *S. procerus* (M. Romano, personal communication), while the older records of VITALE (1920) and RAGUSA (1921) remain in doubt. We have discovered also that two specimens (from the Alburni Mountains, Campania



Figs. 5 - 6: Prosternal process of (5) *Stictotarsus duodecimpustulatus*, (a) ventral view, (b) lateral view, and (6) *S. bertrandi*, (a) ventral view, (b) lateral view.

and from Satriano, Lucania) kept in the Museum of Verona and labelled as *S. duodecimpustulatus* are really *S. procerus* (unluckily both specimens are ♀♀, but the shape of pronotum in our opinion leaves no doubt); as a consequence, for the whole southern part of the Italian Peninsula only one record for *S. duodecimpustulatus* remains, that of Salerno (ANGELINI 1984), which we were not able to check; we think therefore that the presence of the species in southern Italy needs confirmation.

Biology: The species inhabits streams, ditches and small rivers, sometimes also lakes and ponds with clear water. According to NILSSON & HOLMEN (1995) it occurs amid sub-



Figs. 7 - 9: Male anterior claws of (7) *Stictotarsus duodecimpustulatus*, (8) *S. procerus*, and (9) *S. maghrebinus* sp.n.

merged plants in the more slow-flowing parts of backwaters. In Northern Italy we also collected this species in ditches with muddy bottom and very little aquatic vegetation. In Fennoscandia the larva occurs in summer (NILSSON & HOLMEN 1995).

Stictotarsus procerus (AUBÉ, 1838)

Hydroporus duodecimpustulatus var. *procerus* AUBÉ, 1838: 505.

Hydroporus duodecimmaculatus RÉGIMBART, 1877: 133.

Deronectes duodecimmaculatus (RÉGIMBART): SHARP 1882: 424.

Deronectes (Stictotarsus) duodecimmaculatus (RÉGIMBART): ZIMMERMANN 1919: 186.
ZIMMERMANN 1920: 120.

Hydroporus (Stictotarsus) duodecimpustulatus (FABRICIUS) var. *procerus* (AUBÉ): BEDEL 1925: 357.

Deronectes (Stictotarsus) procerus (AUBÉ): ZIMMERMANN 1932: 111.

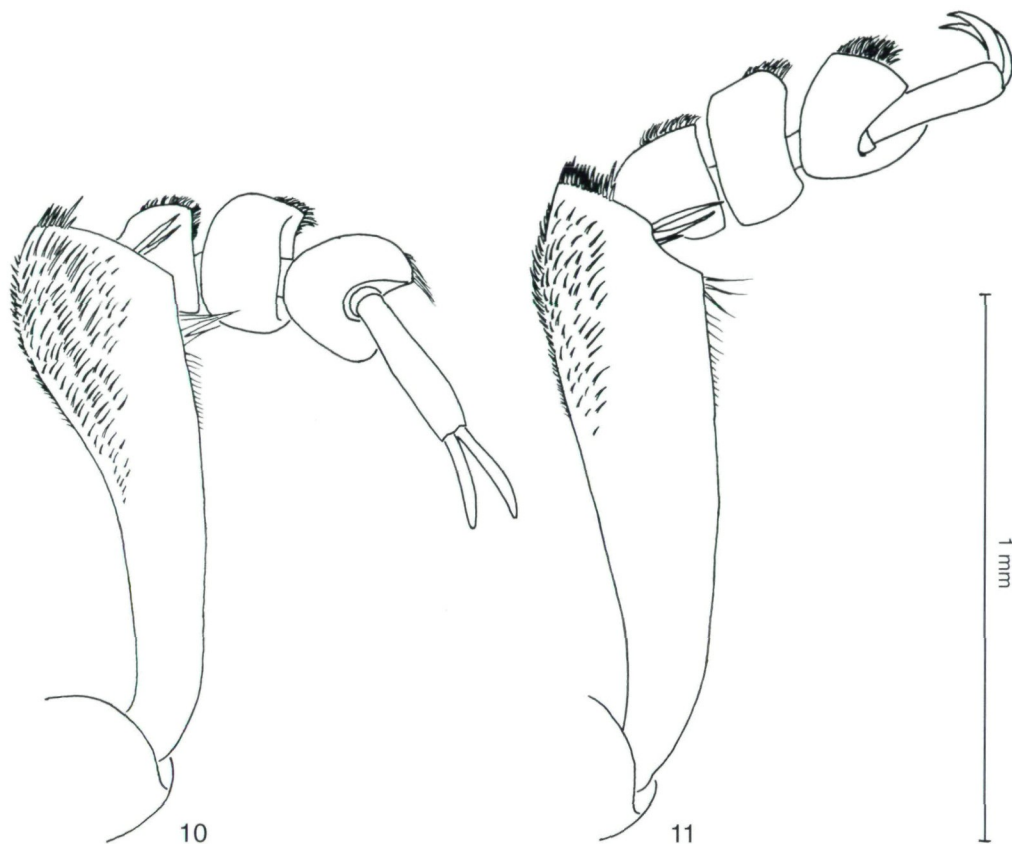
Stictotarsus duodecimpustulatus (FABRICIUS) var. *procerus* (AUBÉ): GUIGNOT 1933: 461.

Stictotarsus procerus (AUBÉ): GUIGNOT 1947: 143. GUIGNOT 1959: 437. KOCHER 1958: 23.
FRANCISCOLO 1979: 446. ANGELINI 1984: 76.

Stictotarsus procerus (AUBÉ) ab. *melas* GUIGNOT, 1959: 437.

Stictotarsus (sensu NILSSON & ANGUS 1992) *procerus* (AUBÉ): NILSSON & ANGUS 1992: 279.

Type material: the species was described on the basis of three ♂♂ from Sardinia which should be in coll. Aubé, in MNHN.



Figs. 10 - 11: Male anterior leg of (10) *Stictotarsus duodecimpustulatus*, and (11) *S. procerus*.

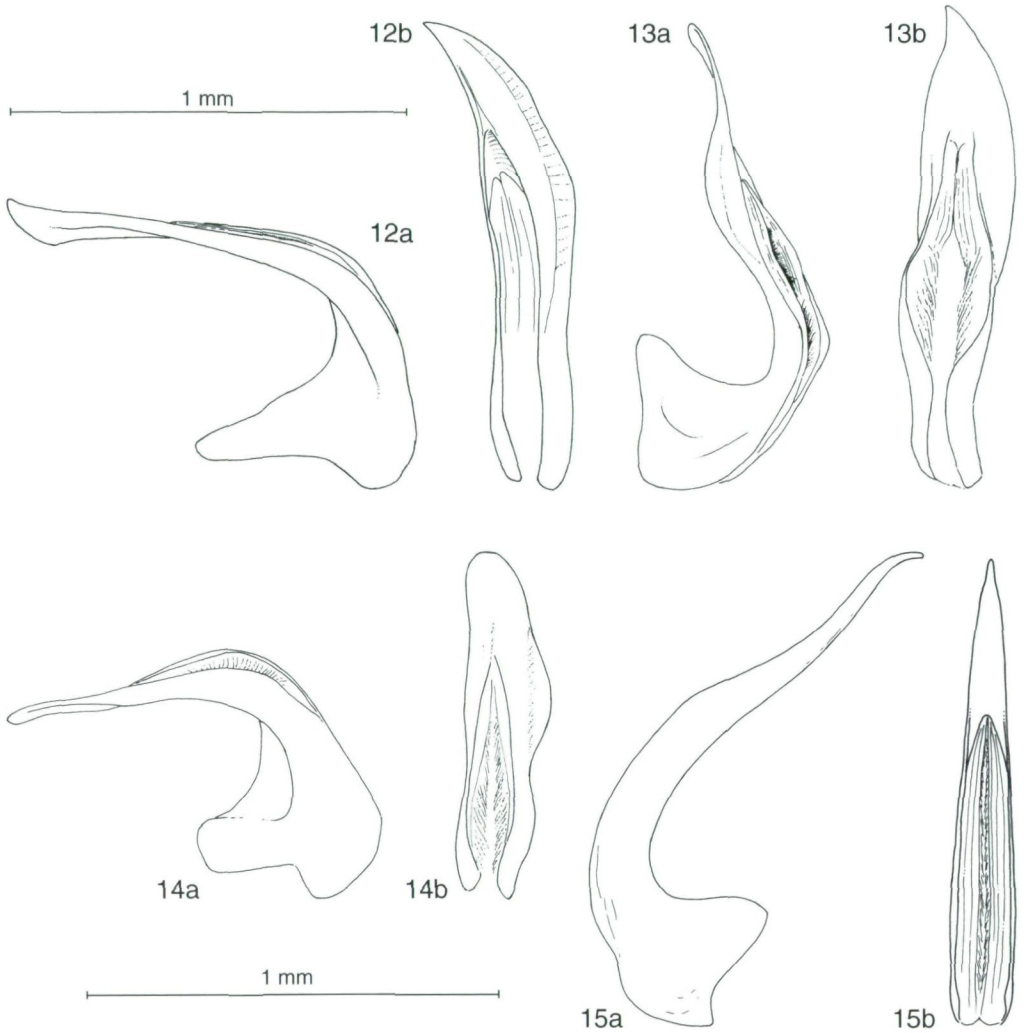
Material examined: Corsica: Portovecchio, s.s. 198-17, 5 km S, pools on stream bed, 14.7.1967, leg. Pederzani, 2 exs. (MTB); Rau Tartagine near Ponte Rosso, m 200, 21.7.1991, leg. Toledo, 22 exs. (MTB & PMB); Sicily: Palermo prov., Balestrate, mouth of river Calatubo, 24-25.4.1992, leg. Toledo, 7 exs. (MTB & PMB); Ragusa prov., Iblei Mountains, river Erminio near Tellesimo, spring-summer 1990, leg. Duchi A., 2 exs. (MTB); North Tunisia, oued 9 km from Nefza, road towards Sejnane, 4.6.1995, leg. Pederzani & Schizzerotto, 5 exs (ASR, FPR).

Type locality: Sardinia.

Diagnosis: Length 5.5 - 6.3 mm (mean 5.9 mm, n = 20); width 2.6 - 3.1 mm (mean 2.9 mm). Body oval-elongated, maximum width of pronotum equal to maximum width of elytra; lateral sides of pronotum regularly rounded; angle between pronotum and elytra strongly pronounced. Colouration dark with light spots, underside reddish or reddish-brown, rarely partially black.

Head dorsally covered by a fine and dense punctation. Colouration reddish-yellow, with a dark band around the eyes and along the posterior border.

Pronotum large, lateral sides rounded, finely bordered. Dorsal surface covered by a dense punctation, strongly impressed. Very few larger dots or none at all are visible on

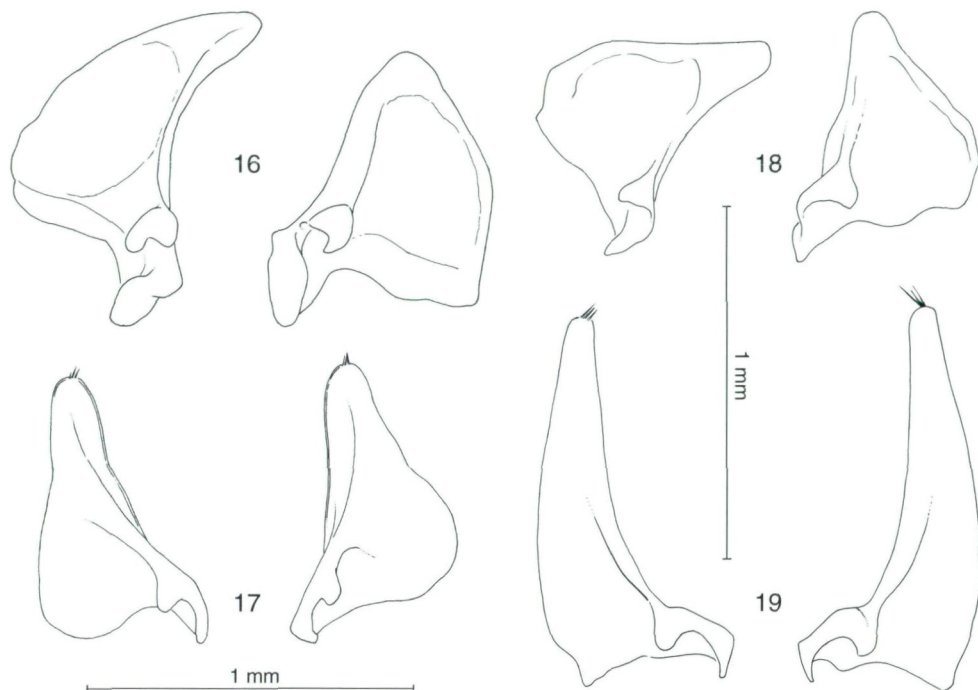


Figs. 12 - 15: Median lobe of aedeagus, (a) lateral view, (b) dorsal view, of (12) *Stictotarsus duodecimpustulatus*, (13) *S. procerus*, (14) *S. maghrebinus* sp.n., and (15) *S. bertrandi*.

the disc, while such dots are regularly present along the anterior and posterior border. Colouration reddish-yellow, with two black bands along the anterior and posterior border.

Elytra elongated, covered by a dense and regular punctation. No larger dots are visible on their surface, except, in some specimens, those belonging to the longitudinal series, hardly visible anyway. Colouration black with two large median spots, yellow or reddish, and three smaller lateral ones (Fig. 2).

Underside uniformly covered by a dense punctation, less impressed on sternites than on metacoxae and metasternum. Colouration reddish-brown, in some specimens some parts of the metasternum are black.



Figs. 16 - 19: Parameres of (16) *Stictotarsus duodecimpustulatus*, (17) *S. procerus*, (18) *S. maghrebinus* sp.n., and (19) *S. bertrandi*.

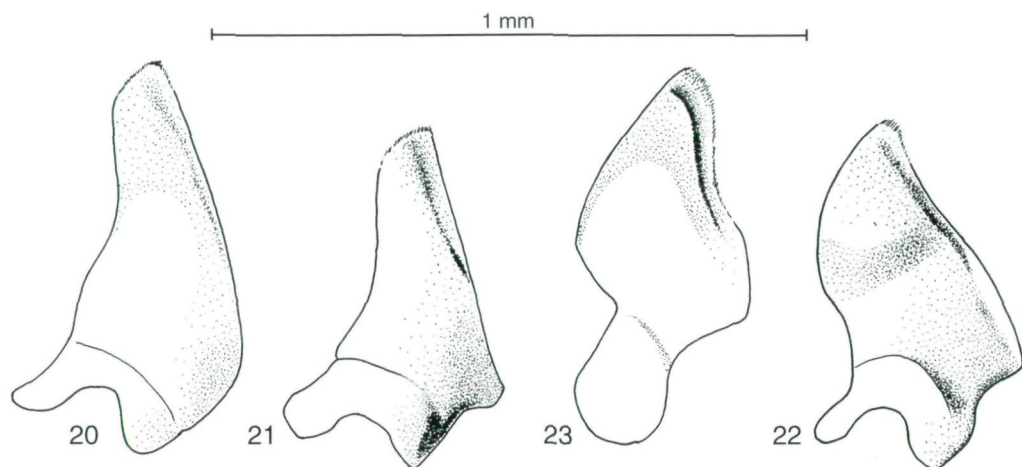
A completely black form (ab. *melas* GUIGNOT) was described; we think that this variety has no particular systematic meaning.

♂♂: protarsi feebly widened. Anterior claws unequal, the inner one distinctly shorter than the outer one (Fig. 8). Dorsal side with microreticulation completely obliterated, therefore smooth and shiny in the spaces between the punctures. Profemora, protibiae, mesofemora and mesotibiae thicker than in females, protibiae regularly widened from base to apex, without strong dilation in the apical third (Fig. 11), mesotibiae curved inward. Median lobe of aedeagus long and flat, pointed at the apex (Fig. 13); parameres as in Fig. 17, subequal.

♀♀: Anterior claws subequal; dorsal side, especially of pronotum, with a weak microreticulation, therefore the surface looks alutaceous. Gonocoxosternites as in Fig. 21.

Distribution: Corsica, Sardinia, Sicily, southern Italy; North Tunisia (see below); Algeria: Bône [= Annaba] and Ain Sefra; Morocco: Oujda, Tanger, Oued Herrimèn near Fes, Rabat, Bouznika (Fig. 25) (ANGELINI 1984, 1993, BEDEL 1925, FRANCISCOLO 1979, GUIGNOT 1932, 1947, 1959, KOCHER 1958, EL ALAOUI 1983); the presence of the species in southern Italy and Tunisia is recorded for the first time. Because of the discovery of the new species, all records for North Africa, and those for Morocco in particular (see below), need confirmation; the confirmed presence of the species in Tunisia suggests that *S. procerus* might be restricted to the Mediterranean Region.

Biology: Streams at sea level or in low mountains. Often amid submerged plants and roots.



Figs. 20 - 23: Gonocoxosternite of (20) *Stictotarsus duodecimpustulatus*, (21) *S. procerus*, (22) *S. maghrebinus* sp.n., and (23) *S. bertrandi*.

Stictotarsus maghrebinus sp.n.

Type material: **Holotype** ♂ (NMW): "Morocco, Tioulit, Oued Âit-Baha, 21.7.1997, leg. Ribera, Hernando, Aguilera & Millan". **Paratypes** 44 exs labelled as the holotype (1 in NMW, 2 in PMB, 2 in MTB, 2 in HFB, 14 in IRB, 11 in AMM, 9 in PAB, 3 CHB); 8 exs labelled "Morocco, Khourigba, El Khatouat, 800 m, 12.4.85, leg. G.Wewalka (M16)" in GWW; 10 exs labelled "Algeria, Tassili, Sahara centr., Fort Garden, 17.10.1975, lgt. A. Hoffer" (8 in PMB, 2 in MTB). 6 exs labelled "Algeria, Tassili, Sahara centr., Gelta Assareh, 17.10.1975, lgt. A. Hoffer" in MTB.

Type locality: Morocco, Tioulit, Oued Âit-Baha.

Diagnosis: length 5.2 - 6.1 mm, width 2.6 - 3.1 mm.

This species is very similar to *S. procerus* from which it can be separated with certainty only by the different shape of aedeagus and parameres. The upper surface of males is also slightly rougher in *S. maghrebinus*, but this character is very difficult to appreciate if specimens of *S. procerus* are not available for comparison.

♂♂: upper surface very rough, especially on pronotum, but spaces between the punctures smooth due to complete obliteration of the microreticulation. Protarsi weakly widened. Anterior claws strongly unequal, slightly more so than in *S. procerus* (Fig. 9). Median lobe of aedeagus short, rounded at the apex (Fig. 14); parameres as in Figure 18, subequal, broader and shorter than in *S. procerus*.

♀♀: upper surface alutaceous, especially on pronotum, due to the presence of a weak microreticulation; gonocoxosternites as in Figure 22.

Distribution: Morocco (Atlas region) and Algeria (Tassili) (Fig. 25). SHARP (1882) reports that the only specimen of *Stictotarsus* he observed from North Africa (Tanger?) "differs so much from *duodecimmaculatus* that it may be another species". KOCHER (1958) records another specimen of *S. procerus* from the central Great Atlas, massif of Toubkal, lake Ifni at 2300 m, which looks atypical. These specimens might belong to

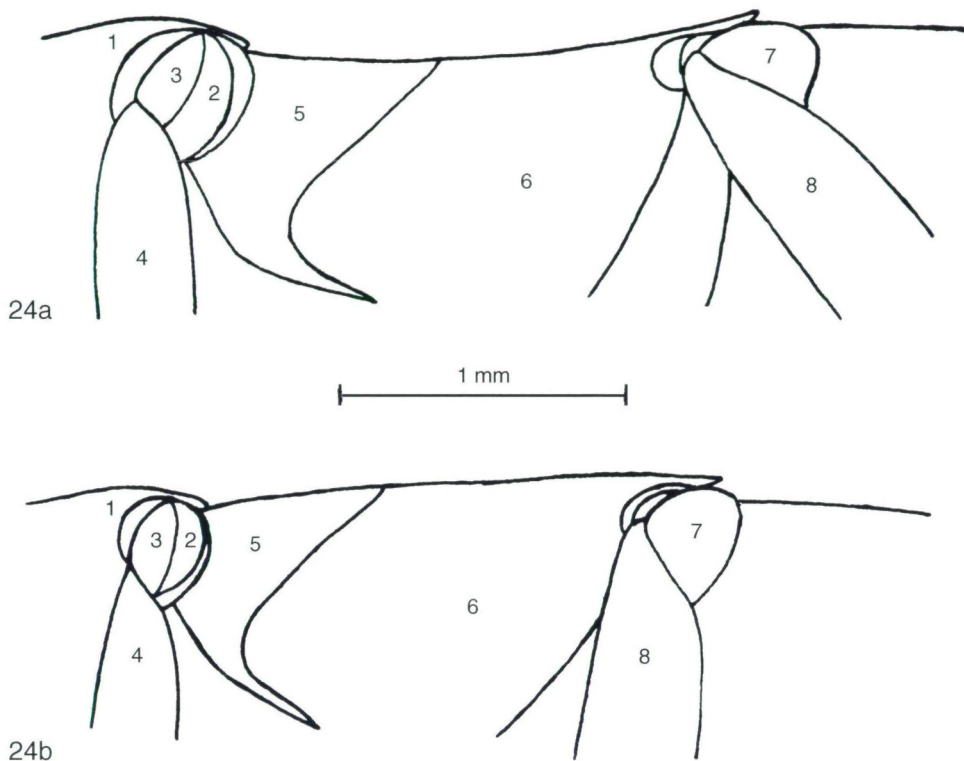


Fig. 24: Metasterno-metacoxal area of *Stictotarsus duodecimpustulatus* in lateral view: (a) ♂; (b) ♀. 1: prosternum; 2: mesocoxa; 3: mesotrochanter; 4: mesofemur; 5: metasternum; 6: metacoxa; 7: metatrochanter; 8: metafemur.

the new species described here. On the basis of present knowledge, we might hypothesize that *S. maghrebicus* occupies an area including the massifs of central Sahara and the Atlas region of Morocco, with *S. procerus* being confined to the Mediterranean coast, but all the old records are in need of confirmation; whether the distributions of the two species partially overlap in North Africa is another problem which cannot be settled at present.

Biology: The locality in the oued Âit-Baha in Tioulit was a well vegetated pool surrounded by reeds and some trees, with submersed macrophytes and filamentous algae, with a pH of 9.4 and a conductivity of 464 μ S, at 1150 m a.s.l. (I. Ribera, in litt.).

Etymology: from Maghreb, the northern African Region where the new species seems to be endemic.

Stictotarsus bertrandi (LEGROS, 1956)

Deronectes bertrandi LEGROS, 1956: 134.

Deronectes bertrandi LEGROS; BERTRAND & LEGROS 1971: 193. RICO, PEREZ & MONTES 1990: 101.

Stictotarsus bertrandi (LEGROS); NILSSON & ANGUS 1992: 275, FERY & BRANCUCCI 1997: 279.

Type material: Holotype ♀ in coll. Régimbart (sic!), in MNHN.

Material examined: Spain: Leon, Villafranca del Bierzo, Paradasecca, Rio Burbia, Fresneda & Leblanc leg., 9.8.1990, 6 exs. (MTB). Leon, n. Villafranca, Paradasecca, Rio Burbia, 6.7.1992, H. Fery leg., 11 exs. (PMB & MTB). Salamanca, Monsagro, Sierra de la Peña de Francia, 1010 m, 6.8.1990, Fresneda & Leblanc leg. 3 exs. (PMB).

Type locality: Spain, Santander province, Rio Quiviesa at Potes.

Diagnosis: Length 5.1 - 5.7 mm (mean 5.4 mm, n = 20); width 2.5 - 3.1 mm (mean 2.6 mm). Body oval, angle between pronotum and elytra poorly pronounced. Lateral sides of pronotum rounded (Fig. 4).

Head, dorsally, with large deep and scattered punctures; underside densely punctate, but with visible traces of a postocular ridge. Epistome rounded, with anterior foveae on clypeus. Dorsal surface uniformly reddish-brown without dark markings. Antennae and mouth-parts reddish-brown.

Pronotum transverse. Lateral sides bordered, rounded. Posterior angles almost rounded, posterior border not sinuated. Upper surface covered by large, irregular and deep dots, together with a very fine punctation, which gives a very rough look to the surface. Colouration uniformly reddish-brown. Ventral side densely punctate. Prosternal process broad, with lateral borders and central carina (Fig. 6).

Elytra elongated, with lateral sides slightly rounded. Dorsal surface almost glabrous, covered by a dense punctation, quite impressed. Six longitudinal deep grooves, running from the humera almost until the apex (plus a short periscutellar one) are present on each elytron. Colouration reddish-brown with a large transverse black band near the middle of the length; small black spots are also present near the apex (Fig. 4).

Underside dull, covered by a thick punctation with no microreticulation visible; colouration reddish-brown.

Ventral face of metafemora without a longitudinal row of setiferous dots, densely punctured.

♂♂: Pro- and mesotarsi slightly broader. Mesofemora and mesotibiae thicker than in females, mesotibiae curved inward. Area between metasternum and metacoxal processes slightly incavate. Median lobe of aedeagus symmetrical, without lateral expansions, sinuate in lateral sight (Fig. 15). Parameres very sclerotised, elongated, subequal (Fig. 19).

♀♀: Gonocoxosternites of typical hydroporine shape (Fig. 23).

Distribution: Spain and Portugal: endemic to the Iberian Peninsula, but apparently restricted to its northern half (RICO, PEREZ & MONTES 1990, FERY & BRANCUCCI 1997) (Fig. 25).

The systematic position of *Stictotarsus*

As we have already mentioned in the introduction, the three species of *Stictotarsus* sensu ZIMMERMANN 1919 are clearly separated from the other species of *Stictotarsus* sensu NILSSON & ANGUS (1992) by a combination of three characters. It is our opinion that these characters represent synapomorphies which clearly identify a natural group. If we now consider the position of *Stictotarsus bertrandi* (LEGROS), we discover that this taxon does not possess the three characters mentioned, but it has two more characters in common with the three species of *Stictotarsus* sensu ZIMMERMANN, i.e.: a) mesotibiae strong, curved inward in ♂♂ (although this character is less pronounced in *S. bertrandi*);

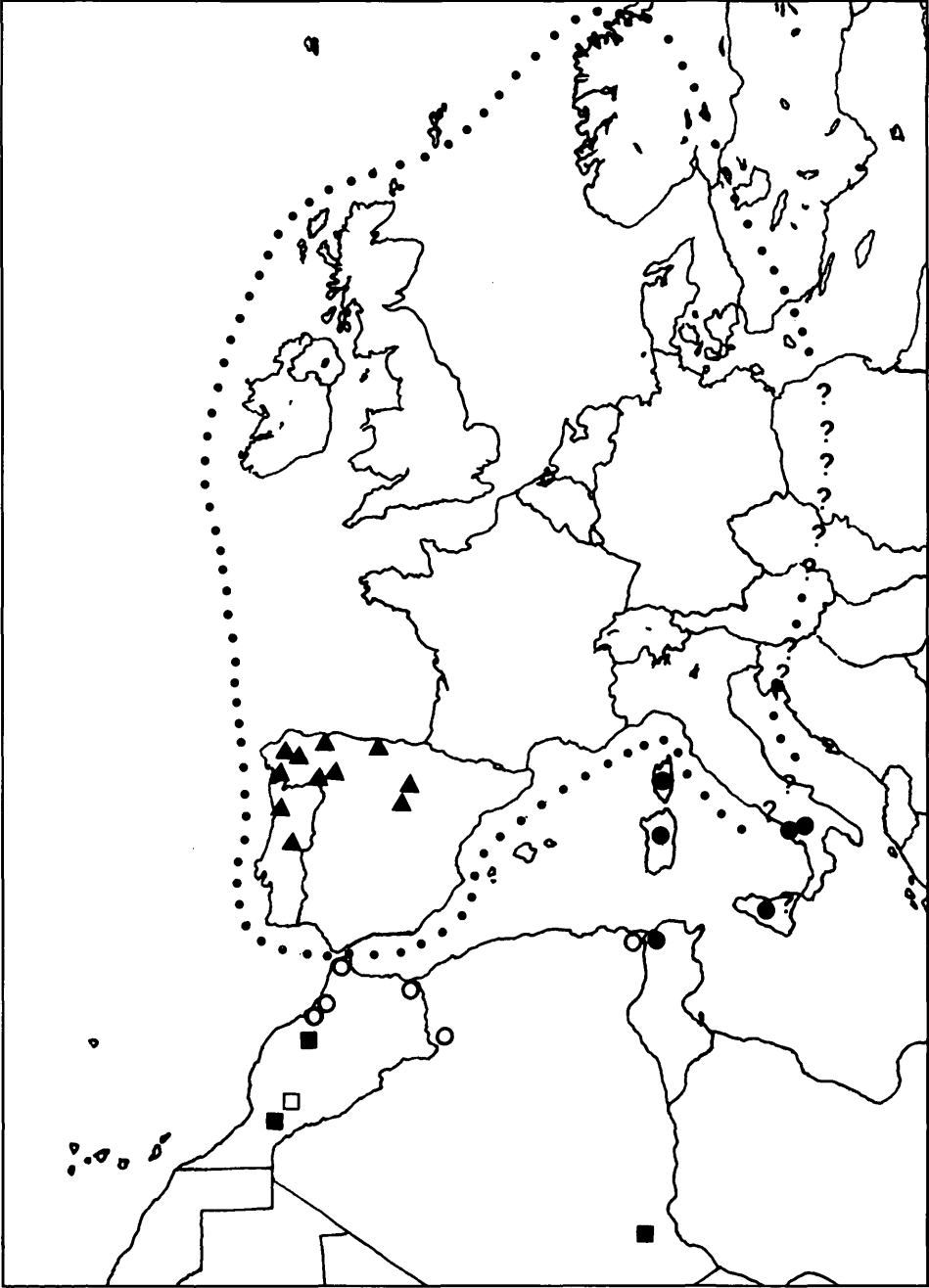


Fig. 25: Distribution of: (a) *Stictotarsus duodecimpustulatus* (dotted line; the question marks indicate uncertainties in the distribution of this species); (b) *S. procerus* (black circles: confirmed records; white circles: old records in need of confirmation); (c) *S. maghrebicus* sp.n. (black squares; the white square indicates the atypical specimen of *S. procerus* quoted by KOCHER (1958) from lake Ifni, central Great Atlas, which might belong to the new species); (d) *S. bertrandi* (black triangles).

b) males with a weak but distinct concavity in the area formed by the posterior part of the metasternum and the metacoxal processes. The character "dorsal surface of the metatarsus with the same dense punctation as on the anterior face of the metatibia", which NILSSON & ANGUS (1992) quote as a synapomorphism of *Stictotarsus* sensu ZIMMERMANN + *S. bertrandi*, cannot be used for this purpose, since it is not really limited to these 4 species; we had the possibility to examine one specimen of *S. grammicus* (SHARP) (Mexico, Chihuahua, Bachinava, 10.4.1975, J.R.Zimmerman / Brit. Mus. 1984-415/ *Deronectes grammicus* SHARP, det. J.R.Zimmerman, in BML) and one of *S. neomexicanus* ZIMMERMANN (Texas, Presidio Co., Presidio, 7 m E, Alamito Creek, 29.9.1976, 830, J.R.Zimmerman / Brit. Mus. 1984-415 / *Deronectes neomexicanus* Zimmerman & Smith, det. J.R.Zimmerman, in BML) and while on the metatarsus of *S. grammicus* this punctation is absent, it is instead distinctly present in *S. neomexicanus*. On the other hand, *S. bertrandi* has some unique characters which evidently represent the apomorphies characterizing this taxon: a) pronotum with very strong and deep punctures; b) elytra with six deep longitudinal grooves.

On the basis of the above discussion, therefore, we think that the three species of *Stictotarsus* sensu ZIMMERMANN form a well-defined natural group and that *S. bertrandi* represents its sister group. *Stictotarsus* sensu ZIMMERMANN + *S. bertrandi*, therefore, would in turn form a natural group, which is confirmed by biogeographical considerations, since all these taxa have a western Mediterranean distribution, with one species extending to central and northern Europe. As a consequence these two taxa might deserve an independent generic status. Nevertheless, if this solution is adopted, problems arise concerning the status of the remaining species of *Stictotarsus* sensu NILSSON & ANGUS (1992), in particular it becomes difficult to group the four Nearctic species of the *duodecimpustulatus*-group, which in this case would form a paraphyletic group, since so far it has not been possible to identify a valid synapomorphy to group these species together. The same problem arises with the other species groups of *Stictotarsus* sensu NILSSON & ANGUS (1992), *roffi*-group and *griseostriatus*-group, in particular with the latter, for which, as already recognized by NILSSON & ANGUS (1992) themselves, no synapomorphies have been identified so far. We think therefore that at present it is premature to separate *Stictotarsus* sensu ZIMMERMANN and *S. bertrandi* into independent genera, although the present status of *Stictotarsus* remains unsatisfying. It would therefore be highly desirable that the species of *Stictotarsus*, not included in the natural group *Stictotarsus* sensu ZIMMERMANN + *Stictotarsus bertrandi*, were studied in more detail.

References

- ANGELINI, F. 1984: Catalogo topografico dei Coleoptera Haliplidae, Hygrobiidae, Dytiscidae e Gyrinidae d'Italia. – Memorie della Società Entomologica Italiana 61A(1982): 45-126.
- ANGELINI, F. 1993: 45. Coleoptera Adepaga 2 ("Hydroadepaga"). In: Checklist delle specie della fauna d'Italia (Minelli A., Ruffo S., La Posta S., eds). Calderini, Bologna: 1-9.
- AUBÉ, C. 1838: Species general des Hydrocanthares et Gyriniens. In: Species general des Coléoptères de la collection de M. le Comte Dejean. Paris: Mequignon & Marvis: 6: XVI + 1-804.
- BALFOUR-BROWNE, F. 1940: British Water Beetles. Vol. I. Ray Society n.127, London, 375 pp. + 5 pl.

- BALFOUR-BROWNE, F. 1953: Coleoptera Hydradephaga. In: Handbooks for the identification of British insects 4, 3: 1-33.
- BEDÉL, L. 1925: Catalogue raisonné des Coléoptères du Nord de l'Afrique (Maroc, Algérie, Tunisie et Tripolitaine) avec notes sur la faune des Iles Canaries et de Madère, 1 (2): 321-402, Publication de la Société entomologique de France, Paris (P. PEYERIMHOFF ed.).
- EL ALAOU, A. 1983: Contribution a l'étude des Coléoptères hydrocanthares de la zone littorale entre Kenitra et Mohamedia. – Bulletin de l'Institut Scientifique, Rabat 7: 127-142.
- FABRICIUS, J.C. 1792: Entomologia systematica emendata et aucta. Hafniae 1: I-XX+1-330.
- FERY, H. & BRANCUCCI, M. 1997: A taxonomic revision of *Deronectes* Sharp, 1882 (Insecta: Coleoptera: Dytiscidae) (part I). – Annalen des Naturhistorischen Museums in Wien 99B: 217-302.
- FRANCISCOLO, M.E. 1979: Coleoptera Haliplidae, Hygrobiidae, Gyrinidae, Dytiscidae. Fauna d'Italia 14: 804 pp.
- GUEORGUIEV, V.B. 1971: Coleoptera Hydrocanthares et Palpicornia. Catalogus faunae Jugoslaviae, III/6. Izdala Slovenska Akademia Znanosti i Umetnosti v Ljubljani: 1-45.
- GUIGNOT, F. 1933. Les Hydrocanthares de France. Toulouse: Les Frères Douladoure, 1931-1933: i-xv + 1-1057.
- GUIGNOT, F. 1946: Genotypes des Dytiscoidea et des Gyrinoidea. – Revue Française d'Entomologie 13(3): 112-118.
- GUIGNOT, F. 1947: Coléoptères Hydrocanthares. Faune de France 48, Paris, Lechevalier: 1-287.
- GUIGNOT, F. 1959: Revision des Hydrocanthares d'Afrique (Coleoptera Dytiscoidea). Deuxième partie. – Annales du Musée Royal du Congo-Belge, Tervuren, Sci.Zool. 78: 323-648.
- JACQUET, J. 1925: Description d'une variété caractérisée de l'*Hydroporus duodecimpustulatus* F. (Coleoptera Dytiscidea). – Miscellanea Entomologica 28 (6-7): 41-42.
- KOCHER, L. 1958: Catalogue commenté des Coléoptères du Maroc 2, Hydrocanthares, Palpicornes, Brachelytres. – Travaux de l'Institut Scientifique Chérifien (Société de sciences naturelles et physiques du Maroc) ser. Zoologie, 14: 1-244.
- LEGROS, C. 1956: Un *Deronectes* nouveau d'Espagne (Col.Dytiscidae). – Bulletin de la Société entomologique de France 61: 134-136.
- NIEUKERKEN, E. VAN 1992. 11: Dytiscidae (water skaters). In: De Waterkevers van Nederland (DROST M.B.P., CUPPEN H.P.J.J., NIEUKERKEN VAN E.J., SCHREIJER M., eds.). Uitgeverij K.N.N.V., Utrecht, pp. 90-160.
- NILSSON, A.N. & ANGUS, R.B. 1992: A reclassification of the *Deronectes*-group of genera (Coleoptera: Dytiscidae) based on a phylogenetic study. – Entomologica Scandinavica 23: 275-288.
- NILSSON, A.N. & HOLMEN, M. 1995: The aquatic Adepaga (Coleoptera) of Fennoscandia and Denmark. II. Dytiscidae. Fauna Entomologica Scandinavica 32, E. J. Brill, Leiden - New York - Köln: 1-192.
- RAGUSA, E. 1921: Coleotteri nuovi o poco conosciuti della Sicilia. – Bollettino della Società Entomologica Italiana, Firenze 53: 31-36, 85-100.
- RÉGIMBART, M. 1877: Annales de la Société entomologique de France: CXXXIII.
- RICO, E., PEREZ, L.C. & MONTES, C. 1990: Lista faunistica y bibliografica de los Hydradephaga (Coleoptera: Haliplidae, Gyrinidae, Noteridae, Dytiscidae) de la península Iberica e Islas Baleares. Listas de la Flora y Fauna de las Aguas Continentales de la Península Iberica. Publicación 7, Asociación Española de Limnología: 1-216.

- SCHAEFLEIN, H. 1971: 4. Familie: Dytiscidae, echte Schwimmkäfer. In: Die Käfer Mitteleuropas (Freude H., HARDE K.W., LOHSE G.A., eds). 3: 16-89.
- SCHAEFLEIN, H. & WEWALKA, G. 1982: Catalogus Faunae Austriae. Ein systematisches Verzeichnis aller auf Österreichischem Gebiet festgestellten Tierarten. Teil 15c: Ordn.: Coleoptera. Fam.: Hygrobiidae, Haliplidae, Dytiscidae. – Österreichische Akademie der Wissenschaften, Wien: 1-27.
- SCHOLZ, R. 1923: 6. Beitrag zur Kenntnis und Verbreitung paläarktischer Dytisciden (Col.). – Entomologische Blätter 19: 181-185.
- SHARP, D. 1882: On aquatic carnivorous Coleoptera or Dytiscidae. – Scientific Transactions of the Royal Dublin Society (Ser.2) 2: 179-1003.
- STEPHENS, J.F. 1829: Illustration of British Entomology: or a Synopsis of Indigenous Insects: containing their generic and specific distinctions; with an account on their metamorphoses, times of appearance, localities, food and economy, as far as practicable. Mandibulata, London 2: 1-200, plates 10-15.
- VITALE, F. 1920: Catalogo dei Coleotteri di Sicilia. – Atti dell'Accademia Peloritana, Messina (1918-20) 139, 28: 17-32.
- ZIMMERMAN, J.R. & SMITH, H. 1975: A survey of the *Deronectes* (Coleoptera: Dytiscidae) of Canada, The United States and Northern Mexico. – Transactions of the American Entomological Society 101(4): 651-726.
- ZIMMERMANN, A. 1919: Die Schwimmkäfer des Deutschen Entomologischen Museums in Berlin-Dahlem. – Archiv für Naturgeschichte A 83(12): 68-249.
- ZIMMERMANN, A. 1920: Dytiscidae, Haliplidae, Hygrobiidae, Amphizoidae. Coleopterorum Catalogus, X. W.Junk, Berlin 71:1-326.
- ZIMMERMANN, A. 1932: Monographie der paläarktischen Dytiscidae. III. Hydroporinae (3. Teil). – Koleopterologische Rundschau 18: 69-111.