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DESCRIPTION OF *AGABUS (DICHONECTES)*
AFRICANUS N. SP. FROM NORTH-WEST TUNISIA
AND NOTES ON THE COHABITING SPECIES
OF HYDRADEPHAGA
(*Coleoptera Haliplidae, Gyrinidae & Dytiscidae*)

ABSTRACT - PEDERZANI F. & SCHIZZEROTTO A., 1998 - Description of *Agabus (Dichonectes) africanus* n. sp. from North-west Tunisia and notes on the cohabiting species of Hydradephaga (*Coleoptera Haliplidae, Gyrinidae & Dytiscidae*).

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Agabus (Dichonectes) africanus n. sp. from North-west Tunisia is described and illustrated. It is characterised by the colour pattern of its habitus, the shape of pronotum, the microreticulation of elytra and the shape of aedeagus. It is closely related to *A. binotatus* Aubé, 1836. Faunistical and taxonomical notes on some species of *Hydradephaga* cohabiting with *A. africanus* are given.

KEY WORDS - *Coleoptera, Hydradephaga, Dytiscidae, Agabus africanus* n. sp., Tunisia.

RIASSUNTO - PEDERZANI F. & SCHIZZEROTTO A., 1998 - Descrizione di *Agabus (Dichonectes) africanus* n. sp. della Tunisia nord occidentale e note sulle specie di Idroadeffagi ad esso associate (*Coleoptera Haliplidae, Gyrinidae & Dytiscidae*).

L'articolo descrive ed illustra *Agabus (Dichonectes) africanus* n. sp. della Tunisia nord occidentale. *A. africanus* è molto vicino ad *A. binotatus* Aubé, 1836 ma se ne distingue per l'habitus uniformemente bruno rossiccio, per il corpo di forma più parallela, per il pronoto con lati subparalleli alla base e fortemente convergenti in avanti, per la microreticolazione delle elitre le cui maglie solo eccezionalmente sono prive di punto/i interno/i, e per la configurazione dell'edeago. Vengono poi presentate alcune note tassonomiche e faunistiche sugli Idroadeffagi raccolti assieme alla nuova specie.

PAROLE CHIAVE - *Coleoptera, Hydradephaga, Dytiscidae, Agabus africanus* n. sp., Tunisia.

(*) The authors feel honoured to participate with this article in the commemoration of the famous entomologist Livio Tamanini who was also their master.

DESCRIPTION OF THE NEW SPECIES

During a research carried out in 1995 on the mountains of north-west Tunisia, near the Algerian border, we collected four specimens of an *Agabus* Leach, 1817 belonging to the subgenus *Dichonectes* Guignot, 1945. On the basis of close scrutiny and comparison with the known mid-Mediterranean species of this subgenus - namely: *Agabus biguttatus* (Olivier, 1795) ⁽¹⁾, *binotatus* Aubé, 1836, *dilatatus* Brullé, 1832 and *guttatus* (Paykull, 1798) ⁽²⁾ - we assign the above mentioned four specimens to a new species whose description is given below.

***Agabus africanus* n. sp.**

Diagnosis. An *Agabus* of the subgenus *Dichonectes* characterised by: a) uniformly reddish brown body with fairly parallel sides in the middle; b) sides of pronotum quite parallel near the basis, then curved toward the anterior margin; c) elytra usually lacking mid lateral yellow spots; d) almost all the meshes of elytral microreticulation with one or two inner dots; e) first metatarsal segment with one row of spines on ventral side; and f) relatively short aedeagus slightly curved toward the basis (in lateral view) and with almost straight sides (in dorsal view).

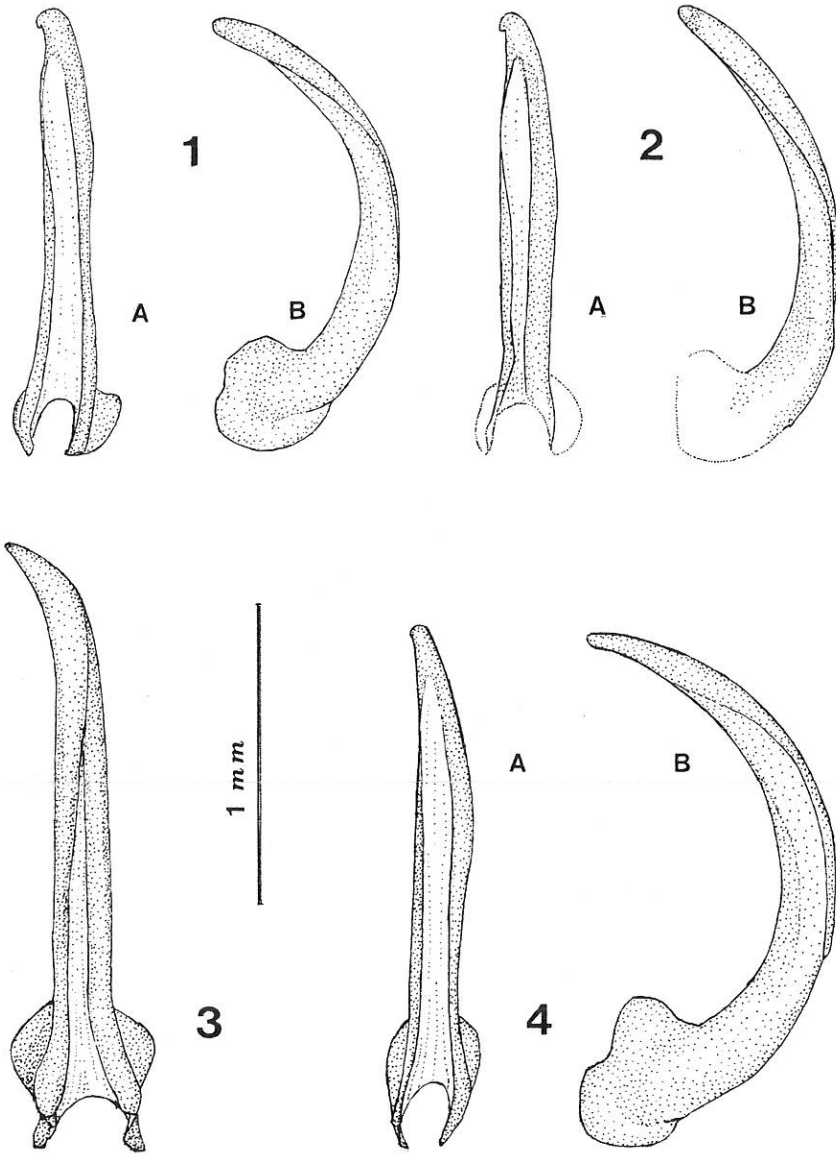
Type material. Holotype: ♂, length 8.0 mm; width 4.0 mm; labelled NW Tunisia, Aïn Draham, Babouch, Oued Babouch, 600 m a.s.l., 1.VI.1995, leg. F. Pederzani.

Paratypes: 3♀♀ labelled as follows: 1) NW Tunisia, Aïn Draham, Babouch, Oued Babouch, 600 m a.s.l., 1.VI.1995, leg. F. Pederzani; 2) NW Tunisia, Aïn Draham, Oued Beni Mtir, 800 m a.s.l., 1/2.VI.1995, leg. F. Pederzani; 3) NW Tunisia, Aïn Draham, Les Chênes, 900 m a.s.l., 5.VI.1995, leg. F. Pederzani.

The holotype and two paratypes are in the collection F. Pederzani (Ravenna); one paratype in the collection A. Schizzerotto (Rovereto).

⁽¹⁾ In our opinion, *Agabus nitidus* (Fabricius, 1801) is conspecific with *A. biguttatus* (Olivier).

⁽²⁾ We are fully aware that also *Agabus cephalotes* Reiche, 1861 is a mid-Mediterranean species of the subgenus *Dichonectes*. We did not mention it in the main text because it is distinctly different from *A. africanus* and no risk exists of confounding the latter with the former.



Figs 1 - 4. Median lobe of the aedeagus in some species of *Agabus* s. gen. *Dichonectes*. A) dorsal view; B) lateral view. - Fig. 1. *Agabus binotatus* Aubé: Corsica, Vizzavona, 8.IX.1966, leg. Pederzani. - Fig. 2. *Agabus africanus* n. sp.: Tunisia, Ain Draham, Oued Babouch, 1.VI.1995, leg. Pederzani. - Fig. 3. *Agabus biguttatus* (Olivier): Elba Island, Marciana Alta, VI.1973, leg. Pederzani. - Fig. 4. *Agabus dilatatus* Brullé: Turkey, Kil. Taurus, Namrun, 8.VI.1968 leg. Wewalka.

Description. Length 7.4-8.4 mm; width 3.8-4.3 mm. Oval, oblong, slightly convex, shiny, entirely reddish brown, microreticulated by small, polygonal and irregular meshes, most of which with one or two light inner punctures.

Head: reddish brown with two frontal yellowish spots, labrum somewhat lighter than the rest of the head. Microreticulation made up of light, small and irregularly polygonal meshes, most of which containing one or two small dots. Antennae reddish.

Pronotum: reddish brown. Anterior submarginal row of punctures widely interrupted in the middle. Microreticulation similar to that of the head, although some meshes are larger. Rim of lateral margin quite narrow, impressed, not tapering anteriorly and reaching the anterior angle of pronotum. Sides of pronotum almost parallel in the basal third then curved toward the anterior margin.

Elytra: reddish brown, usually without mid lateral spots and with two small and hardly detectable yellowish preapical spots. Only one ♀ displays elytra with a very tiny, rounded and testaceous specks in the middle. Maximum width of elytra around middle where they are fairly parallel-sided. Microreticulation consisting of small, light, polygonal and irregular meshes nearly all of which with one or two dots inside.

Ventral side: reddish brown, with mouth parts, prosternal process and epipleura all light reddish. Sides of metasternum and of all visible sternites, except the first, all brown. Ventral surface shiny and microreticulated by very light, transversal and irregular meshes, some of which containing a slight puncture. Prosternal process convex with a lateral rim. Wings of metathorax broad, their anterior margin near epipleura being distinctly sinuated. Last abdominal sternum without longitudinal wrinkles in the middle; only few large and deep punctures can be seen.

Legs: fore, mid and hind legs all reddish with the proximal part of metafemuri brown. First metatarsal segment with one row of spines on the ventral side and about as long as the second and third segments taken together. First two segments of male's fore and mid tarsi slightly thick and with adhesive discs on ventral surface. Fore claws of male rather short and regularly sickle-shaped, without any indentation or sinuosity in their ventral margin.

Aedeagus: median lobe relatively short (figs. 2a and 2b). In dorsal view, this shows almost parallel sides in the basal half (fig. 2a). In lateral view, it appears only slightly curved toward basis (fig. 2b). Dorsal groove with sides quite parallel and narrow up to its mid length, then suddenly enlarged (fig. 2a). Parameres as in the closely related species. It must be noted that the holotype is a little teneral, consequently the parameres have a poor taxonomic value.

Female: except sexual characters, similar to male.

Derivatio nominis. Latin adjective recalling the fact that during Roman empire and several centuries thereafter the name «Africa» was used mainly to indicate contemporary Tunisia.

Discussion. *Agabus africanus* n. sp. is related to *A. binotatus* because of the following characters: a) first metatarsal segment with one row of spines; b) elytral microreticulation light in both males and females; c) male's fore claws not indented; d) median lobe of aedeagus almost straight (in dorsal view). Despite these similarities, the new species can be distinguished from *A. binotatus* by: a) the shape of the body more parallel-sided; b) the shape of pronotum less regularly tapering anteriorly; c) the colour of pronotum which is entirely reddish brown instead of pitchy-black with reddish to testaceous sides; d) the lack of mid lateral yellow spots on elytra or, at least, their reduction to very tiny rounded specks; e) the fewer meshes of elytral microreticulation without inner dot(s); and f) the median lobe of aedeagus less curved toward the basis and with a more asymmetrical median groove (figs. 1 and 2).

Obviously, all these features also allow a straightforward distinction between *Agabus africanus* n. sp. and the other mid-Mediterranean species of the subgenus *Dichonectes* different from *A. binotatus*. By and large, the lack of a second row of spines from ventral surface of first metatarsal segment should be sufficient to identify the new species ⁽³⁾. However, we know of some specimens of *A. biguttatus*, *A. dilatatus* and *A. guttatus* with the second row of spines reduced to one or two spines or even completely absent. In such cases one must check the identification paying attention to an additional character. For instance, to the elytral microreticulation and puncturation for the distinction of the new species from *A. guttatus*; the shape of male's fore claws for its separation from *A. biguttatus*; and the aedeagus for its distinction from both *A. biguttatus* (fig. 3) and *A. dilatatus* (fig. 4).

Geonemy. *Agabus africanus* n. sp. has been caught in the same habitats where *A. binotatus* usually lives, i.e. small puddles of springs and calm bends of streams and brooklets running in forest or, at least, under trees and bushes. Taking into account the ecological similarities between the two species, their morphological closeness and the fact

⁽³⁾ For the configuration of this second row of spines in *A. biguttatus*, *A. guttatus* and *A. dilatatus*, cf. FRANCISCOLO (1979: 534, figs. 1573 and 1574).

that *A. binotatus*, a circumTyrrenian species, is not recorded from north west Africa, we hypothesise that *A. africanus* is geographic vicariant of the former species in that area.

Material studied. - *Agabus binotatus* Aubé, 1836: Corsica, Vizzavona, 1100 m a.s.l., 8.IX.1966, leg. Pederzani (1♂, FP); Corsica, Restonica, 1600 m a.s.l., 4.VIII.1980, leg. Sette (1♂, AS); Sardinia, Province of Sassari, Olbia, Tavolara Island, 28.IX.1985, leg. G. Osella (2♂♂, 2♀♀, AS); Sardinia; Province of Nuoro, Villagrande Strisaili, Arcu Correboi, 1000 m a.s.l., 6.VII.1997, leg. Schizzerotto (4♂♂, 3♀♀, AS); Elba Island, Marciana Alta, VI.1973, leg. Pederzani (1♂, FP); Giglio Island, Campese, 6.VIII.1959, leg. Pederzani (1♀, FP). - *Agabus biguttatus* (Olivier, 1795): Italy, Province of Trento, Vallarsa, Anghebeni, 700 m a.s.l., 15.V.1983, leg. Schizzerotto (6♂♂, 8♀♀, AS); Italy, Province of Vicenza, Posina, Laghi, 700 m a.s.l., 31.III.1985, leg. Schizzerotto (2♂♂, 3♀♀, AS); Elba Island, Marciana Alta, VI.1973, leg. Pederzani (1♂, FP); Italy, Province of Grosseto, Sticciano Scalo, Rigo stream, 19.VII.1985, leg. Schizzerotto (1♂, 1♀, AS); Sicily, Province of Palermo, Madonie, Piano Battaglia 1500 m a.s.l., 30.V.1985, leg. Chemini (2♂♂, 1♀, AS). - *Agabus guttatus guttatus* (Paykull, 1798): Italy, Province of Bolzano, Sesto Pusteria, Alpe di Nemes, 2000 m a.s.l., 10.VI.1986, leg. Schizzerotto (1♂, AS); Italy, Province of Trento, Brentonico, 700 m a.s.l., 31.III.1983, leg. Schizzerotto (3♂♂, 4♀♀, AS); Italy, Province of Vicenza, Posina, Posina stream, 600 m a.s.l., 11.VI. 1988, (1♂, 1♀, AS). - *Agabus guttatus baudii* Seidlitz, 1887: Italy, Province of Firenze, S. Godenzo, Passo del Muraglione, 6.VIII.1989, leg. Schizzerotto (1♂, 1♀, AS). - *Agabus dilatatus* Brullé, 1832: Greece, Eubea, Mount Dirphys, 1000 m a.s.l., 15.IX.1982, leg. Sette (3♂♂, 2♀♀, AS); Crete, Mount Dikti, 12.VII. 1989, leg. Toledo (1♂, 1♀, AS); Turkey, Kil. Taurus, Namrun, 8.VI.1968, leg. Wewalka (1♂, FP).

Acronyms: FP = Pederzani collection (Ravenna); AS = Schizzerotto collection (Rovereto).

After finishing the description of *A. africanus* n. sp., we read the article by FOSTER & BILTON (1997) describing *Agabus picotae* Foster & Bilton, 1997 and containing an excellent key to the Palaearctic species of the *Agabus guttatus* group. In order to take into account *Agabus africanus* n. sp., the first entry of that key should be modified as follows.

- 1 Underside of first metatarsal segment with a single row of spines. Palpi and antennae without darkened tips. Male fore claws not dentate 2
- 2 Body more rounded in the middle. Pronotum more regularly tapering anteriorly. Habitus clearly two coloured. Pronotum pitchy black with light reddish to testaceous margins and elytra reddish brown. Each elytron with a mid lateral spot and a preapical one all of them yellow and easily detectable. More numerous meshes of dorsal microreticulation without inner dot(s). Median lobe of aedeagus longer and more curved toward basis; its dorsal groove larger and quite symmetrical *binotatus* Aubé

- Body fairly parallel-sided in the middle. Pronotum less regularly tapering anteriorly, quite parallel near the basis. Habitus uniformly coloured. Pronotum entirely reddish brown and elytra as well. Each elytron usually lacking mid lateral spot and with only a yellowish small and hardly detectable preapical spot. Very few meshes of dorsal microreticulation without inner dot(s). Median lobe of aedeagus slightly shorter and less curved toward basis, its dorsal groove narrower and asymmetrical *africanus* n. sp.

FAUNISTICAL AND TAXONOMICAL REMARKS ON HYDRADEPHAGA COHABITING WITH *A. africanus* N. SP.

The species of Hydradephaga living together with *A. africanus* in each locality where the latter was found are listed in table I.

Leaving aside the endemic species *Rhithrodytes numidicus* (Bedel, 1888), and *Deronectes perrinae* Fery & Brancucci, 1997 and the specimens of *Stictonectes* we are still studying, we think useful pointing out the following remarks.

Hydroporus feryi Wewalka, 1992

This appears to be the most common *Hydroporus* in the area around Aïn Draham. In our opinion it is taxonomically and ecologically closer to *Hydroporus discretus* Fairmaire, 1859 than to any Palaearctic species of the genus. Therefore, it is a pity to find that WEWALKA (1992), in his excellent revision of the Palaearctic species of the *Hydroporus planus* group, did not compare *H. feryi* with *H. discretus*. The best character to split the two species is the microsculpture of the ventral side.

Graptodytes fractus (Sharp, 1880)

All the colour patterns of this species (GUIGNOT, 1959: 403) - from the testaceous variety *exanguis* to specimens reproducing the habitus either of *Graptodytes varius* (Aubé, 1836) or of *Graptodytes ignotus* (Mulsant, 1860) - have been caught in the localities listed in table I. As a consequence, we found it difficult to identify some specimens with certainty.

Stictonectes samai Schizzerotto, 1988.

This turned out to be the most frequent *Stictonectes* in the area concerned. It was also collected at a lower altitude (200 m a.s.l.) in a small stream near Sejnane (80 km to the east of Aïn Draham). It is clearly a common species in north-west Tunisia, which, before its recent description, was confused with other of the same genus.

Table I. List of Hydradephaga associated with *Agabus africanus* n.sp.

Hydradephaga	Localities		
	Oued Babouch	Oued Beni Mtir	Sources Les Chênes
<i>Haliplus lineatocollis</i> (Marsham)	-	+	-
<i>Gyrinus dejeani</i> Brullé	+	-	-
<i>Gyrinus urinator</i> Illiger	+	-	-
<i>Aulonogyrus striatus</i> (Fabricius)	+	-	-
<i>Bidessus minutissimus</i> (Germar)	++	-	-
<i>Yola bicarinata</i> (Latreille)	+	-	-
<i>Hydroporus obsoletus</i> Aubé	+	-	++
<i>Hydroporus pubescens</i> (Gyllenhal)	-	+	-
<i>Hydroporus analis</i> Aubé	+	+	-
<i>Hydroporus feryi</i> Wewalka	+	++	+
<i>Hydroporus tessellatus</i> Drapiez	-	+	+
<i>Rhithrodytes numidicus</i> (Bedel)	-	++	+
<i>Graptodytes concinnus</i> (Stephens)	+	++	-
<i>Graptodytes fractus</i> (Sharp)	+	++	-
<i>Graptodytes varius</i> (Aubé)	+	-	-
<i>Stictionectes samai</i> Schizzerotto	++	++	-
<i>Stictionectes</i> sp.	-	+	-
<i>Deronectes perrinae</i> Fery & Brancucci	+	++	-
<i>Laccophilus hyalinus</i> (De Geer)	+	-	-
<i>Copelatus atriceps</i> Sharp	+	-	-
<i>Agabus brunneus</i> (Fabricius)	-	+	-
<i>Agabus didymus</i> (Olivier)	-	+	-
<i>Agabus africanus</i> n. sp.	+	+	+
<i>Agabus bipustulatus</i> (Linnaeus)	-	+	-
<i>Agabus bedeli</i> Zaitzev	+	++	+
<i>Agabus nebulosus</i> (Forster)	+	++	+
<i>Meladema coriacea</i> Castelnau	-	++	-

(++ common species; + uncommon species).

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