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Another synonym of *Agabus faldermanni* ZAITZEV, with a discussion of the *guttatus*-, *nebulosus*- and *paludosus*-groups (Coleoptera: Dytiscidae)

A.N. NILSSON

Abstract

Agabus iranicus GUEORGUIEV, 1965, is a junior subjective synonym of *Agabus faldermanni* ZAITZEV, 1927, syn.nov. A lectotype is designated for *Gaurodytes palaestinus* ZIMMERMANN, 1934. The distribution of *A. faldermanni* is mapped. Delimitations of the *guttatus*-, *nebulosus*- and *paludosus*-groups are discussed. It is concluded that *A. faldermanni* either should be placed in a group of its own or placed in the *guttatus*-group which necessitates a widening of the definition of the group.

Key words: Dytiscidae, taxonomy, *Agabus faldermanni*, *Agabus iranicus*, synonymy, lectotype designation, distribution.

Recently, WEWALKA (1991) synonymized *Agabus palaestinus* (ZIMMERMANN, 1934) with *A. faldermanni* ZAITZEV, 1927, and listed some new records together with a diagnose of the species. During the preparation of a checklist of the genus *Agabus* LEACH, 1817, another junior synonym of *A. faldermanni* was found.

I thank Dr. O. Martin, Copenhagen, for the loan of the holotype of *A. iranicus* and for information from Kaiser's field-notes. Dr. G. Scherer, Munich, is thanked for the loan of specimens and giving me important information. Dr. G. Wewalka, Vienna, is thanked for information and for the loan of specimens.

Agabus faldermanni ZAITZEV

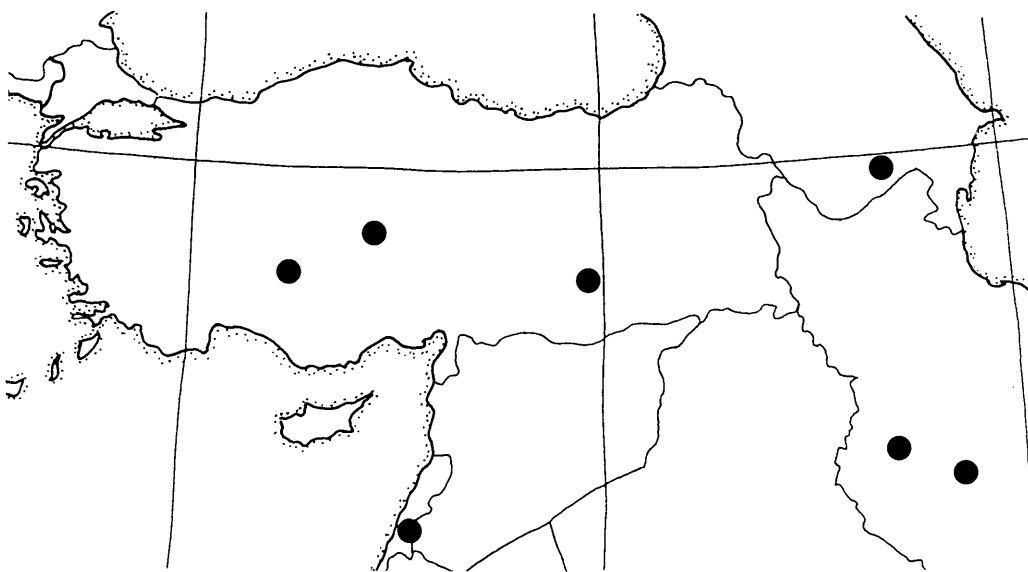
Agabus faldermanni ZAITZEV, 1927: 22.

Gaurodytes palaestinus ZIMMERMANN, 1934: 164.

Agabus iranicus GUEORGUIEV, 1965: 257, syn.nov.

GUEORGUIEV (1965) described *A. iranicus* from a single male collected at Nourabad in Iran (prov. Luristan, 33°27'N, 49°30'E, 2200 m a.s.l., near Istgah-Ezna, 50 km E of Borujerd, vide Kaiser's field-notes). No later records are known of this species (GUEORGUIEV in litt.). The new species was placed in the *nebulosus*-group, chiefly because of the testaceous elytra of the holotype. However, this character is not adequate as the actual specimen is teneral. A comparison between the holotype (in Zoological Museum, Copenhagen) of *A. iranicus* and a syntype of *A. palaestinus* (ZIMMERMANN) (in Zoologische Staatssammlung, Munich) has convinced me of their identity. The aedeagus of the *A. iranicus* holotype agrees with WEWALKA's (1991) illustration of that of *A. faldermanni*. Moreover, abdominal sternum 6 is rugose in posterior 2/3, and sterna 4 and 5 are rugose in posterior 1/3, most pronounced sublaterally. Other characters agree with WEWALKA's (1991) diagnose of *A. faldermanni*.

A reference to *A. palaestinus* not mentioned by WEWALKA (1991) was provided by GUEORGUIEV (1968), who presented a record from Konya (Konya prov.) in Turkey together with a short description including a drawing of the penis. A single female from Syria was seen in Zool. Staatssammlung Munich, labelled: "Basan. (Orient.) J. Roth, castanipennis Mihi., aus einem Bach zwei Tagreissen von Tamsus, in alten Basan", "Samml. Jak. Sturm". This specimen was seemingly collected in 1837 (SCHERER 1982).



Known records of *Agabus faldermanni*. The lowermost dot to the left represents three records: (1) Syria, Basan 1837, (2) Palestine before 1934, and (3) Israel, Mt. Hermon 1975.

The known records of *A. faldermanni* are mapped in fig. 1. ZIMMERMANN's (1934) description of *A. palaestinus* was based on a male from "Palästina" and a female from "Persien, Kermanschah". WEWALKA (1991) referred to the male as the holotype of *A. palaestinus*. However, as ZIMMERMANN (1934: 164) did refer to both his specimens as "Typen" they must be regarded as syntypes. To avoid further confusion I here select the male from Palestine in the Zimmermann collection as lectotype. It has not been possible to locate the supposed paralectotype from Iran.

Agabus faldermanni has been placed in the following three species-groups: *guttatus*-group (ZIMMERMANN 1934, WEWALKA 1991), *paludosus*-group (ZAITZEV 1953), and *nebulosus*-group (GUEORGUIEV 1965). All these three Palearctic groups belong to a lineage within *Agabus* characterized by: (1) clypeus with anterior bead continuous, (2) pronotum with anterior bead broadly broken medially, (3) penis without ventral subapical spine, and (4) paramere stylete (cf. NILSSON & LARSON 1990).

The *paludosus*-group sensu ZIMMERMANN (1934) and ZAITZEV (1953) is a mixture of unrelated species: *A. uliginosus* (LINNAEUS, 1761), *A. jacobsoni* ZAITZEV, 1905, and *A. amnicola* (SAHLBERG, 1880) belong to the *uliginosus*-group sensu LARSON (1989); *A. pallens* POPPIUS, 1905 (= *A. zaitzevi* POPPIUS, 1910) belongs to the *labiatus*-group (NILSSON 1990); and *A. luteaster* ZAITZEV, 1906, belongs to the otherwise Nearctic *punctulatus*-group sensu LARSSON (1989); all these species have pronotum with anterior bead continuous and paramere straplike. Consequently, the *paludosus*-group is monobasic without *A. faldermanni*.

In the absence of modern revisions, it is very difficult to correctly characterize the *guttatus*- and *nebulosus*-groups. WEWALKA (1991) gave only one character that can be viewed as a synapomorphy of the *guttatus*-group - the absence of ventral adhesive setae on male pro- and mesotarsomeres 3. ZIMMERMANN's (1934) chief character was the medially broken anterior row of punctures on pronotum (also found in his *brunneus*-group). Thus defined, *A. faldermanni* is excluded from the *guttatus*-group, since the male protarsomere 3 has at least one pair of ventral adhesive setae (in contradiction to WEWALKA 1991) and the medial gap in the pronotal row is very narrow. A third potential synapomorphy of the *guttatus*-group is the entire row of anteroventral punctures on the metatibia, also present in *A. faldermanni*.

A definition of the *guttatus*-group that would include *A. faldermanni* is based on the following two characters: (1) male mesotarsomere 3 without ventral adhesive setae, and (2) metatibia with anteroventral row of punctures entire and almost continuous. Both characters have evolved in other *Agabus* lineages, e.g. in Ethiopian groups (NILSSON, in press).

In my opinion, *A. paludosus* should be placed near the base of the *guttatus*-group. This species has few derived characters, but one interesting character, also found in the *guttatus*-group, is the sublateral gap in the posterolateral row of punctures on pronotum. This character separates these two groups from the *nebulosus*-group, defined by ZIMMERMANN (1934) primarily on the yellow colour of pronotum and elytra. Males of this group have large adhesive discs on their pro- and mesotarsomeres 1-3, a character of unknown polarity. Moreover, the enlarged ventral spinulae on the apical third of the penis provide a potential synapomorphy of the group.

In conclusion, the widening of the definition of the *guttatus*-group allows inclusion of *A. faldermanni* in it. Alternatively, this species could be placed in a group of its own, near the base of the *guttatus*-group, and characterized by the unique structure of the three last abdominal sterna.

Zusammenfassung

Agabus iranicus GUEORGUIEV, 1965 ist ein jüngeres subjektives Synonym von *Agabus faldermanni* ZAITZEV, 1927. Ein Lectotypus wird für *Gaurodytes palaestinus* ZIMMERMANN, 1934 designiert. Die Verbreitung von *A. faldermanni* wird anhand einer Karte dargelegt. Die Abgrenzungen der *guttatus*-, *nebulosus*- und *paludosus*-Gruppe werden diskutiert. *Agabus faldermanni* sollte entweder als eigene Gruppe oder innerhalb der *guttatus*-Gruppe geführt werden. Letzteres würde eine Erweiterung der Gruppenmerkmale bedingen.

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Autor(en)/Author(s): Nilsson Anders N.

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