

Adjustments to the French syrphid fauna following from revision of the Iberian *Merodon* species (Diptera, Syrphidae)

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Summary. – Following from a recently published review of the Iberian species of the genus *Merodon* (Diptera: Syrphidae), two name changes are introduced to the French syrphid list and one species is added to it. The species previously known on the French list as *M. minutus* Strobl, 1893, is now *M. chalybeus* Wiedemann in Meigen, 1822; *M. alexeji* Paramonov, 1925, of the French list becomes *M. serrulatus* Wiedemann in Meigen, 1822. The species *M. unicolor* Strobl in Czerny & Strobl, 1909, is added to the French list, from material previously determined as *M. aeneus* Megerle in Meigen, 1822, from the Pyrenees and Haut-Languedoc, while the presence in France of *M. aeneus* itself is confirmed from the Alps. It is pointed out that the two segregates of *M. avidus* (Rossi, 1790), currently referred to in the literature as *M. avidus* A and *M. avidus* B, are probably present in France, but that the apparent presence of additional cryptic taxa of the *M. avidus* complex shows that more incisive revision is necessary, before the status in France of any of these cryptic taxa can usefully be addressed. A key is presented for separation of the males of the three closely-related species *M. aeneus*, *M. legionensis* and *M. unicolor*.

Résumé. – **Corrections à la faune de France des Syrphides suite à la révision des espèces ibériques du genre *Merodon* (Diptera, Syrphidae).** A la suite d'une révision récemment publiée des espèces ibériques du genre *Merodon* (Diptera, Syrphidae), la liste française de Syrphes voit deux espèces changer de nom et une autre qui lui est ajoutée. Les espèces précédemment connues en France sous le nom de *M. minutus* Strobl, 1893, et de *M. alexeji* Paramonov, 1925, deviennent respectivement *M. chalybeus* Wiedemann in Meigen, 1822, et *M. serrulatus* Wiedemann in Meigen, 1822. L'espèce *M. unicolor* Strobl in Czerny & Strobl, 1909, est ajoutée à la liste française à partir d'individus auparavant identifiés comme étant *M. aeneus* Megerle in Meigen, 1822, provenant des Pyrénées et du Haut-Languedoc, alors que la présence en France de *M. aeneus* lui-même est confirmée des Alpes. Il est souligné que les deux entités de *M. avidus* (Rossi, 1790), actuellement nommées dans la littérature *M. avidus* A et *M. avidus* B, sont probablement présentes en France, mais que la présence apparente d'autres taxa cryptiques au sein du complexe de *M. avidus* montre qu'une révision encore plus poussée doit être faite sur ce genre pour que le statut en France de ces taxa cryptiques puisse être abordé avec confiance. Une clé est donnée permettant de séparer les mâles des trois espèces proches *M. aeneus*, *M. legionensis* et *M. unicolor*.

Key words. – Diptera, Syrphidae, *Merodon*, France, Corsica, new record.

Species new to the fauna of France. – *Merodon unicolor* Strobl (Ariège, Haute-Garonne, Hérault, Pyrénées-Atlantiques, Pyrénées-Orientales Tarn).

In Europe, the genus *Merodon* Meigen, 1903, reaches its maximum diversity in the Mediterranean zone. The many species, although often brightly-coloured and striking to look at, have never been subject to comprehensive review and some of them can be extremely difficult – or impossible – to determine. A recent attempt to revise the European species, by Hurkmans, was abandoned with only the first part published (HURKMANS, 1993), leaving many unsolved taxonomic issues. A new initiative, progressively revising the European *Merodon* fauna, is now underway, combining the efforts of Maria-Angeles Marcos-García and her team in Alicante (Spain) with those of Ante Vujić and his co-workers in Novi-Sad (Serbia) and with contributions from various other syrphid workers scattered round the continent. A major advance resulting from this work is the publication of a revision of the *Merodon* species of the Iberian peninsula (MARCOS-GARCÍA *et al.*, 2007). This revision includes identification keys incorporating all of the known Iberian species (eight of them described by MARCOS-

GARCÍA *et al.* as new to science), species diagnoses, figures of the male terminalia of all of the species covered and various nomenclatural changes, including re-instatement of a number of names previously regarded as synonyms, or otherwise fallen into disuse. The present text deals with some of these nomenclatural changes that affect the known French fauna and includes first records from France of one of the reinstated species. It would seem quite likely that re-examination of French material in existing collections will result in further additions to the French *Merodon* fauna, as the MARCOS-GARCÍA *et al.* (2007) revision becomes more widely known and more widely used.

THE *MERODON* SPECIES KNOWN FROM FRANCE

There are 32 *Merodon* species listed for France by SPEIGHT *et al.* (1998). *Merodon loewi* van der Goot, 1964, has been added subsequently (SPEIGHT & SARTHOU, 2006). The revision of the Spanish *Merodon* species by MARCO-GARCÍA *et al.* (2007) covers only part of the French *Merodon* fauna and there remain various issues to resolve in relation to *Merodon* taxa occurring in France but not known from the Iberian peninsula. With the exception of *M. aeneus*, the only species considered in the present note are species whose names and/or taxonomic status, as given in SPEIGHT *et al.* (1998), now require to be changed, in consequence of this revision. These taxa are treated here in alphabetical order, following the nomenclature of MARCO-GARCÍA *et al.* (2007), with the name used in SPEIGHT *et al.* (1998) shown below the current name. Explanatory notes and available records are provided, as necessary.

Merodon aeneus Megerle in Meigen, 1822

Merodon aeneus Megerle in Meigen, 1822, *partim*.

MARCOS-GARCÍA *et al.* (2007) separate a number of species-level taxa from *M. aeneus* of authors, which now has to be regarded as a complex of cryptic species. But they do not record *M. aeneus* itself from the Iberian peninsula and do not redefine it. Here, the working hypothesis is adopted that the *aeneus*-group taxon absent from Iberia, but occurring through mountainous parts of central Europe, including the Alps and the Apennines, and generally known as *M. aeneus*, can still be referred to as such. This is the implication of the findings of MARCO-GARCÍA *et al.* (2007). To clarify the application of the name *aeneus* as used here, a diagnosis of the male is provided as follows to distinguish it from males of other European *aeneus*-group species known from east of the Pyrenees: upper third to half of eyes black-haired; antennae with segment 1 black, segment 2 very dark brown and segment 3 red-brown/brown; mesoscutum entirely covered in dense, long, orange-yellow hairs and metallic, brassy-green in colour; femora black except for very narrowly at apex; postero-lateral surface (and often antero-lateral surface) of hind femora with black, bristly hairs on apical half; tibiae black except at base, where narrowly brownish; tarsi black (mid basitarsus may be yellowish at base, dorsally).

Females of *M. aeneus* cannot at present be reliably distinguished from females of some forms of the closely-related *M. cinereus* (Fab.).

As defined above *M. aeneus* is present in various parts of the French Alps (confirmatory records are provided below, based on specimens that have been re-determined by us). But existing French material named as *M. aeneus* in collections requires to be rechecked because at least one additional species in this complex, *M. unicolor* (see below), is now known from France and others could await discovery. Use of the name *aeneus* Megerle for the taxon referred to above may well change, since there is continuing uncertainty over application of this name because the type material of *aeneus* Megerle cannot be located and its original description is insufficiently precise. Some authors advocate an alternative approach, of using the older name *aureus* Fabricius for this taxon. But the description of *aureus* is equally unhelpful and all that remains of the type material is a pair of wings, which neither decide the identity of the taxon concerned nor permit designation of a neotype, so it is difficult to

see how use of the name *aureus* would provide any greater nomenclatural stability than use of the name *aeneus*.

Records. – AIN: Virieu-le-Petit, 5.VII.1993, ♂, *J.-J. Bignon*; ALPES-DE-HAUTE-PROVENCE: La Foux-d'Allos, 1700m. alt., 22.VI.2002, ♂♂ et *er*, *M. Speight*; ALPES-MARITIMES: Jardin alpin de Casterine, St.-Dalmas-de-Tendre, 11.VI.1998, *er*, *M. Martinez*; HAUTE-SAVOIE: Réserve Naturelle des Aiguilles-Rouges, Chamonix, 1720 m. alt., 15-30.VI.2005, *er*, *J.-P. Sarthou*.

Merodon avidus (Rossi, 1790)

MARCOS-GARCÍA *et al.* (2007) follow the practice introduced by MILANKOV *et al.* (2001), of recognising *M. avidus sensu auct.* as a combination of at least two cryptic species and record both of them from Spain. Like MILANKOV *et al.* (2001) they also refer to these two cryptic taxa as *M. avidus* A and *M. avidus* B. Using the morphological features provided by MILANKOV *et al.* (2001) and MARCOS-GARCÍA *et al.* (2007), to critically re-examine French material consigned to *M. avidus*, provides strong grounds for recognising both *M. avidus* A and B as present in France. However, this same re-examination procedure synchronously demonstrates that neither taxon A nor taxon B exhibit a convincing degree of homogeneity, when segregated in this way. Morphologically, it could be as easily justified to segregate French *M. avidus* into as many as four cryptic taxa. MILANKOV *et al.* (2001) provided a genetic basis for segregation of their *M. avidus* A and *M. avidus* B, as well as diagnostic morphological features. However, the material on which their work was based was all derived from the Balkan peninsula. MARCOS-GARCÍA *et al.* (2007) based their recognition of the presence of *M. avidus* A and B in Spain solely on morphological criteria and, so far, results of genetic studies have not been published for *M. avidus* from any part of Europe other than the Balkans. At this point in time it would seem wisest simply to draw attention to the fact that *M. avidus* as recognised in France at present is almost certainly a complex of cryptic species, and to await further clarification of such issues as how many cryptic taxa are involved, how they can reliably be separated and what names can validly be applied to them, before introducing any of them to the French species list.

Merodon chalybeus Wiedemann in Meigen, 1822

Merodon minutus Strobl, 1893, *sensu* SPEIGHT *et al.*, 1998.

Merodon spicatus Becker, 1907.

This species was known as *M. spicatus* in earlier literature and French material was erroneously referred to *M. minutus* by SPEIGHT *et al.* (1998). In France it is known from Corsica.

Merodon serrulatus Wiedemann in Meigen, 1822

Merodon alexeji Paramonov, 1925, *sensu* HURKMANS, 1993.

MARCOS-GARCÍA *et al.* (2007) demonstrate that HURKMANS (1993) erroneously synonymised *M. serrulatus* Wiedemann with *M. avidus* Rossi, as a consequence of designating the wrong specimen as lectotype of *M. serrulatus*. They located the holotype of *M. serrulatus* and re-instated the species. Comparison between Spanish material of *M. serrulatus* and specimens identified as *M. alexeji* by Hurkmans (including French material) shows that *M. alexeji sensu* HURKMANS (1993) is *M. serrulatus*. Whether this means that *M. alexeji* Paramonov is a synonym of *M. serrulatus* is beyond the scope of the present note to decide. HURKMANS (1993) states that he based his identification of *M. alexeji* on Paramonov's description (PARAMONOV, 1925) of the species, since the type material was lost. Inclusion of *M. alexeji* on the French list by SPEIGHT *et al.* (1998) was based on material determined by Hurkmans, and it is reasonable to conclude that all of the French material involved belongs to *M. serrulatus*. Until and unless there is reason for revising this conclusion, *M. alexeji* Paramonov should be removed from the French list. *M. serrulatus* can be identified using the keys, diagnosis and figures provided by MARCOS-GARCÍA *et al.* (2007).

***Merodon unicolor* Strobl in Czerny & Strobl, 1909**

Merodon aeneus Megerle in MEIGEN, 1822, *partim*.

MARCOS-GARCÍA *et al.* (2007) show that Iberian material previously consigned to *M. aeneus* represents a combination of three different species, none of them *M. aeneus*. One of them, *M. pumilus* Macquart in Lucas, 1849, is according to MARCOS-GARCÍA *et al.* (2007) a North African species, recorded by them for the first time from Europe and apparently with very few Spanish records. Another of them, *M. legionensis* Marcos-García *et al.*, 2007, is recorded from northern and eastern Spain. This species is also found in southern Italy (M. Speight, *in litt.*). They provide records of the third species, *M. unicolor*, from mountainous country all over Spain. The present paper extends the known range of *M. unicolor* to French parts of the Pyrenees and to as far East as Haut-Languedoc (see records, below).

Records. – ARIÈGE: Sentein, tourbière de l'Izard, 1450 m alt., 8.VI.2003, ♂♂, ♀, slope mire, *J.-P. Sarthou*; HAUTE-GARONNE: Sengouagnet, Pujau, 530 m alt., 13.V-13.V.2000, ♂, roadside, Malaise trap, *J.-P. Sarthou*; HÉRAULT: col de Font-Froide, 970 m alt., 28.VI.1998, ♂♂, dry grass/heath edging *Pinus* plantation, *M. Speight*; PYRÉNÉES-ATLANTIQUES: Aincille, nr St Jean-Pied-de-Port, 250 m alt., 13.VI.1981, ♂♂, ♀, well-drained, open, *Betula* woods on sand, *M. Speight*; nr Esnazu, vallée des Aldudes, 750 m. alt., 29.VII.1995, ♀, hay meadow, *M. Speight*; forêt d'Iraty, 950 m alt., 15.VIII.2007, male, montane heath in open *Fagus* forest, *E. Castella*; PYRÉNÉES-ORIENTALES: Eyne, 12-18.VII.2000, 1700 m, ♀, *T. Noblecourt*; TARN: Rouairoux, Le Rec, 14.V-22.VI.2000, 600 m alt., ♂, ♀♀, roadside, Malaise trap, *V. Sarthou*.

In *Merodon aeneus*, *M. legionensis* and *M. unicolor*, the mesoscutum is densely and entirely covered in long, orange-yellow hairs. In the males of these species the abdominal tergites are similarly covered in long, orange-yellow hairs and the terminalia provide no distinguishing features. The males of these three species may be separated as follows.

1. Legs with tibiae and tarsi almost entirely yellow (tibiae may have small, dark marks; eyes black-haired dorsally) *M. legionensis*
- Legs with tibiae and tarsi almost entirely black 2
2. Eyes with dorsal half black-haired *M. aeneus*
- Eyes entirely pale-haired *M. unicolor*

In the diagnosis of *M. legionensis* provided by MARCOS-GARCÍA *et al.* (2007) there is an error: *M. pumilus* is referred to as having the eyes "entirely pale-haired". In that species the eyes are black-haired on the upper half, as stated in the diagnosis of *M. pumilus* and in the key they provide (Marcos-García, *pers. comm.*). Although *M. legionensis* is not as yet known from France its occurrence would seem quite possible, in mountainous country close to the Mediterranean coast. It is included in the above key for that reason. Of these three species, it is the only one not in flight in the spring. It is an autumnal species, found in September. *M. aeneus* is a spring/summer species, flying from May to August, the later records being from higher altitudes. According to MARCOS-GARCÍA *et al.* (2007), the flight season of *M. unicolor* in Spain is from April to September, implying a number of generations per year. But in the Pyrenees and SW France the available records are only from mid May/mid July and it is possible the species is univoltine in this part of its range. *M. aeneus* is a montane/subalpine species in the Alps, not normally encountered below 1000 m. *M. unicolor* apparently has a wider altitudinal range, occurring in the Pyrenees from 1700 m down to below 300 m.

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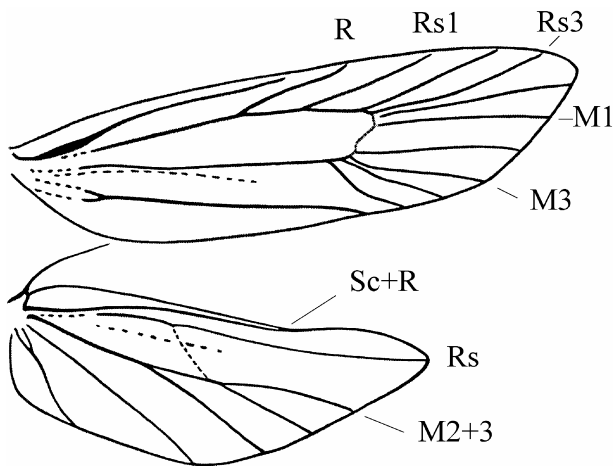
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Joël MINET. – La position systématique du genre *Protochanda* Meyrick (Lep.)

Summary. – The monotypic genus *Protochanda* Meyrick, 1935, is here transferred from the metachandine Oecophoridae (Gelechioidea) to the Carposinidae (Copromorphoidea). Its type species, described from Tianmushan (“Tien-Mu-Shan”), may be a synonym of *Commatarcha quaestrix* (Meyrick, 1935), also described from this mountainous area of Zhejiang Province, eastern China.

Le genre monotypique *Protochanda* Meyrick, 1935, est rangé par CLARKE (1965) dans les “Metachandidae”, groupe désormais considéré comme une tribu (Metachandini) des Oecophoridae Oecophorinae (Gelechioidea). Bien qu’il soit repris par les auteurs actuels (<http://www.nhm.ac.uk/jdsml/research-curation/projects/butmoth>), ce point de vue est manifestement erroné, notamment parce que *Protochanda bicuneata* Meyrick, 1935, – l’espèce-type du genre – ne possède pas l’une des synapomorphies les plus nettes des Metachandini, à savoir la fusion complète, à l’aile antérieure, des nervures Rs3 et Rs4. En



Protochanda bicuneata,
nervation d’après CLARKE (1965).

réalité, cette espèce a une nervation typique des Carposinidae (DAVIS, 1969 ; DIAKONOFF, 1989), famille dont elle possède les autapomorphies (p. ex. aile postérieure sans nervure M2 indépendante) et dans laquelle il convient donc de la transférer. De plus, en raison de nombreuses similitudes (coloration des ailes antérieures, forme des ailes postérieures, palpes labiaux à revêtement écailleux peu épais, etc.), son lectotype – sans abdomen – pourrait correspondre au mâle, encore inconnu, de *Commatarcha quaestrix* (Meyrick, 1935), taxon ayant la même localité-type : Tianmushan (30°13’ à 30°21’N, 119°00’ à 119°25’E ; alt. 1500-1600 m) dans la province chinoise du Zhejiang (= Chekiang).

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