

First record of *Ochtheophilus (O.) praepositus* Mulsant & Rey, 1878 in North Africa

Première citation d'*Ochtheophilus (O.) praepositus* Mulsant & Rey, 1878 en Afrique du Nord

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Abstract. Recent surveys in the Moulouya watershed and in eastern Morocco have led to a discovery of *Ochtheophilus (s. str.) praepositus* Mulsant & Rey, 1878, reported for the first time from the Maghreb. Here we provide its distribution range in North Africa, which is restricted to high altitude of the Middle and High Atlas mountains, in addition to an overview on its ecology and accompanying species of rove beetles found in its habitat.

Key words: Coleoptera, Staphylinidae, *Ochtheophilus praepositus*, first record, Moulouya, Morocco.

Résumé. Des prospections récentes effectuées dans le bassin versant de la Moulouya et dans le Maroc Oriental, ont permis la découverte pour la première fois au Maghreb de l'espèce *Ochtheophilus (s. str.) praepositus* Mulsant & Rey, 1878. Son aire de répartition en Afrique du Nord, est jusqu'à présent limitée aux hautes altitudes du Moyen et du Haut Atlas. Dans ce travail, un aperçu sur son écologie et sur les espèces accompagnatrices des staphylins trouvées dans son habitat est présenté.

Mots clés: Coléoptères, Staphylinidae, *Ochtheophilus praepositus*, nouvelle citation, Moulouya, Maroc.

INTRODUCTION

The genus *Ochtheophilus* Mulsant & Rey, 1856 (Coleoptera: Staphylinidae, Oxytelinae), after its recent revision, comprises 62 valid species distributed in the Holarctic region, including 25 recently described (Makranczy *et al.* 2014). The western Palearctic species *Ochtheophilus (s. str.) praepositus* Mulsant & Rey 1878, whose distribution is still poorly known, was not yet reported from North Africa or the Maghreb.

MATERIAL AND METHODS

Three surveys, spread over six months (March to August 2014), were carried out in the watershed of Moulouya and eastern Morocco. The sampling was carried out with a sampler of the "Surber" type provided with a frame delimiting a surface of 20 x 25 cm and equipped with a net of mesh of 500 µm.

For each station, 8 samples were made, i.e. an area of 0.40 m². This same sampler was used both for semi-aquatic environments and for riparian environments. For each sample, a first sorting, carried out on the field, made it possible to eliminate the coarse material and to collect the apparent fauna that was collected in a jar containing 70° alcohol. A second, finer sorting was done in the laboratory under a binocular lens to recover the remaining macroinvertebrates that were also stored in 70° alcohol. All the Staphylinidae were identified by one of us (MT).

Ochtheophilus (O.) praepositus praepositus Mulsant & Rey, 1878 = *Ancyrophorus grigolettoi* (Fagel, 1951) = *Ancyrophorus ruteri* Jarrige, 1949 (Fig. 1).

Habitat: Species of the genus *Ochtheophilus* are strictly hygrophilous and live on the sandy or gravelly banks of streams, mostly under or between stones as well as in moss or wet rocks (Makranczy *et al.* 2014).

Comments: Western Palearctic element (Löbl & Smetana 2004). Although it is a common species, its distribution is still poorly known (Callot 2016). It is reported from the Pyrenees to the Alps and the Carpathians where it is most prevalent (Uhlig *et al.*, 2006, Renner 2013) and the northern Balkans to the Caucasus and Turkey (Makranczy *et al.* 2014).



Figure 1. *Ochtheophilus (s. str.) praepositus* Mulsant & Rey, 1878

Ochtheophilus praepositus Mulsant & Rey, 1878 is reported here for the first time from North Africa. During the study period, a total of 26 individuals were collected in six localities, all located in the Atlasic part of the Moulouya watershed (Fig. 2), in forest or agricultural fields, between 560 and 1895m above sea level. From:

- The upstream of Oued el Bared (S1: 33°54' 40.2" N and 4° 02'40.7" W), located in a forest domain at the Meghraoua depression (Middle Atlas), at an altitude of 931m. This station is supplied by snowmelt in the spring and mainly by temporary sources in summer. 3 individuals were collected on 01/VI/2014.

- Place name Bou Iblane, Targa (S2: 33° 42'43.25" N and 3° 50'5.83" W), located in the Oriental Middle Atlas, at an altitude of 1531m. This station has banks bearing dense riparian vegetation. The granulometry, weakly clogged, is dominated by stones, pebbles and gravel. The strong

sunlight accentuates the development of the periphyton on the aquatic substrate, especially in summer. 7 individuals were collected on 14/VI/2014 with *Platystethus cornutus cornutus* (Gravenhorst, 1802) and *Ochtheophilus (Mysancrus) emarginatus* (Fauvel, 1871) and 1 individual on 07/VIII/2014 with *Anotylus nitidulus* (Gravenhorst, 1802) and *Ochtheophilus (Mysancrus) emarginatus* (Fauvel, 1871).

- The upper part of the Oued Berkine (Zobzit) (S3: 33° 48' 58.2" N and 3° 47' 7.4" W), located in a forest domain, at an altitude of 950m. This section of the river has sloping banks, with a strong sunlight, a weakly clogged granulometry, dominated by stones, pebbles and gravel and with plant debris. 9 individuals were collected there on 15/VI/2014.

- The confluence between Oued Berkine and Oued el Bared (S4: 34° 03' 02.25" N and 3° 46' 34.1" W), located at an altitude of 560m in an agricultural environment. The banks are inclined on the right bank and vertical on the left bank, the vegetation of the banks is herbaceous and sparse. The granulometry consists of blocks, stones, pebbles, gravel and sand, with little clogging and little plant debris. The strong sunlight favors the growth of filamentous algae and periphyton on the stones of streams. Only one individual was found on 15/VIII/2014.

- Anzar Oufounas spring (S5: 32° 25' 45"N and 5° 09' 24.8" W). It flows into Wadi Anzegmir, one of the main

tributaries of the Moulouya. It is rheocrenous and flows directly on the ground, at an altitude of 1895m. The granulometry of the bottom is made up of blocks, stones, pebbles and a lot of plant debris. In this localities, *O. praepositus* was found during the three sampling campaigns: 2 individuals were caught on 02/V/2014, with *Tachyporus (Palporus) nitidulus* (Fabricius, 1781), *Tachyporus (s. str.) hypnorum* (Fabricius, 1775), *Tetralaucopora longitarsis* (Erichson, 1839), *Platystethus (s. str.) oxytelinus* Fauvel, 1875 and *Sepedophiluscf marshami* (Stephens 1832); 1 individual was sampled on 14/VI/2014, with *Tachyporus (Palporus) nitidulus* (Fabricius, 1781) and *Ochtheophilus (Mysancrus) emarginatus* (Fauvel, 1871) and another individual was captured on 15/VII/2014, with *Tachyporus (s. str.) hypnorum* (Fabricius, 1775), *Aloconota sulcifrons* (Stephens, 1832) and *Platystethus (s. str.) oxytelinus* Fauvel, 1875.

- The downstream of the Oued Anzegmir (S6: 32° 44' 32" N 4° 54' 51" W), located at an altitude of 1455m, the right bank of which is formed by granite slabs, Left bank, vertical, is covered by dense shrub and herbaceous vegetation. The granulometry of the bottom consists of pebbles and gravel with medium clogging and little plant debris. This locality suffers from a strong anthropic disturbance due to the extraction of gravel. Only one individual was captured on 14/VI/2014 in company of *Ocalea atlasica* Coiffait, 1973.

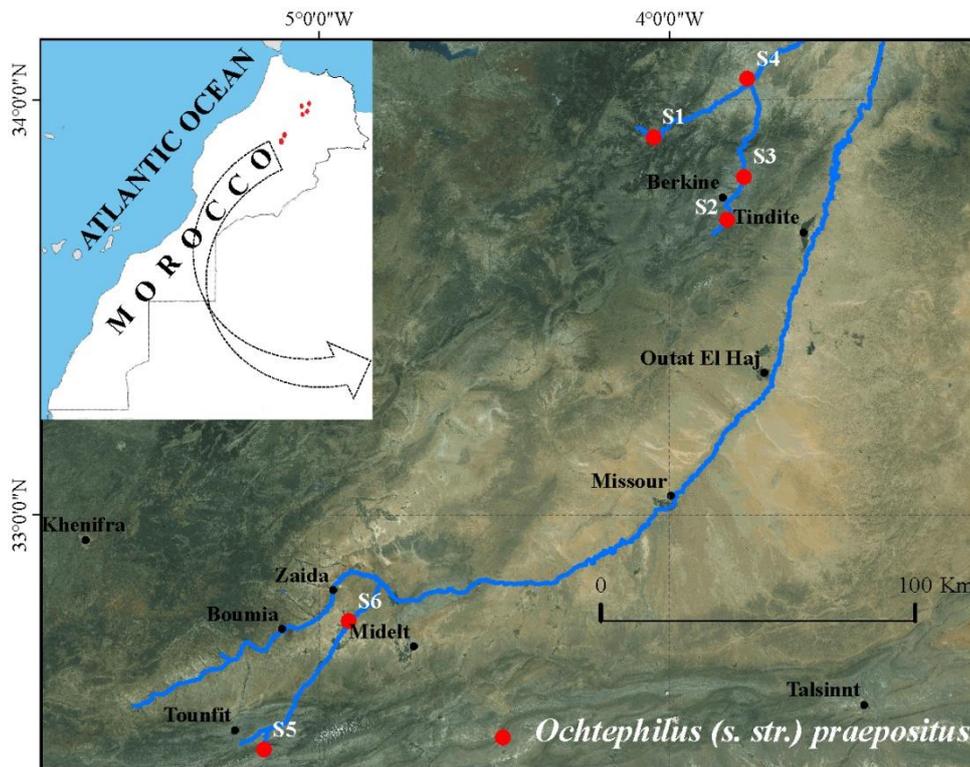


Figure 2. Distribution of *Ochtheophilus (O.) praepositus* in Morocco.

DISCUSSION AND CONCLUSION

In Eastern Morocco, the mainland waters are subjected to a hard anthropic pressure and are suffering a severe degradation because of many pollution sources from domestic, industrial and agricultural origins (Mabrouki *et al.* 2016a, 2017a, Mabrouki 2017, Ramdani *et al.* 2017, Taybi

et al. 2016a, Yahya *et al.* 2017). Consequently, the knowledge of Moroccan biological diversity, particularly those related with aquatic ecosystems should be a priority objective. Complementarily, conservation assessment and biodiversity research directed to minimize the biodiversity loss requires high-quality data on species' identity and distributions (Hortal *et al.* 2007). In this regard, we have

carried out several studies regarding monitoring of aquatic ecosystems based on macroinvertebrates in Oriental Morocco and the basin of Moulouya River (Daoudi *et al.*, 2017, Mabrouki *et al.*, 2016b, 2017b; Millán *et al.* 2016, Taybi *et al.*, 2016b, 2017a, b, 2018). Our surveys in hard-to-reach places and our repetitive campaigns made it possible to report important faunistic novelties. Indeed, the Anzar Oufounas spring, located in the High Atlas and where we discovered *O. praepositus*, also gathers several species recently cited as new for either North Africa, Morocco, or for the Moulouya watershed (Mabrouki *et al.*, 2016a, 2017a, Taybi 2016, Taybi *et al.* 2016a, 2017a,b).

On the other hand, the formal citation of *Sepedophilus marshami* as a new species for Morocco is too categorical and asks to be presented with caution for two reasons: since its presence in Tunisia indicated in the "Catalog of Palearctic Coleoptera" (Löbl & Smetana 2004, Löbl & Löbl 2015) is certainly a mistake, as no such records appears in the entomological edition of these fifty years; the other is that the specimen that was identified is a female, since no character allowing to confirm it formally.

The sampling method, which is not adapted to the collection of riverbanks, may explain the small amount of material collected, both in species and individuals, and the procession of riparian Staphylinidae must certainly be more diversified and abundant. The continuation of our research with *ad hoc* techniques should allow us to deepen our knowledge about this family.

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