

## First record of the slave-maker ant *Harpagoxenus sublaevis* (NYLANDER, 1849) from Bulgaria (Hymenoptera: Formicidae)

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### Abstract

*Harpagoxenus sublaevis* (NYLANDER, 1849) was found among ants taken in pitfall traps set in the Alibotoush Reserve, Slavjanka Mountain in southwestern Bulgaria. This species is new to the Bulgarian myrmecofauna that recently numbered about 130 species.

**Key words:** Formicidae, social parasite, Bulgaria, *Harpagoxenus sublaevis*.

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### Introduction

The boreo-alpine slave-maker *Harpagoxenus sublaevis* (NYLANDER, 1849) occurs in European mountains up to 2400 m altitude (BERNARD 1968) ranging from the Pyrenees to Russia and the Caucasus, and from northern Italy to northern Norway (KUTTER 1977, CZECHOWSKI & al. 2002). Specifically, HEINZE & KAUFFMANN (1993) reported it from the Pontic Mountains and BUSCHINGER (1966a) recorded it from Germany. It is found in Denmark and throughout Fennoscandia, but it is absent from the British Isles (COLLINGWOOD 1979). In the Balkans it has been found in regions of the former Yugoslavia (AGOSTI & COLLINGWOOD 1987), in Albania, Turkey (BUSCHINGER & DOUWES 1993), and Romania (MARKÓ & CSÓSZ 2001), but until now it has not been reported from Bulgaria.

### Study area and methods

During 2006 - 2007 several expeditions were made to the Pirin Mts. and Slavjanka Mts. as part of a project "The role of high-mountain karst in Bulgaria as a reservoir for conservation-significant species". Study sites included the UNESCO biosphere reserve Alibotoush in Slavjanka Mts.; this 1628 ha reserve with its 750 ha buffer zone was included in the Man and the Biosphere programme of 1977. The habitat varies greatly with altitude: the higher parts have a mean annual temperature of 6°C with an average annual rainfall of about 900 mm, however they are dry due to the calcareous substrate with eutric cambisols. The lower parts are warmer (c. 14°C) and chromic luvisols prevail. N. Simov and M. Langourov used pitfall traps (4% formalin solution) for sampling invertebrate fauna (7.VI. - 5.VII.2006). One worker of *Harpagoxenus sublaevis* that was found in a trap (UTM GL 18) situated on sub-alpine meadow at about 1975 m a.s.l. near Shabran Peak, 41° 23' 22" N, 23° 36' 31" E is deposited in my collection (V. Antonova).

### Discussion of *Harpagoxenus sublaevis*

This highly polymorphic species lives in obligate dulotic association with *Leptothorax acervorum* (FABRICIUS, 1793), *L. muscorum* (NYLANDER, 1846), and rarely with *L. gredleri* MAYR, 1855 (see BUSCHINGER 1966a, b, 1968, BUSCHINGER & WINTER 1978, CZECHOWSKI & CZECHOWSKA 1999, 2001). *Leptothorax acervorum* is the most frequently used host species (SCHULTZ & BUSCHINGER 2006) and in mature colonies the slave-makers are less than 20% of the worker population (CZECHOWSKI & al. 2002). The only known host species found in the same pitfall traps was *L. muscorum* and is the best candidate for the host species for the Bulgarian record. Other ant species in great abundance in the same location are: *Formica fusca* LINNAEUS, 1758, *Myrmica lobicornis* NYLANDER, 1846, *Myrmica ruginodis* NYLANDER, 1846 and *Manica rubida* (LATREILLE, 1802).

The Bulgarian specimen was found in open sub-alpine meadow on the Slavjanka Mountain that has boreal-montane fauna on its higher peaks while the lower slopes have strong Sub-Mediterranean characteristics. *Harpagoxenus sublaevis* is oligotopic in Central Europe (CZECHOWSKI & CZECHOWSKA 2001); in Germany it inhabits bogs, rocky slopes in the mountains, dry woods (BUSCHINGER 1966a) and in Poland it is found mainly in Peucedano-Pinetum forests (CZECHOWSKI & al. 1995) where it nests in rotten logs and under bark in tree-stumps but in the mountains it mainly lives under stones (CZECHOWSKI & al. 2002). It can be found from hilly regions up to mountain pastures, and marshlands in Romania (MARKÓ & CSÓSZ 2001).

The discovery of *H. sublaevis* brings the myrmecofauna of Bulgaria to 130 species. However, no extensive faunistic investigations have been made in the southern mountains of Bulgaria (ATANASSOV & DLUSSKY 1992) and I predict that, when this is rectified, the number of Bulgarian ant species will be much higher. For example, although

*H. sublaevis* is the 19<sup>th</sup> social-parasitic species for the country, six other species have been reported for Greece, Yugoslavia and Turkey and may be expected in Bulgaria (BUSCHINGER & DOUWES 1993). They are *Myrmoxenus corsicus* (EMERY, 1915), *M. kraussei* (EMERY, 1915), *M. adlerzi* (DOUWES, JESSEN & BUSCHINGER, 1988), *Plagiolepis xene* STÄRCKE, 1936, *Strongylognathus insularis* BARONI URBANI, 1968 and *S. dalmaticus* BARONI URBANI, 1969. On the other hand, *H. sublaevis* has not been recorded from Greece but given that this Bulgarian record is from the extreme southwest of the country, about 1 km north of the Greek border, it almost certainly will be found in the mountains of northern Greece at about 2000 m a.s.l.

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### Zusammenfassung

*Harpagoxenus sublaevis* (NYLANDER, 1849) wurde mit der Barberfallen-Methode für das Alibotoush Reservat im Slavjanka-Gebirge (Südwest-Bulgarien) nachgewiesen. Die Art ist neu für die bulgarische Myrmekofauna, die vor kurzem mit ungefähr 130 Arten beziffert wurde.

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