

## NOTE

### *Leucospis dorsigera* Fabricius (Hymenoptera, Leucospidae) as a Hyperparasitoid of Cerambycidae (Coleoptera) through Xoridinae (Hymenoptera: Ichneumonidae) in Iran

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The genus *Leucospis* (Chalcidoidea: Leucospidae) is distinct among the Chalcidoidea both morphologically and biologically. The species are usually robust, patterned vespid-like with yellow or red stripes on a black ground color. The hind femora are swollen and toothed beneath as in the Chalcididae but the fore wings are folded longitudinally and the ovipositor is turned up over the abdomen (Bouček 1974, Grissell and Schauff 1997).

Determination of host associations for parasitic wasps is fraught with difficulties. They are particularly problematic when it comes to concealed hosts, especially those living in deep or potentially complex situations where more than one species may be involved (Noyes 1994). In this paper, we report a new host relationship for *Leucospis dorsigera* Fabricius, 1775 in Iran.

During the study of the natural enemies of the Rosaceae branch borer, *Osphranteria coerulescens* Redtenbacher, 1850 (Coleoptera: Cerambycidae) on apricot trees in Abarkouh region of Yazd province, Iran, branches infested with borer larvae were hatched in plastic cages. Several parasitoid species emerged from the samples: *Eurytoma* sp. (Hymenoptera: Eurytomidae), *Xorides corcyrensis* (Kriechbaumer, 1894) (Hymenoptera: Ichneumonidae: Xoridi-

nae) and also five specimens of *Leucospis dorsigera* (Fig. 1). At first, we assumed that *L. dorsigera* emerged from a wasp or a bee nesting in holes in the wood, but we could not find any of its known hosts. For this species, there are records from Apidae (Hymenoptera) and Bostrychidae (Coleoptera) (Noyes 2004), but the latter host records were considered doubtful by Baur and Amiet (2000). To discover the possible host of *L. dorsigera* some infested branches were opened by the senior authors. Finally, five *Xorides* cocoons (Fig. 2) contained remnants of a *X. corcyrensis* larva together with a single ectoparasitoid larva which pupated after a few days and yielded *L. dorsigera*.

This is the first recorded instance of a species of *Leucospis* developing as a hyperparasitoid. Host records have been reported only for 33 (Grissell and Schauff 1997) of the 121 known species, all of them develop as primary parasitoids of aculeate Hymenoptera. Their hosts are mainly solitary bees, less frequently solitary wasps, e.g. Vespidae and Sphecidae nesting in a similar way as the bees. Except for one gregarious species (Grissell and Cameron 2002), all *Leucospis* develop—as far as is known—as solitary parasitoids. Occasionally parasitic bees have also been recorded



Fig. 1. Female of *Leucospis dorsigera*, emerged from larvae of *Xorides corcyrensis* (scale 0.5 cm).

as hosts for certain Palearctic species (Bouček 1974), but such records were considered doubtful by Baur and Amiet (2000).

*L. dorsigera* is a rather variable and widely distributed species that occurs from Eastern Russia through Western Europe to North Africa (Bouček 1974, Noyes 2004). The five specimens obtained from the *Xorides* cocoons show rather extensive yellow markings (Fig. 1). Furthermore, the gaster of the female is relatively short and in lateral view broadly rounded at the apex. Its ovipositor sheaths just reach to

the base of the gaster. The ratio of ovipositor sheath to hind femur length is only 1.5, which lies slightly outside the range of 1.53–1.92 given by Baur and Amiet (2000) for European specimens. In all other characters, especially the shape of the clypeus and the first gastral tergite (compare Baur and Amiet 2000: 367, figures 5a and 5b), the specimens fit very nicely the diagnosis of *L. dorsigera* provided by Bouček (1974) and Baur and Amiet (2000). According to Bouček (1974), pale coloration and a relatively short gaster were also ob-



Fig. 2. Opened cocoon of *Xorides corcyrensis* containing a pupae of *L. dorsigera* together with frass and the remnants of the *Xorides* larva (scale 1 cm).

served in other specimens collected in southern parts of the distribution area of this species.

Specimens of *L. dorsigera* are deposited in the Natural History Museum, Bern, Switzerland (1 female) and in the Dept. of Plant Protection, Shiraz Islamic Azad University, Shiraz, Iran (1 female, 3 males); specimens of *X. corcyrensis* (3 females, 2 males; 3 cocoons) and of *O. coerulescens* (6 specimens) are deposited in the Dept. of Plant Protection, College of Agriculture, Tehran University, Karaj, Iran.

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