

**A new record of *Bracon celer* (Hymenoptera: Braconidae),
a parasitoid of the olive fruit fly in Israel**

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The olive fruit fly, *Bactrocera oleae* (Rossi) (Diptera: Tephritidae), is the most serious pest of cultivated olives. It is currently found wherever olives are grown, except Australia. The presence of olive trees, under both natural and cultivated conditions, and the lack of natural enemies in areas where olive fruit fly has invaded, prevents effective control of this pest. The common approach to control its populations is classical biological control.

Bracon celer Szépligeti (Hymenoptera: Braconidae) is considered one such prospective parasitoid of the olive fruit fly. This is the only species in the genus *Bracon* known as parasitoid of the olive fruit fly. It has been recorded in Kenya (Silvestri, 1914), Ethiopia (Silvestri, 1915), South Africa (Neuenschwander, 1982, Daane *et al.*, 2011), and Namibia (Daane *et al.*, 2011). *B. celer* is an idiobiont ectoparasitoid of third (last) instar olive fruit fly larvae. Over 100 years ago there was an attempt to introduce *B. celer* to Italy (Silvestri, 1914) and 70 years later to Greece (Neuenschwander, 1982). These attempts did not result in its establishment (Clausen, 1978, Neuenschwander, 1982). The introduction of *B. celer* to California is currently under discussion (Sime *et al.*, 2006, Daane *et al.*, 2011, Hoelmer *et al.*, 2011). There are no data on attempts to introduce this parasitoid into additional countries, in particular into Israel.

In some online catalogues *B. celer* is noted as a species of the Italian fauna (Yu *et al.*, 2011; de Jong, 2013). These records are derived from the "Checklist of Braconidae of Italy" (Bergamesco *et al.*, 1995) (Dr. D.S. Yu, personal communication). The list of the Braconidae of Italy indicates that the species has been recorded there but without any reference to the source. Dr. A. Canale informed me of this (personal communication): "It is conceivable that the successive discoveries of this parasitoid in Italy arise from the original introduction of the species made by Silvestri more than one century ago. As concerns my personal 20 years of experience in Tuscany, I never obtained this parasitoid from olive fruit fly infested olives. So, probably the species is present at very low density."

In Israel *B. celer* was reared from olive fruits collected in November 2011 from Bet Dagan (Central Coastal Plain) at the Institute of Agricultural Engineering (Agricultural Research Organization, Volcani Center). For this 150-200 fruits were placed in a cage. A total of 1,330 olives were collected in seven samples. *B. celer* was found in only five samples, with a total of 78 females and males. At the end of this emergence part of the fruits were analysed and we found the remains of the flies and the parasitoid empty cocoons in damaged olives. *B. celer* was identified by Wharton's and Joder's (2013) key. The majority of these specimens of *B. celer* are deposited in the collection of Zoological Museum of Tel Aviv University and some in the collection of Institute for Biological Control (Bet Dagan).

The overall percentage of olive fruit fly parasitism in the five samples was 34%, of which 71.5% was by *Psytalia concolor* Szépligeti (Hymenoptera: Braconidae) and 28.5% by *B. celer*. Although the survey of olive fruit fly parasitoids was conducted over the course of six years (2007-2012), *B. celer* was only found in 2011.

At present, we have no explanation of the possible ways by which *B. celer* arrived in Israel.

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