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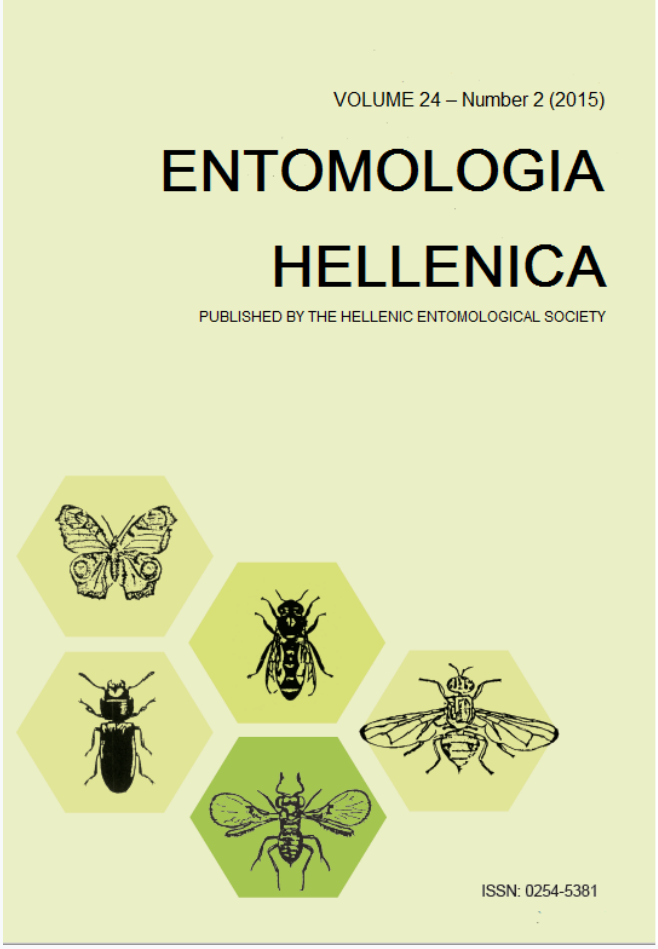

First record of the black soldier fly,Hermetia illucens, in Greece

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SHORT COMMUNICATION

First record of the black soldier fly, *Hermetia illucens*, in Greece

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ABSTRACT

In May 2015, the black soldier fly *Hermetia illucens* (L.) (Diptera: Stratiomyidae) was recorded for the first time in Greece. Its occurrence was noticed firstly in May 2015 in the island of Naxos, Cyclades. Newly hatched larvae of *H. illucens* feed on different decaying organic material, such as rotting fruits and vegetables, animal manure and human excreta, achieving a significant dry mass reduction. Thus, they are considered to provide remarkable ecological service on recycling. Information on its morphology, biology and distribution is given.

KEY WORDS: Stratiomyidae, black soldier fly, first record.

The black soldier fly, *Hermetia illucens* (L.) (Diptera: Stratiomyidae), is originally a New World species, but transportation of food and other materials by human have resulted in the establishment of this species in additional regions (Üstüner et al. 2003). It is now widely distributed in tropical and warmer temperate regions between about 45°N and 40°S (McCallan 1974; Üstüner et al. 2003). In Europe, it was recorded in Malta for the first time in 1926 (Lindner 1936) and since then it has been found in other parts of the Mediterranean region such as Albania, Croatia, France, Italy, Portugal and Spain (Navarro and Perris 1991, Üstüner et al. 2003, Rozkosny and Knutson 2007, Martínez-Sánchez et al. 2011).

The present study reports the first record of the black soldier fly in Greece. Specifically, in May 2015, one female individual of *H. illucens* (Fig. 1A) was captured via a sweep-net on the slopes of a creek near to a goat farm, at Kampos of Agiassou, located at the southwestern part of Naxos island. After the first capture, two more specimens were collected via a sweep-net in September 2015 in an urban environment: the first in Aigaleo (W Athens) and the second in Alimos (S Athens) (Figs. 1B, 2). Identification of the specimens was made based on morphological criteria (Sheppard et al. 2002) and confirmed by Dr. Nigel Wyatt, British National History Museum.

Black soldier fly adults are 15-20 mm in length, black in color with two translucent areas on the first abdominal segment (Sheppard et al. 2002). The antennae are three segmented and visibly elongated. Female eyes are dioptic, in contrast to male's ones which are holoptic. Females deposit up to 500 eggs in cracks and crevices near, or on decaying matter. Newly hatched larvae feed on different decaying organic material,

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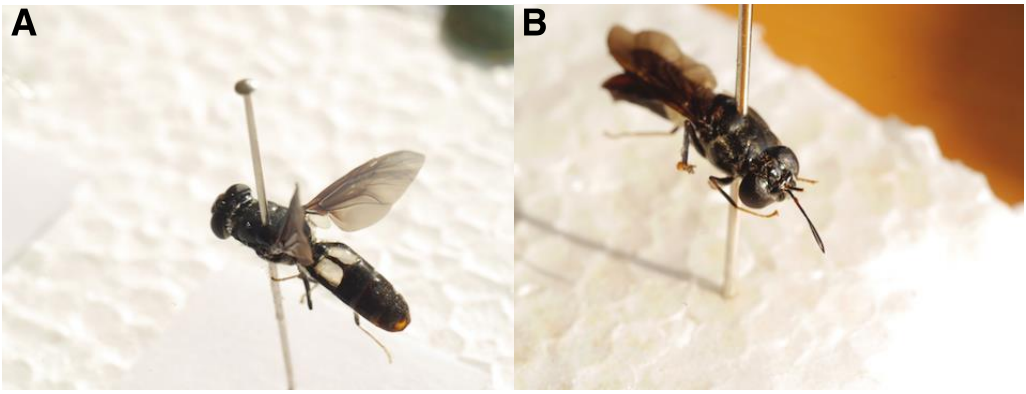

FIG. 1. (A) Female adult of *H. illucens* (missing antennae) caught at Kampos of Agiassou, Naxos and (B) female adult of *H. illucens* (left antenna damaged) caught at Alimos, Athens.

such as rotting fruits and vegetables, animal manure and human excreta, achieving a dry mass reduction of ca. 55% (Sheppard 1983, Newton et al. 2005, Myers et al. 2008, Diener et al. 2011). Larvae can reach 27 mm in length and are whitish in color with a small, projecting head containing chewing mouthparts.

In total, larvae pass through six instars and require approximately 18.5 days to complete larval development (Tomberlin et al. 2009). Last instar larvae migrate from the larval food source in search of a dry and protected site to pupate. Pupae are immobile and their development takes place inside the last larval integument (puparium). Adults emerge by putting hydrostatic pressure from the hemolymph to generate splits along predetermined lines.

Adults of the black soldier fly are not considered a pest (Newton et al. 2005), mainly because they lack of functioning mouthparts and thus do not feed (van Huis et al. 2013). Furthermore, they are weak fliers usually resting on vegetation. Their only duty is reproduction and spreading. Sunlight is essential for successful mating (Cribb 2000, Tomberlin et al. 2002).

Unlike adults, larvae of the black soldier fly have chewing mouthparts and through their feeding activity they provide the beneficial ecological service of manure recycling. More specifically, *H. illucens* larvae have the potential of improving organic waste into a rich fertilizer (Diclaro II and Kaufman 2015). Furthermore, presence of *H. illucens* larvae repels oviposition

FIG. 2. Locations of where *H. illucens* was recorded (red asterisk: Kampos; blue asterisk: Aigaleo; green asterisk: Alimos).

of female house flies (Bradley and Sheppard 1984), a serious disease vector especially in developing countries, where open defecation and inappropriate sanitation account for dangerous sources of pathogens (Graczyk et al. 2001). However, as the mature larvae crawl out to search for pupation sites, they

become subsequently available as livestock feed (Diclaro II and Kaufman 2015).

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Πρώτη καταγραφή του εντόμου *Hermetia illucens* στην Ελλάδα

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ΠΕΡΙΛΗΨΗ

Στην παρούσα εργασία γίνεται η πρώτη καταγραφή του είδους *Hermetia illucens* (L.) (Diptera: Stratiomyiidae) στην Ελλάδα. Η παρουσία του είδους αυτού διαπιστώθηκε για πρώτη φορά τον Μάιο του 2015 σε ρυάκι στην περιοχή Κάμπος της Αγιασσού, στην νοτιοδυτική Νάξο. Οι νεοεκκολαφθείσες προνύμφες του *H. illucens* αποδομούν τρεφόμενες σημαντικές ποσότητες οργανικής βιομάζας φυτικής, ή ζωικής προέλευσης, ελαττώνοντας έτσι σημαντικά την ξηρή μάζα των βιοαποβλήτων. Για τον λόγο αυτό θεωρείται ότι δύνανται να έχουν σημαντική συμβολή στην διαδικασία της ανακύκλωσης. Δίδονται πληροφορίες σχετικά με τα μορφολογικά και βιολογικά χαρακτηριστικά, όπως και για την εξάπλωση του εντόμου.

