

First record and description of *Capparimya savastani* (Martelli, 1911) (Diptera Tephritidae) on wild *Capparis spinosa* (L.) (Brassicales Capparaceae) in Biskra province (Algeria)

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ABSTRACT

During biodiversity plant investigations in Biskra localities (Algeria) conducted in autumn 2020 for the detection of specific arid meliferous plants, insect attacks were observed on wild caper plants *Capparis spinosa* L. (Brassicales Capparaceae). Infested caper fruits were taken and kept in laboratory conditions until adults 'emergence. Adults were identified as *Capparimya savastani* (Martelli, 1911) (Diptera Tephritidae). This record is the first one in Biskra region. Larvae of *C. savastani* feed on the edible flower buds and fruits of *Capparis spinosa*. This species seems to be able to cause significant damages to the fruit of wild caper.

KEY WORDS

Algeria; Biskra; caper plant; *Capparimya savastani*.

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INTRODUCTION

Capparis spinosa L. (Brassicales Capparaceae) is the most common species of this genus in the Mediterranean basin (Fici, 2001). It is a perennial xerophytic shrub originated from tropical or subtropical regions (Chedraoui et al., 2017) conspicuously adapted to poor soil and hot climate (El Amri et al., 2019). In Algeria, it is naturally spread throughout different bioclimatic stages (Benseghir-Boukhari et al., 2015) with the calcareous rocks concentrate as the most important populations of this species (Benseghir-Boukhari & Seridi, 2007). Different parts of *Capparis spinosa* are used in

human food, medicines and cosmetics products (Sozzi, 2001). The first caper cultivations started around 1970 in Spain and Italy but currently, Turkey and Morocco are the main caper producers in the world (Infantino et al., 2007). In Algeria, *Capparis spinosa* still remains as a wild plant in its natural habitats (Benseghir-Boukhari et al., 2015). The main 23 insects species that have been reported as key pests on caper plants were poly-phytophagous, and only two species that are considered as monophagous as *Cydia capparidana* (Zeller, 1847) (Lepidoptera Tortricidae) and *Capparimya savastani* (Martelli, 1911) (Diptera Tephritidae) (Infantino et al., 2007).

Capparimya Bezzi, 1920 is a genus of tephritid or fruit flies and is found predominantly in the Afrotropical region. Its species are mono-phytophagous pests developing on plants of Cappariaceae family.

Specialists account eight species, and *C. savastani* is the only species of this genus found in Europe and in the south of the Mediterranean region (De Meyer & Freidberg, 2005; Miranda et al., 2008). It has also been reported in other regions as Iran, Jordan, Oman, Pakistan and Yemen (Donati & Belcari 2003; Miranda et al. 2008; Papachristos et al. 2009; Moussa & Yammouni 2014; Mazzon & Martinez-Sañudo, 2014; El Harym & Belqat 2017; Mohamadzade-Namin & Korneyev 2018, Demetriou & Kryfos, 2020).

Unlike most of Ceratidini species, *C. savastani* larvae are able of devouring flower buds as well as fruits. In Algeria, the first samples of *C. savastani* have been found in Ghardaia province located in the north of Algerian Sahara (De Meyer & Freidberg, 2005).

This study aims to give a brief morphological description and to provide biological notes on *C. savastani* from another Algerian locality.

MATERIAL AND METHODS

All material was collected during plant investigations in Biskra province situated in the southeastern part of Algeria (Fig. 1). The sample was formed by some infested caper fruits. They were taken and kept in laboratory in standard conditions ($T = 25 \pm 2$, $RH = 60 \pm 10\%$ and photoperiod = 16/8 L/D) until adults' emergence. On November 11, 2020 there was the first pupae emergence. From some infested caper fruits, 9 pupae and 8 adults emerged (4 males and 4 females and from Algeria: Biskra, M'Ziraa locality, Sidi-Messmoudi's rocks, $34^{\circ}44'.160''N$, $05^{\circ}55'.130''E$, 569 m, legit S.Tahar-Chaouche, 22.X.2020). The material was stored in 75% alcohol and deposited in the laboratory of Bio-Systematic of the Scientific and Technical Research Centre on Arid Regions (CRSTRA), Biskra-Algeria as well as in the personal collection of the first author. Species was identified according to Carroll et al. (2002). Field photos (Figs. 2, 3) were taken using Canon EOS Rebel T5 body (with EF-S 18–55 mm f/3.5–5.6 IS II Lens). Photographs of specimens were done using stereomicroscope (Realux, France) with an integrated camera.

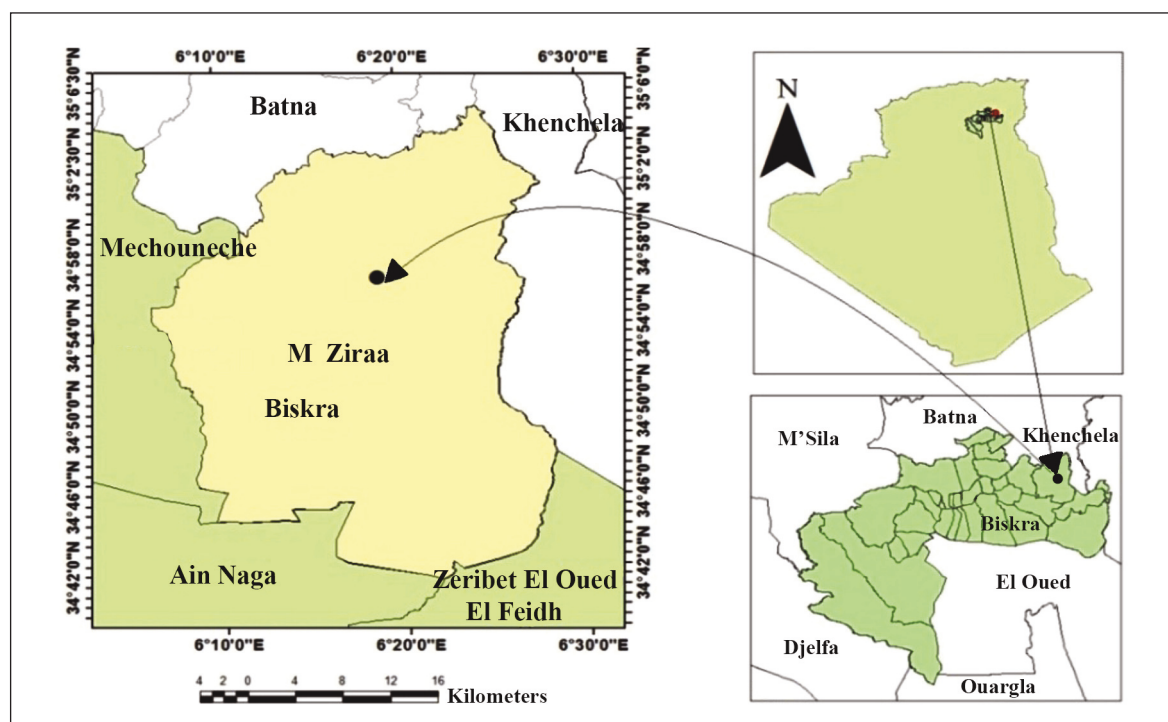


Figure 1. Map of Biskra region (Algeria) indicated sampling site in M'ziraa locality.

RESULTS AND DISCUSSION

Capparimyia savastani's field damages that attracted our attention were detected on fruit stage of *Capparis spinosa* with presence of many holes on the same fruits associated to ant's activities and on the same plant some caper fruits were small and dry (Figs. 2–4).

In our case and under laboratory conditions, most larvae complete their development inside fruits in more than 20 days and emerge from the fruit through holes (Fig. 4).

Rearing *C. savastani* pupae have brown colour (Fig. 5). Their number varied between 1–3 pupae per caper fruit and the pupal stage was between 7 to 10 days. In total, eight adults emerged.



Figure 2. Caper fruit (*Capparis spinosa*). Figure 3. Caper infested with ants. Figure 4. Exit wholes of *Capparimyia savastani* pupae on carper fruit (white arrows). Figures 5–8. *Capparimyia savastani*. Fig. 5: pupae. Fig. 6: thorax (adult). Fig. 7: adult female. Fig. 8: adult male.

An adult *C. savastani* is a small tephritid fly with average body length between 3–3.4 mm, and females were slightly longer than males. It is mainly confused with medfly *Ceratitis capitata* Wiedemann, 1824 (Diptera Tephritidae) but the characteristic scutum and scutellum patterning are fairly different. It can be distinguished by plump body with mixture colour of yellow and black. The thorax of both sexes is yellowish with typical patterns of black spots and bristles on pronotum, mesonotum and scutellum. On the yellowish scutum, the absence of the dark lyre-like pattern and the large dark central stripe which broadens basally is distinctly visible. The abdomen is ovate, yellowish to orange-brown color, flatter in lateral view and more flexible (Figs. 6–8). The wing is partly bare with pattern mostly yellowish combined to dark longitudinal streaks through basal cells. Legs with femora slender and entirely of one color.

Capparis spinosa is very common in different Algerian regions as wild plant and several of its parts are used by local people. The presence of *C. savastani* is dependent on its host plant and it is also probable that this species can be found in other regions.

In the future, more studies are needed to evaluate the geographical distribution of this pest.

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