

NEW RECORD OF FAMILY SCATOPSIDAE (DIPTERA) ASSOCIATED WITH LEPIDOPTEROUS STEM-BORERS OF SUGARCANE IN EGYPT

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Abstract

During investigations conducted in 2003-2004 at Aiat (Middle Egypt), saprophagous larvae of *Coboldia fuscipes* (Meigen) and *Quateiella inexpectata* Haenni (Scatopsidae) have been reared from sugarcane *Saccharum officinarum* L. infested by Pyralid and Crambid stem-borers (Lepidoptera). Larvae of both species followed a similar pattern of occurrence with two peaks in mid of November and February. Both species are recorded for the first time in Egypt. The scatopsid fauna of Egypt includes now 3 species.

INTRODUCTION

The Scatopsidae, the minute black scavenger flies or dung midges, is a small family of Nematoceran flies. About 350 species in some 30 genera have been described so far from all parts of the world, of which 98 species in 22 genera are known in Europe (Haenni, 1997, 2004). Records of the Scatopsidae of the Middle East are extremely scarce. In their List of Egyptian Diptera, Steyskal & El-Bialy (1967) reported only unidentified material of the family. Since then, only three species of Scatopsidae have been recorded from the region: the cosmopolitan and anthropophilous *Coboldia fuscipes* from Palestine (Cook, in litt.), *Swammerdamella brevicornis* from Egypt (Cook, 1972), Kazakhstan (Krivosheina, 1969) and Saudi Arabia (Haenni, 1985), and *Psectrosciara brevistylis* Cook, from Iran (Cook, 1958).

Sugarcane *Saccharum officinarum* L. is thought to have originated from the island of New Guinea (Artschwager & Brandes, 1958). It is widely grown around the world in mediterranean and tropical climates. Lepidopterous stem-borers are the more important pests among the more than 40 identified species of pest insects of sugarcane in Middle Egypt (Ezzat & Atries, 1967), a figure comparable to that of e. g. Mauritius (Facknath, 1989). Last instars larvae of the Lepidopteran sugarcane borers live tunneling in the internodes of the stalk and, if tunneling is extensive, death of the terminal bud of the plant may result (dead-heart). The newly emerged adults leave the stalk through an exit hole which allows the entry of secondary invaders, including fungal and bacterial saprophytic organisms. Apparently some species of flies are attracted by the smell of fermentation in this microhabitat (El-Serwy, 2008) where

their larvae may develop. Among these, two species of Scatopsidae have been obtained from the samples from Aiat.

MATERIALS AND METHODS

This study was conducted in Aiat region, 40 km south of Cairo, west of the Nile (Middle Egypt, Giza governorate). In this area, sugarcane is usually planted in autumn and spring months and harvested 12-18 months later. Thereafter, the ratoon cane is harvested every 12 months during approximately 4-5 years. Harvesting for juice may occur all over the year. The growing season extends from April to November, with most rapid growth during hot summer. Sugarcane plants vary in height (4.5-6 m), diameter of stems (2.5-7.5 cm) and length of internodes (5-15 cm). Sugarcane stalks infested by stem borers *Eldana saccharina* Walker (Pyralidae) and *Schoenobius niloticus* Zeller (Crambidae) were collected weekly from untreated sugarcane fields in Aiat region from September 23, 2003 to February 19, 2004. On each collection date, 5-15 stalks of mature cane plants infested by stem-borers were sampled and taken to the laboratory for study.

In the laboratory, the bored internodes cuttings from infested stalk samples were placed on paper sheets to dry, to avoid fermentation and growth of fungi. The semi-dried internodes infested by stem borers were kept inside rearing boxes 30 x 30 x 30 cm each, whereas the dried ones were placed in plastic bags with ventilation pores closed with an elastic band, to allow the emergence of flies. Daily inspection was made and the emerging flies were collected into 70% ethanol, counted and identified.

RESULTS AND DISCUSSION

Coboldia fuscipes (Meigen, 1930)

Material: Egypt: Aiat, em. x-iv. 2003- 2004, 20 ♂♂, 16 ♀♀. New for Egypt.

Additional captures of this species have been made by Skidmore and El-Serwy at Giza and Sinbelwein (130 km north east of Cairo) during April- June in 2000 and 2001 (unpublished data).

C. fuscipes is a cosmopolitan species and the commonest scatopsid, present in all parts of Europe and spread by man in all continents. It may be found both under natural and anthropogenic conditions. The larvae may develop in a wide variety of decaying organic matter, both of vegetal or animal origin: they have been obtained from diverse rotten plants and fruits, cultivated or wild, refuse from food factories, mushrooms, dung, carrion, compost heaps, etc (Haenni & Vaillant, 1994). Under

favorable conditions, the life-cycle may be achieved within 3-4 weeks, allowing the development of several generations in a year. *Coboldia fuscipes* may sometimes produce annoying proliferation in food-processing plants, canneries and even in houses, but there is no report of any damage due to this species, except in mushrooms cultivations (e.g. Talebi *et al.*, 2003). A large number of fungi species have been recorded as medium for their development and *C. fuscipes* is the most important pest of the mushroom *Agaricus bisporus* in several regions of the world.

***Quateiella inexpectata* Haenni, 1988**

Material: Egypt: Aiat, em. xi-iv. 2003- 2004, 9 ♂♂, 6 ♀♀. New for Egypt.

This species is still poorly known and the material from Egypt represents the third report of this species, which was described from Spain (Haenni, 1988). *Q. inexpectata* is probably Mediterranean in distribution since additional material from Israel has been studied by the second author (Haenni, in prep.). The larvae are still unknown but some Israeli specimens were obtained from rotten *Opuntia* and it is likely that the larvae are saprophagous in decaying vegetable material.

***Swammerdamella brevicornis* (Meigen, 1830)**

Already recorded from Egypt by Cook (1972).

This species was not obtained from the infested cane samples from Aiat. However recent captures have been made at Giza and Sinbelwein (130 km north east of Cairo) and in Governorates of Dakahlia at Mansoura and Shirbin (140 km north of Cairo), and Sharkia at San El-Hagar (140 km east of Cairo) during April-June in 2000 and 2001 (Skidmore & El-Serwy, unpublished data).

Distribution numbers of emerged scatopsid midges from Aiat are summarized in Table 1. Data show that the emerged *Coboldia fuscipes* adults were about two times more numerous than those of *Quateiella inexpectata*, whereas the sex ratio (male : female) tended to males in both species with about 1.2:1 and 1.5:1, respectively. According to Talebi *et al.* (2003), the sex ratio of *C. fuscipes* is the same populations fed on artificial diet or living under natural conditions. In Aiat the occurrence of larvae of both species in samples was higher in November and February resulting in two main peaks of emergence of adults in laboratory during December and March. Under natural conditions, Skidmore and El-Serwy found that the highest numbers of *C. fuscipes* and *S. brevicornis* were collected at lights in March and April at Giza (unpublished data).

With *Coboldia fuscipes* and *Quateiella inexpectata*, the present fly fauna known to be associated with sugarcane infested by stem-borers includes 13 species in Egypt (El-Serwy, 2008).

Table 1. Emergence of Scatopsidae from sugarcane infested by stem-borers in Aiat
(Egypt) 2003-2004

Date of emergence / month	Date of emergence per week	<i>Coboldia fuscipes</i> nb of specimens (week/month of sampling)	<i>Quateiella inexpectata</i> nb of specimens (week/month of sampling)	Total
October 2003	1	10 (4/ix)		10
	2			
	3	2 (1/x)		2
	4			
November	1			
	2	7 (2/x)	2 (2/x)	9
	3	2 (2/xi)		2
	4			
December	1	3 (3/xi)		3
	2	1+19 (2/xi-3/xi)	1+4 (1/xi-2/xi)	25
	3	11+1 (3/xi-4/xi)	4 (2/xi)	16
	4	1 (3/xi)	2 (2/xi)	3
January 2004	1	4 (3/xi)	7 (2/xi)	11
	2			
	3			
	4			
February	1			
	2			
	3			
	4			
March	1	1+1 (4/i, 3/ii)		2
	2	8 (3/i)	3 (3/i)	11
	3			
	4	15 (2/ii)	13 (2/ii)	28
April	1	4 (2/ii)		4
	2			
	3			
	4	14 (2/ii)	11 (2/ii)	25
Total		104	47	151

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تسجيلات حديثة تنتمي إلى فصيلة سكاتوبسيدي (رتبة ثنائية الأجنحة)
المرافقة لثاقبات حرشفية الأجنحة
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ربيت يرقات *Coboldia fuscipes* (Meigen) و *Quateiella inexpectata* Haenni من فصيلة سكاتوبسيدي على المادة العضوية العفنة لقصب السكر المصاب بثاقبات من فصيلتي بيرلدي وكرامبيدي خلال التجارب التي أجريت في منطقة العياط بمصر الوسطي في عامي ٢٠٠٣ - ٢٠٠٤. اتبعت يرقات كلا النوعين مسارا متشابها في التواجد في منتصف نوفمبر وفبراير. سجل كلا النوعان وكذلك الجنسان لأول مرة في مصر. الآن تمثل تلك الفصيلة بثلاثة أنواع في مصر.