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A New Pest Record for Capparis (Capparaceae) in Turkey and Its Larval Parasitoids, *Stiphrometasia sancta* (Hampson, 1900) (Lepidoptera: Crambidae)

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ABSTRACT

In this study, *Stiphrometasia sancta* (Hampson, 1900) which is from Crambidae family has been identified as harmful for *Capparis ovata* Desf. (Capparaceae). The biology of this species has been examined for the first time and research has been carried out on the harm of this species for the plant together with its larval food plant and nutrition style. *Apanteles* (*Apanteles*) *subcamilla* Tobias, 1976, *Bracon hebetor* Say, 1836, *Chelonus canescens* Wesmael, 1835 from Braconidae have been identified for the first time as larval parasitoid of *S. sancta*, and also *A. subcamilla* is a new record for Braconidae fauna of Turkey.

Key words: Stiphrometasia sancta, new pest, *Capparis ovata*, parasitoids, new record.

INTRODUCTION

Stiphrometasia Zerny, 1914 is in Cybalomiinae subfamily in Crambidae family. It has 5 species around the world and only 1 species in Turkey (Koçak and Kemal, 2009; Nuss *et al*., 2003-2017). *Stiphrometasia sancta* was first identified in Metasia species in 1900 by Hampson (sp. 393). It is used as taxon *Stiphrometasia sancta (*Hampson, 1900) now. In Turkey, it has been identified as "Snellenia alba Caradja, 1916" around Maraş and Yüksek Dağ (Mardin) by Osthelder (1935: 100). It was also been collected in Siirt (Kurtalan and Şirvan) by Koçak and Kemal (2009), but there was no report of this species as a caper pest in this country.

Capparis species grow naturally in Turkey and is the nutrition plant of lepidopter larvae in Turkey together with some other countries (Bodenheimer, 1930; Wiltshire, 1957; Palmoni, 1969; Pittaway, 1979; Garcia, 1988; Jordano *et al*., 1988; 1991; Halperin, 1991-1992; Shaffer *et al*. 1996; Renwick, 2001; Robinson *et al*., 2006; Solis *et al*., 2009; Kemal *et al*., 2010). Two species of this genus spread around Turkey; *Capparis spinosa* and *C. ovata.* Generally, C. *spinosa* varieties naturally spread around in the west and south coasts, while *C. ovata* varieties do so in the middle parts, East and Southeast regions. The fruits, flower buds, leaves and shoot ends of the plant are used as food (Belgin *et al*., 2005; Kara *et al*., 1996). Besides, it is stated

that *Capparis* may also be an important nutrition source for livestock (Varshney *et al*.,1991). It is also an effective controller of erosion because of its old, deep roots and its permeative feature (Arslan and Söyler, 1999).

In this paper, was investigated the biology, pest status, and larval parasitoids of *S. sancta* under the ecological conditions of Southeastern Region Anatolia.

MATERIAL AND METHODS

With the aim of determining pest damage to caper plant by *Stiphrometasia sancta*, studies were conducted at 14 different locations where caper grow naturally: Adıyaman, Mardin and Şanlıurfa provinces of the Southeastern Anatolia Region during July, August and September between 2008 and 2009 (Table 1). Extent of damage was determined by counting 2330 buds and fruits on 265 capers plants from these locations. The infected fruits were collected from the plants in the survey areas and cultured in separate 22x22x27 cm cages in the laboratory at 25±1°C and 65±5% r.h. Data were collected both from the field studies and the laboratory experiments. The parasitoids obtained by killing were stored in 70% alcohol in tubes and parasitoids were identified by Prof. Dr. Ahmet BEYARSLAN (Bitlis Eren University, Faculty of Science Literature, Department of Biology, Bitlis, Turkey).

Table 1. The locations in Adıyaman, Mardin and Şanlıurfa provinces where the studies were conducted in 2008-2009.

Province-Township- Village	GPS coordinate	Altitude (m)
Adıyaman-Merkez-Kuştepe	37°466760D, 38°25433K	687
Adıyaman-Merkez-Reşatlı	37°432709D, 41°47830K	609
Adıyaman-Merkez-Akpınar	37°430847D, 41°54662K	653
Adıyaman-Merkez-Abuzer Gaffari	37°442095D, 41°80618K	604
Mardin-Mazıdağı-1	37°629534D, 41°47996K	1105
Mardin-Mazıdağı-2	37°628679D, 41°47438K	1080
Mardin-Mazıdağı-Ömürlü	37°634009D, 41°53075K	921
Mardin-Mazıdağı-Derecik	37°635214D, 41°55682K	911
Mardin-Derik	37°613871D, 41°38250K	952
Şanlıurfa-Bozova	37°463073D, 41°36141K	591
Şanlıurfa-Bozova-Yalıntaş	37°465937D, 41°36249K	561
Şanlıurfa-Bozova-Tatarhöyük	37°468270D, 41°36121K	575
Şanlıurfa-Bozova-Beyazpınar	37°473879D, 41°38678K	634
Şanlıurfa-Hilvan-Uluyazı	37°376630D, 38°52684K	558

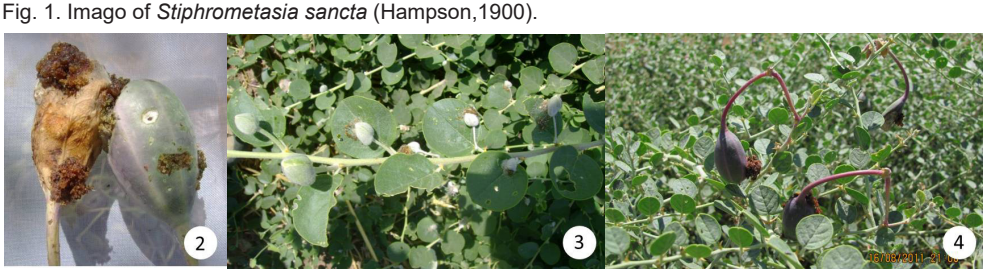
RESULTS AND DISCUSSION

Caper plant is a naturally grown plant in highway edges, around residential areas, in mountain slopes, in unused agricultural land or it is produced by farmer in Adıyaman,

Mardin and Şanlıurfa provinces from Southeastern Anatolia Region. *Stiphrometasia sancta* brings about important damage on caper plant and it almost creates a significant threat to caper. The latest observations indicate that sp. sancta is spreading rapidly in caper cultivation areas and pest management should be applied in these fields. It is only harm in the buds and fruits of caper plant. *Stiphrometasia sancta* (Hampson, 1900) leaves its eggs one by one on the buds of Capparis at the beginning of July and later on its fruits. There is one larva on each fruit. Larvae lead their lives by feeding through the fruits. They pass from one fruit to another covering the entrance holes with their dirt or with leaves. At the beginning of September, mature larvae go down to the soil and form cocoons to pass the winter. The adult moth exit is around the middle of May (Fig.1). In its early life stages, *S. sancta* do substantial damage to the buds, and to fruits in later life stages. Therefore, fruit production and quality decreases. 1614 from 2330 fruits were found to be infected. The number of fruits infected with this species was highest in locations in Adıyaman, Mardin and Şanlıurfa. Average damage ratio was determined as 63.1-79.5%, 48.4-50.9% and 79.9-75.3% in Adıyaman, Mardin and Şanlıurfa (Table 2). Therefore, it decreases its fruit production and quality (Figs. 2-4). Almost no fruit is obtained from the plants on which they exist.

Three species of parasitoids were determined belonging to Braconidae families of Hymenoptera. *Apanteles subcamilla* Tobias was described from Azerbaijan (Tobias, 1976). This species is a new record for Braconidae fauna of Turkey. *Bracon hebetor* Say, was reported as a parasitoid of most species of Lepidoptera (Yu *et al*. 2012). *Chelonus canescens* Wesmael, was given as parasitoid of *Cnephasia pasquana* (Tortricidae) (Aydoğdu and Beyarslan 2007; 2011). These parasitoids were identified for the first time from larvae of *S. sancta*.

Fig. 1. Imago of *Stiphrometasia sancta* (Hampson,1900).



Figs. 2-4 The damage on 2. flower buds of caper, 3. flower buds of caper. 4. fruits of caper.

Table 2. The number of buds and fruits on controlled caper plants and their average of damage ratio in Adıyaman, Mardin and Şanlıurfa during 2008 and 2009.

Years	Provinces	Districts	Village	The number of plant	Total number of buds and fruits	The number of buds and fruit infestation
2008	Adıyaman	Merkez	Kuştepe	3	47	28
			Kuyulu	17	120	64
			Akpınar	24	126	113
	Total			44	293	205
	Mardin	Mazıdağı	Center1	11	143	74
			Center2	8	112	59
			Ömürlü	3	41	14
			Derecik	8	104	47
		Derik	Center	5	44	21
	Total			35	444	215
	Şanlıurfa	Bozova	Center	7	76	64
			Yalıntaş	9	47	38
			Tatarhöyük	4	21	18
			Beyazpınar	10	68	68
		Hilvan	Uluyazı	41	290	213
	Total			71	502	401
2009	Adıyaman	Merkez	Kuştepe	4	38	26
			Reşatlı	6	41	32
			Akpınar	27	133	128
			Ziyaret	19	124	81
	Total			56	336	267
	Mardin	Mazıdağı	Center	7	60	26
			Ömürlü	3	37	22
			Derecik	8	52	27
		Derik	Center	2	26	14
	Total			20	175	89
	Şanlıurfa	Bozova	Center	12	146	109
			Yalıntaş	8	127	71
			Tatarhöyük	5	91	84
			Beyazpınar	9	154	132
		Hilvan	Uluyazı	5	62	41
	Total			39	580	437

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