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The Cuculliinae of Israel (Lepidoptera: Noctuidae)

V. D. Kravchenko, M. Fibiger, G. Muller & L. Ronkay

Abstract

The distribution within Israel and the time of flight of the 51 species of Cuculliinae (Lepidoptera: Noctuidae) are reported. Eleven of them are new for fauna of Israel. Six species are known only from old records, or found in old collections. Most of species are rare, local, flying only once a year during 2 - 4 weeks in early spring, and are attracted to light after midnight. The bulk of the species has Eremic and Palearctic range of distribution. The highest numbers of species inhabit different biotopes of Negev. Four species are restricted to the Levant and are eremic endemics.
KEY WORDS: Lepidoptera, Noctuidae, Cuculliinae, fauna, Israel.

Los Cuculliinae de Israel (Lepidoptera: Noctuidae)

Resumen

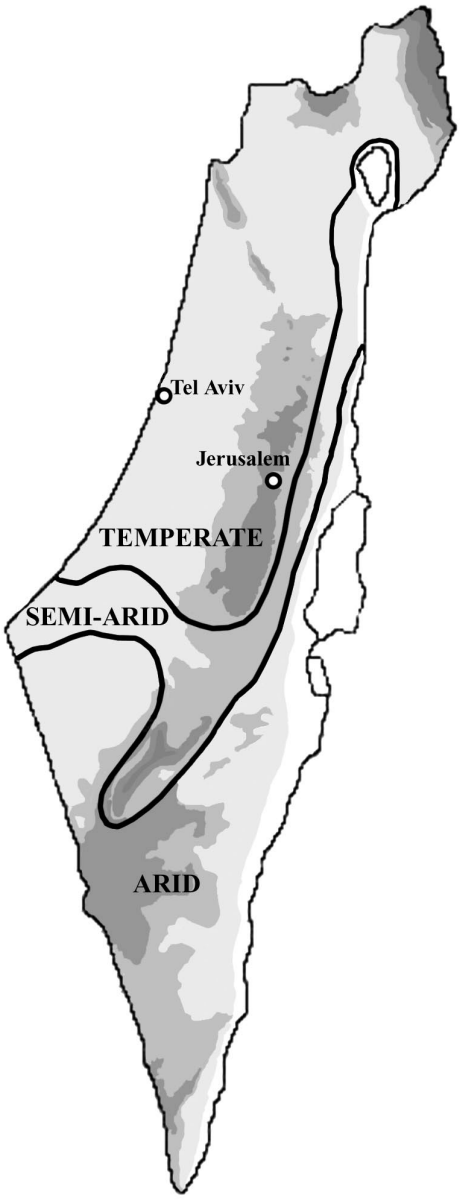
Se indica la distribución y la época de vuelo de 51 especies de Cucullinae (Lepidoptera: Noctuidae) presentes en Israel. Once de ellas son nuevas para la fauna de Israel. Seis especies son conocidas de citas antiguas o se encuentran en antiguas colecciones. La mayoría de las especies son raras, están muy localizadas, volando sólo durante 2-4 semanas a principios de la primavera y son atraídas por luz artificial después de la medianoche. La mayoría de las especies son erémicas y de distribución Paleártica. Un elevado número de las especies habitan en diferentes biótopos del Negev. Cuatro especies están restringidas al Próximo Oriente y son endemismos erémicos.
PALABRAS CLAVE: Lepidoptera, Noctuidae, Cuculliinae, fauna, Israel.

Introduction

Israel is located at the eastern end of Mediterranean Sea. Despite the small size, its geomorphology, climate and flora vary greatly. Northern part of Israel includes Mt. Hermon 2200 m above sea level, while Dead sea is 400 m below the s. l. Area of temperate climatological region (see map) is a Mediterranean part with dry and warm summers and rainy and mild winters. Semi-arid region includes a steppic area with mostly Irano-Turanian fauna and flora. The arid region is a part of eremic Saharo-Arabian district with high temperatures, low and irregular precipitations and poorly covered by vegetation (KUGLER, 1988).

The Cuculliinae s. str. appears large and phylogenetically compact subfamily of the family Noctuidae (Lepidoptera). During their evolution they specialized in the non-arboreal habitats all over the World. The majority of the Cuculliinae species inhabit xerophilous steppes, xero-mountain and/or eremic areas (RONKAY & RONKAY, 1994, 1995). Moths of the Cuculliinae are well attracted to ultraviolet light, but come to the light often after the mid night.

Up to the beginning of the 20th century 24 species of the Cuculliinae were recorded for Israel by different authors. The species were listed by AMSEL (1933). Intensive collection during the last 10 years using automatic light traps increased our knowledge about the Israeli Cuculliinae fauna with the records of 27 species, 16 of them have already published (HACKER, KRAVCHENKO & YAROM 2000; KRAVCHENKO *et*



Map.– Climatological regions of Israel (accordingly to JAFFE, 1988; modified).

al., 2001; HACKER & SCHREIER 2001). The information about the Cuculliinae of Israel has been summarised in the faunistical survey of Noctuidae of the Levant by HACKER (2001). Present paper provides the records of another 11 species (which marked in the text by asterisks (*). Ten of them were collected during the last three years, while the last one species was found in an old collection in the Museum of Tel Aviv University.

The material was identified by Hermann Hacker Staffelstein, Germany), Michael Fibiger Sorø, Denmark) and László Ronkay (Hungarian Natural History Museum, Budapest).

Result

None of the Cuculliinae species occurred all over the country. Only 17 of the collected species are considered as common, others are rare and mostly local. The expression 'common' is used for species collected in more than 20 specimens; 'rare' is used for species collected in 5 - 19 specimens; single, 1 - 4 specimens are given by number. Six of the species are known only from old records, or found in old collections and not collected recently. They are: *Cucullia santonici*, *Pamparama acuta*, *Omphalophana anatolica*, *Recophora beata*, *Metopoceras delicata*, *Metopoceras felicina*.

Accordingly to their general range of distribution most of the species belong to are Eremic (22 species) and Palearctic (26 species) elements (table 1). Most of the eremic species occurred in the arid region of Israel while, the Palearctic species prefer the Simi-arid (12 species) and Temperate (9 species) regions. Two species are endemics to Levant: *Brachygalea kalchbergi* and *Lithophasia venosula* (see HACKER, 2001), *Shargacucullia strigicosta* is endemic of Arabia. The largest species diversity of the material can be found clearly in the different biotopes of the Negev.

Most of the Cuculliinae are uni-voltine species flying only once a year and in rather short period (just 2 - 4 weeks). The highest number of species (30 species) is recorded in the early spring (March). Some species were most frequent during the winter, or peaked in April and May (table 2). Only 2 rare species: *Cucullia argentina* and *Cucullia santonici* may occur in two aspects of the year (spring and autumn). There are 2 autumnal Cuculliinae species in Israel: *Lithophasia venosula* inhabits the Mt. Meron (upper Galilee) and is on the

Table 1.– Number of Cuculliinae species in different Climatological regions of Israel depending of their general range of distribution.

Range of distribution		**Climatological regions**			
Group	**Categories**	**Arid**	**Semi-arid**	**Temperate**	**Total**
Eremic	Afro-Eremic	7	3		10
	Irano-Turanian eremic	6			6
	Pan-Eremic	2			2
	Saharo-Sindian	3	1		4
	Eremic total	18	4		22
Palaearctic	Mediterranean	2	4	1	7
	Ponto-Mediterranean	1	4	3	8
	Irano-Turanian	2	3	3	8
	Trans-Palaearctic		1		1
	Turkestanian			2	2
	Palaearctic total	5	12	9	26
Endemics of:	Levant			2	2
	Arabian	1			1
	Endemics total	1		2	3
	Total	24	16	11	51

wing flying in October, while *M. autumna* fly in the northern Negev during November. All 3 species of genus *Oncocnemis* inhabit the tragacanth zone of the Mt. Hermon (~2000 m) and the adults can be found mostly in June.

Table 2.– Seasonal distribution of Cuculliinae species in different Climatological regions.

Months	Arid	Semi-arid	Temperate	Total
January	2		1	3
February	5		1	6
March	15	10	5	30
April		2		2
May		3		3
June			3	3
July				
August				
September				
October			1	1
November	1			1
December	1	1		2

Host plants for 35 of these species are unknown. Larvae of other species developed mostly on *Artemisia sp.* (Compositae) and different Scrophulariaceae species: *Verbascum sp.*, *Scrophularia sp.*, *Antirrhinum sp.* and *Linaria sp.*

Subfamily Cuculliinae Herrich-Schäffer, 1845

Brachygalea albolineata (Blachier, 1905)

Distribution: Afro-Eremic. Its range extends from the West Sahara through the desert areas of the African Mediterranean to Saudi Arabia, Jordan, Israel, Iraq and Southern Iran. The species is known also from Europe, it was collected in south-eastern Spain. Israel: all over the Arid zone. Locally common.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: January-April. Peaked in March.

Host plants: unknown.

Brachygalea kalchbergi (Staudinger, 1892)

Distribution: Endemic to the Levant. Known only from Israel and Jordan. Israel: on medium heights of Temperate zone: Judean mountains (Sattaf), Carmel (Hai Bar Natural Reserve), Upper Galilee (Nahal Keziv, Nahal Amud Natural Reserve), foothills of Hermon Mt. (Banyas Natural Reserve), Golan Heights (Majdal Shams). Locally common.

Bionomics: Uni-voltine, spring species, inhabiting clearings in forests and xerophytice slopes. Period (s) of flight: March, April.

Host plants: unknown.

Lithophasia quadrivirgula (Mabille, 1888)

Distribution: Afro-Eremic. From Morocco to Egypt, Israel, Jordan and Iraq. Israel: Judean desert, northern Arava (Nahal Zin, ‘Iddan), northern Negev (Retamim), and along coastal sand dunes (Nizzanim Natural Reserve, Qesarya). Common in the Judean desert, elsewhere - rare.

Bionomics: Probably uni-voltine, winter, steppe species. Period (s) of flight: November-February. Peaked in December.

Host plants: unknown.

* *Lithophasia venosula* Staudinger, 1892

Distribution: Probably endemic of Levant. Only two type specimens (male and female) were collected in Lebanon (Beirut) by Paulus serving the base of the description of Staudinger in 1892; date is unknown. Later on, the female syntype specimen has extinct. Israel: rare, but regularly collected in forests of Meron Mt. (Meron Field School).

Bionomics: Probably uni-voltine, autumnal, forest species. Period (s) of flight: all specimens were collected in October. Host plants: unknown.

Host plants: unknown.

* *Metlaouia autumna* (Chrétien, 1910)

Distribution: The species is a typical member of the northern African desert ranges, it is known from the Maghreb area, Tripolitania and Egypt (Sinai). In Israel: northern Negev (Ezuz, Retamim) and northern Arava (Hazeva, 'Iddan). Rare.

Bionomics: Probably uni-voltine, autumnal, desert species. Period (s) of flight: all specimens were collected in November.

Host plants: unknown.

Cucullia syrtana (Mabille, 1888)

Distribution: Saharo-Sindian. Widely distributed in the desert and semi desert zone from West Sahara and Morocco to Egypt, Arabian Peninsula, Iraq and Iran. It has been found twice in Europe: on Malta and in Greece. Israel: along the arid part of the Rift valley (Arava valley and Dead Sea area). Common.

Bionomics: Uni-voltine, winter, desert species. Period (s) of flight: November-April. Peaked in January, February.

Host plants: unknown. *Launaea sp.* suggested as possible food plant (HACKER, 2001).

* *Cucullia argentina* (Fabricius, 1787)

Distribution: Western and Central-Asian. Its area extends from central Turkey throughout the Caucasus, Iraq, Iran, Turkmenistan, southern Russia, Kazahstan and Afghanistan to Mongolia. Israel: 2 specimens were collected on grasslands of the upper Golan Heights (El Rom).

Bionomics: Bi-voltine, steppe species. Period (s) of flight: in Israel the specimens were collected in May. In Turkey, Iran and Turkmenistan the species fly in April - May and from the second half of July to August. The mature larva can be found in July and September, October.

Host plants: larvae feed on flowers of different *Artemisia* species (RONKAY & RONKAY, 1994).

Cucullia santolinae Rambur, 1834

Distribution: Holo-Mediterranean. South Europe, Northern Africa, Turkey, Caucasus region and Israel. Israel: central and northern Negev and along sand dunes of the Coastal plain. Locally common.

Bionomics: Uni-voltine, winter, grassland species. Period (s) of flight: December, January.

Host plants: larvae feed on flowers and seeds of *Artemisia arborea* and *A. campestris*. In Levant probably on *Artemisia monosperma* (RONKAY & RONKAY, 1994; HACKER, 2001).

Cucullia calendulae Treitschke, 1835

Distribution: Holo-Mediterranean-Iranian. Widespread in all parts of the Mediterranean Basin, including northern Africa; and towards to Saudi Arabia, Lebanon, Jordan, Israel, Transcaucasus, Turkmenistan, Iran, the easternmost known localities lie in Afghanistan. Israel: all over Temperate and Semi arid zones. Widespread and common.

Bionomics: Uni-voltine, winter, steppe and forest cleanings species. Period (s) of flight: November-April, peaked in December, January.

Host plants: larvae feed on Compositae including *Calendula*, *Achillea*, *Anthemis*, *Ormenis*. In Egypt it has been recorded on *Chrysanthemum coronarium* (HACKER, 2001).

Cucullia santonici (Hübner, [1813])

Distribution: Trans-Palearctic. From south Europe through parts of Near and Middle East to China. Israel: only old records of Bodenheimer (1932) and Amsel (1933) are known.

Bionomics: Bi-voltine, steppe species. Period (s) of flight: April-June and July, August.

Host plants: larvae feed on *Artemisia alba*, *Artemisia absinthium*, probably also on other species of *Artemisia*, *Matricaria* and *Achillea* (HACKER, 2001).

* *Cucullia boryphora* Fischer de Waldheim, 1840

Distribution: Ponto-Turanian. Xeromountain It occurs in semi-arid and xeromountain areas of Near and Middle East. From European part of southern Russia to Turkestan, western Himalayas (northern Pakistan), Afghanistan, Iran, Saudi Arabia and UAE. Israel: all over everywhere in the Negev and Dead Sea area. Rare.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: February-April.

Host plants: probably *Artemisia* species (RONKAY & RONKAY, 1994).

Cucullia improba Christoph, 1885

Distribution: Irano-Ponto-Turanian. Records are known from the south-eastern Caucasus, Turkmenistan, Uzbekistan, Iran, Afghanistan, Turkey, Jordan, Israel. Israel: represented by the subspecies *muelleri* (HACKER, 2001). All over Negev. Rare.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: March, April.

Host plants: probably *Artemisia* species (RONKAY & RONKAY, 1994).

Cucullia macara Rebel, 1948

Distribution: A stenochorous African eremic species. It has been recorded mainly from the Levant and the Arabian Peninsula. Jordan, Israel. Israel: all over Negev. Rare.

Bionomics: Uni-voltine, winter, desert species. Period (s) of flight: December-February.

Host plants: unknown.

Shargacucullia blattariae (Esper, 1790)

Distribution: Ponto-Mediterranean. South-eastern Europe, Near East, Israel and Jordan. In Israel: Golan Heights. Rare.

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: April, May.

Host plants: larvae feed on *Scrophularia* species (RONKAY & RONKAY, 1994).

Shargacucullia barthae (Boursin, 1933)

Distribution: Its range is incompletely known, confirmed records are given only from Turkey, Iraq, Iran and the Near East. Israel: upper part of Judean desert (near Jerusalem) and Golan Heights. Rare.

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: March, April.

Host plants: larvae feed on *Scrophularia* species (RONKAY & RONKAY, 1994).

Shargacucullia lychnitis (Rambur, 1833)

Distribution: Holo-Mediterranean-Caspian. Its range extends throughout most parts of Europe the Near and Middle East (Lebanon, Israel, Afghanistan, Iran, Turkmenistan and Iraq). Israel: the species represented by the eastern subspecies, *albicans* (Wiltshire, 1976). It is present everywhere in the Semi-arid zone. Common.

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: February-April.

Host plants: larvae feed on *Verbascum sp.* and *Celsia sp.* (RONKAY & RONKAY, 1994).

* *Shargacucullia anceps* (Staudinger, 1882)

Distribution: Ponto-Caspian. It occurs in most parts of Asia Minor, Lebanon, Cyprus and Iran. Israel: upper altitudes of the Judean desert. Rare.

Bionomics: Uni-voltine, spring, mountainous steppe species. Period (s) of flight: March, April.

Host plants: larvae feed on *Verbascum sp.*

* *Shargacucullia strigicosta* (Boursin, 1940)

Distribution: Probably endemic Arabian. Known from Iraq, Sinai (Egypt), recently it was collected also in Israel and some areas of Turkey, Azerbaijan and Iran. Israel: northern and central Negev. Rare.

Bionomics: Uni-voltine, winter, desert species. Period (s) of flight: January - March.

Host plants: unknown. Probably *Scrophularia* species (WILTSHIRE, 1957).

* *Shargacucullia macewani* (Wiltshire, 1949)

Distribution: Endemic of South-western Arabia. It has been recorded from Saudi Arabia and from Yemen. Israel: few specimens were collected on sand dunes of the central (Tel Aviv, Rishon-leCion) and southern (Nizzanim Natural Reserve) parts of the coastal plain. Rare.

Bionomics: Uni-voltine, winter, steppe species. Period (s) of flight: January, February.

Host plants: unknown.

Shargacucullia verbasci (Linnaeus, 1758)

Distribution: Ponto-Holo-Mediterranean-Iranian. Through most of Europe to North Africa, Near and Middle East, Turkmenistan, Iran. Israel: grasslands of Kineret area, Golan Heights, upper part of Judean desert. Common.

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: January-April. Peaked in March.

Host plants: larvae feed on *Verbascum sp.* (RONKAY & RONKAY, 1994).

Calocucullia celsiae (Herrich-Schäffer, 1850)

Distribution: Ponto-Mediterranean. From Balkans to Turkey, northern Iraq, Armenia, Iran Israel, Jordan, Lebanon. Israel: the species is represented by the subspecies *levantina* (Hacker, 2001). It occurs at medium heights of the Temperate zone: Judean mountains (Sattaf), Carmel (Hai Bar Natural Reserve), Upper Galilee (Nahal Keziv), Upper Jordan Valley (Banyas Natural Reserve), Golan Heights (Majdal Shams). Rare.

Bionomics: Uni-voltine, spring, species, observed mostly in clearings of forests. Period (s) of flight: January - April. Most of the specimens were collected in February and March.

Host plants: In Bulgaria the larvae of the species were collected on *Hesperis desertorum* (HACKER, 2001).

Metalopha gloriosa (Staudinger, 1892)

Distribution: Anatolian. From western Turkey to eastern Taurus Mountain, Iraq, Anatolia, Israel, Jordan, Lebanon, Syria. Israel: the species is represented by subspecies *ingloria* Draudt, 1933. It was found all over the Temperate zone except the Coastal plain. Common.

Bionomics: Uni-voltine, spring species, occurring in forest clearings and xerophytice slopes of canyons. Period (s) of flight: February - March.

Host plants: unknown. Supposedly *Launaea sp.* (Compositae) (HACKER, 2001).

* *Metalopha liturata* (Christoph, 1887)

Distribution: Ponto-Turkestatanian. Widespread but local in the Near and Middle East from the Levant area to the western Himalayas (Turkey, Iran, Turkmenistan, Afghanistan, Iraq, Syria, Jordan and Israel). Israel: only a few specimens were collected at the foothills of Hermon Mt. (Tel Dan Natural Reserve).

Bionomics: Uni-voltine, spring species inhabiting forest clearings and xerophytice slopes of canyons. Period (s) of flight: March, May.

Host plants: unknown.

Calophasia platyptera (Esper, [1788])

Distribution: Holo-Mediterranean. Southern Europe, Near East, Western Sahara, Morocco, Algeria, Tunisia. Israel: all over the Temperate and Semi-arid zones. Common.

Bionomics: Probably multi-voltine, steppe species. Period (s) of flight: in the Semi-arid zone (Judean desert, northern Negev) the species peaked once a year - in March, April. On grassland areas of Galilee, upper Jordan Valley and Coastal plain it occurs sporadically from the early spring until November.

Host plants: flowers and leaves of *Antirrhinum sp.* and *Linaria sp.* (Scrophulariaceae) (RONKAY & RONKAY, 1995).

* *Calophasia barthae* Wagner, 1929

Distribution: Ponto-Mediterranean. Southern part of Balkans, Turkey and Middle East. Israel: a few specimens were collected on sand dunes of the Northern Negev (Retamim).

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: all specimens collected in March.

Host plants: unknown.

Calophasia angularis (Chrétien, 1911)

Distribution: Pan-Eremic. From West Sahara and Morocco throughout all North Africa, Riyadh, Israel, Jordan, Turkmenistan. Israel: Northern Negev (Retamim, Mamshit Natural Reserve) and Northern Arava Valley (Shezaf Natural Reserve, 'Iddan). Rare.

Bionomics: Uni-voltine, spring, desert species. Probably *psammophilous* (it prefers the sandy habitats). Period (s) of flight: February - March.

Host plants: unknown.

Calophasia sinaica (Wiltshire, 1948)

Distribution: An African eremic. Species extending northwards to the Levant area; it has been recorded from the Arabian Peninsula, Sinai (Egypt) and Israel. Israel: the species occurs in the lower end of the Negev's canyons coming to Arava valley (Nahal Neqarot, Nahal Paran, Nahal Qetura). Rare.

Bionomics: Uni-voltine, winter, desert species. It was found in the In Asir mountains (Saudi Arabia) occurred at rocky places at in middle and higher altitudes, up to 2400 m (HACKER, 2001). Period (s) of flight: October - March; peaked in December, January.

Host plants: unknown.

Pamparama acuta (Freyer, 1838)

Distribution: Anatolian. It is known from Asia Minor and the Near East, (Turkey, Armenia, Azerbaijan, northern Iraq, Israel, Jordan, Lebanon. Israel: only old records are known from the Jerusalem area (the collecting of Paulus in 1891).

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: March-May.

Host plants: unknown.

Cleonymia jubata (Oberthür, 1890)

Distribution: Afro-Eremic. Through all North Africa from West Sahara to Morocco and Libya, Iraq, Israel. Israel: widespread in the Northern and Central Negev. Common.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: February-April.

Host plants: unknown.

Cleonymia warionis (Oberthür, 1876)

Distribution: North African-Eremic. It's known localities lie in Algeria, Morocco, Libya and Israel. Israel: northern and central Negev ('En Ovdat, Ezuz). Local and rare.

Bionomics: Uni-voltine, spring, desert species, preferring the oases. Period (s) of flight: January - March.

Host plants: unknown.

Cleonymia opposita (Lederer, 1870)

Distribution: Ponto-Mediterranean. Widespread in Asia Minor, expanding northwards to the Armenian-Caucasian Region, eastward to Iraq. In Europe found in Greece. In Levant, the species is uncommon. Israel: a few specimens were collected on in the grassland of the northern part of the Jordan valley (Senir).

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: March, April.

Host plants: unknown.

Cleonymia pectinicornis (Staudinger, 1859)

Distribution: Afro-Eremic. Its range extends from southern Spain to throughout the northern African deserts and the Near East. Israel: it occurs in the Semi-arid zone (Brosh, Retamim, Mizpe Ramon). Local and rare.

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: February-April.

Host plants: unknown.

Cleonymia baetica (Rambur, 1837)

Distribution: Circum-Mediterranean. Its main range extends from south-west Europe and North Africa, southeast Turkey, Iraq to southwest Iran, it is known also from Saudi Arabia, Jordan, Syria and Israel. Israel: the species is represented by subspecies *klapperichi* Hacker, 2001. The known localities can be found in the Semi-arid zone (Kokhav haYarden, Brosh, Retamim). Rare.

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: March, April.

Host plants: *Helianthemum* spp (Cistaceae) (RONKAY & RONKAY, 1994).

Cleonymia chabordis (Oberthür, 1876)

Distribution: Saharo-Sindian. North Africa, Near and Middle East, Arabian Peninsula, Iran, Jordan and Israel. Israel: everywhere in the Arava Valley, Negev, Dead Sea area and the southern Costal dunes. Common.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: January-April.

Host plants: unknown.

* *Cleonymia fatima* (Bang-Haas, 1907)

Distribution: Afro-Eremic. Algeria, Tunisia, Libya, Jordan. Israel: rare, but regularly collected in the central Negev (Mizpe Ramon, Nahal Loz).

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: February-March.

Host plants: unknown.

Teinoptera culminifera Calberla, 1891

Distribution: Afro-Eremic. North Africa, the Central Arabian deserts, Sinai (Egypt), Jordan and Israel. Israel: everywhere in the Negev. Locally common.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: February-April.

Host plants: unknown.

Teinoptera gafsana (Blachier, 1905)

Distribution: Afro-Eremic. From Morocco through all northwest Africa to Libya, present also in the central Arabian deserts, Iraq and Israel. Israel: it is distributed in the lower ends of the Negev's canyons coming to Arava valley (Nahal Qetura, Nahal Neqarot) and in the canyons of the Central Negev ('Ezuz). Rare.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: February-April.

Host plants: unknown.

Omphalophana antirrhinii (Hübner, [1803])

Distribution: Ponto-Mediterranean. It is distributed from southern France through all southern Europe (with exception of the extreme west of the Iberian Peninsula), Corsica, Sardinia towards northern Iraq, wes-

tern Iran, Jordan and Israel. Israel: the species is represented by subspecies *asiatica* (Lederer, 1857). It is found in all parts of Temperate zone except costal plain. Common.

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: March-May.

Host plants: *Antirrhinum sp.* (Scrophulariaceae), *Linaria sp.* (Scrophulariaceae), *Scabiosa sp.* (Dipsacaceae) (RONKAY & RONKAY, 1994).

Omphalophana anatolica (Lederer, 1857)

Distribution: Ponto-Mediterranean. South-eastern Europe, Near and Middle East. Common in the Near East, frequent also in the Balkans. Israel: only old records are known from the area of Jerusalem (Kiriat Anavim, 26-III-1930 in AMSEL, 1933).

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: March-May.

Host plants: unknown.

Omphalophana pauli (Staudinger, 1892)

Distribution: Afro-Eremic. Its range extends in narrow zone from Morocco, Algeria and Tunisia through Libya, Jordan and Israel to Syria and southern Turkey. Israel: it is recorded mostly from the upper heights of the Judean Mt. and was also found inside the canyons of the Judean desert ('En Perat) and in the canyons adjacent to the Jordan valley (Nahal Tavor). Common in the Judean Mt., elsewhere - rare.

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: March-May.

Host plants: unknown.

Recophora beata (Staudinger, 1892)

Distribution: Irano-Turanian. The species ranges from Anatolia and southern Turkey eastward to Iraq, south-western Iran, Syria and Israel. Israel: it has been recorded by Bodenheimer (1932), and by Amsel (1933). Since then, there is no new material is available.

Bionomics: Uni-voltine, spring, steppe species. In Turkey the species inhabits mostly the steppes at medium high altitudes. Period (s) of flight: May - June.

Host plants: unknown.

Metopoceras omar (Oberthür, 1887)

Distribution: Pan-Eremic. Widespread through the Palearctic eremic zone from north-western Africa to Near and Middle East. Israel: the species is represented by the subspecies *felix* Standfuss, 1893. It has been found everywhere in the Arid and Semi-arid zones, occurring also on sands of the southern Coastal plain. Common.

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: January-April; peaked in February, March. WILTSHIRE (1941; 1957) suggested two vernal generations.

Host plants: unknown.

Metopoceras delicata (Staudinger, 1898)

Distribution: Irano-Turanian eremic. It has been found in the Arabian Peninsula, Iraq, Turkey, Israel, Jordan and Syria. Israel: only old records are known from the northern part of the Dead Sea area. Recently found common in Azraq oases in Jordan.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: April.

Host plants: unknown.

Metopoceras philbyi Wiltshire, 1980

Distribution: Endemic to Western-Arabia. It is known from various places of the Arabian Peninsula, Jordan and Israel. Israel: the species inhabits the in lower ends of the Negev's canyons coming to Arava valley (Nahal Neqarot, Nahal, Paran, Nahal Qetura). Rare.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: March-April.

Host plants: unknown.

Metopoceras solituda (Brandt, 1938)

Distribution: An African eremic species, expanding northwards to SW Iran and Near East. It occurs in Saudi Arabia, Sinai (Egypt), Israel, Jordan, Lebanon, Syria and Southwest Iran. Israel: the species is represented by the subspecies *eutychina* (Rebel, 1948). It is found in the in the lower ends of the Negev's canyons coming to Arava valley (Nahal Neqarot, Nahal, Paran, Nahal Qetura). Rare.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: March-April.

Host plants: unknown.

Metopoceras kneuckeri (Rebel, 1903)

Distribution: Saharo-Sindian. It is distributed from northwest Africa to Pakistan. Israel: the species is reported from sandy areas of the Northern Negev (Retamim, Mamshit Natural Reserve). Rare.

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: March-April.

Host plants: unknown. Probably *Acacia arabica* (WILTSHIRE, 1962).

* *Metopoceras felicina* (Donzel, 1844)

Distribution: Mediterranean. Spain, Canary Islands, and western parts of Maghreb countries. Israel: only an old record is given from the Jerusalem area (from 1896).

Bionomics: Uni-voltine, spring, steppe species. Period (s) of flight: February-June.

Host plants: unknown.

Rhabinopteryx subtilis (Mabille, 1888)

Distribution: Saharo-Sindian. From Morocco along the northern African coast of Mediterranean Sea (including Malta) to Egypt, the Arabian Peninsula, Iraq, Iran, Israel. Israel: only a few specimens were collected in the oases of Dead Sea area (En Gedi, Neot haKikkar).

Bionomics: Uni-voltine, spring, desert species. Period (s) of flight: February-April.

Host plants: larvae feed on *Plantago albicans* (HACKER, 2001).

Oncocnemis confusa persica Ebert, 1878

Distribution: Ponto-Mediterranean. Iran, Iraq, Asia Minor, northwards to Turkmenistan, European part of southeast Russia. Black Sea shores of Bulgaria. Israel: it has been found in the upper part of the Hermon Mt. (2000 m, tragacanth vegetation). Common.

Bionomics: Uni-voltine, summer, mountainous steppe species. Period (s) of flight: June-August.

Host plants: unknown.

Oncocnemis exacta Christoph, 1887

Distribution: Ponto-Turkestanian. It has a large area extending from the Near East to Central Asia and Mongolia. Israel: the species was recorded from the upper part of Hermon Mt. (2000 m, tragacanth vegetation). Common.

Bionomics: Uni-voltine, summer, mountainous steppe species. Period (s) of flight: June- August.

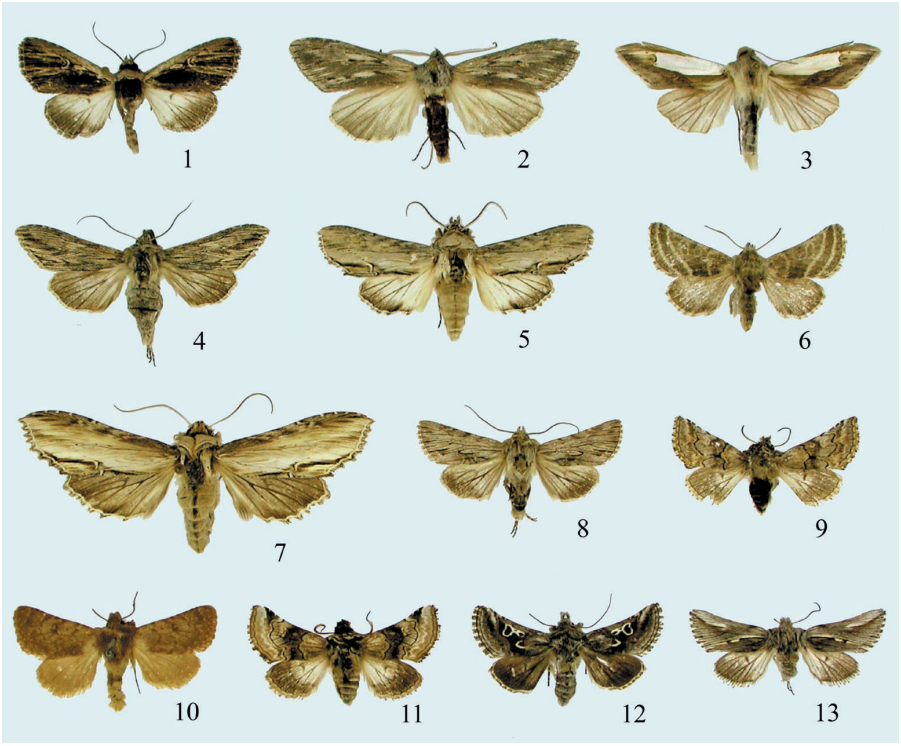
Host plants: unknown.

Oncocnemis strioligera Lederer, 1853

Distribution: Ponto-Turkestatian. The species ranges from Asia Minor throughout Iran and Afghanistan, Turkestan to the Altai Mountains, Mongolia and Inner Asia. Israel: it lives in the upper part of Hermon Mt. (2000 m, tragacanth vegetation). Common.

Bionomics: Uni-voltine, summer, mountainous steppe species. Period (s) of flight: June-August.

Host plants: unknown.



Figs. 1-13.–1. *Lithophasia venosula* Staudinger, 1892. Israel: Upper Galilee. Meron Natural Reserve. X-2003; V. Kravchenko leg. **2.** *Metlaouia autumna* (Chrétien, 1910). Israel: Southern Negev. Timna National Park. 20.XI.1998; I. Yarom & V. Kravchenko leg. **3.** *Cucullia argentina* (Fabricius, 1787). Israel: Golan Heights. El Rom. 15-V-1993. G. Muller & V. Kravchenko leg. **4.** *Cucullia boryphora* Fischer de Waldheim, 1840. Israel: Central Negev. Avedat. IV-2002. V. Kravchenko leg. **5.** *Shargacucullia macewani* (Wiltshire, 1949). Israel: Southern Costal Plain. Nizzanim Natural Reserve. I-2003. V. Kravchenko leg. **6.** *Metalopha liturata* (Christoph, 1887). Israel: Upper Jordan Valley. Tel Dan Natural Reserve. III-1994. G. Muller & V. Kravchenko leg. **7.** *Shargacucullia strigicosta* (Boursin, 1940). Israel: Central Negev. Avedat. I-.2003. V. Kravchenko leg. **8.** *Calophasia barthae* Wagner, 1929. Israel: Northern Negev. Retamim. III-2002. V. Kravchenko leg. **9.** *Cleonymia fatima* (Bang-Haas, 1907). Israel: Central Negev. Mizpe Ramon. III-2002. V. Kravchenko leg. **10.** *Metopoceras felicina* (Donzel, 1844). Jerusalem. 1909. Paulus. **11.** *Cleonymia pectinicornis* (Staudinger, 1859). Israel: Jordan Valley. Berosh. II-2003. V. Kravchenko leg. **12.** *Omphalophana pauli* (Staudinger, 1892). Israel: Jordan Valley. Berosh. II-2003. V. Kravchenko leg. **13.** *Teinoptera culminifera* Calberla, 1891. Israel: Northern Negev. Retamim. III-2002.V. Kravchenko leg.

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