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An annotated checklist of the Crambidae (Lepidoptera: Pyraloidea) of Israel, with remarks on their distribution and phenology

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ABSTRACT

The history of studies of the Crambidae in Israel is summarized. Prior to the present endeavour, 104 species of the Crambidae were recorded in Israel according to published surveys. Another 56 grass moth species have been found in the Steinhardt Museum of Natural History, Tel Aviv, thus increasing the Israeli fauna of the Crambidae to 160 species, although the historical record of *Chilo suppressalis* in Israel was apparently based on misidentification. A checklist of all species with remarks on their general distribution pattern, distribution in Israel, flight periods and host plants is compiled.

KEYWORDS: Biodiversity, Pyraloidea, Crambidae, Israel, East Mediterranean, fauna, grass moths, pests.

INTRODUCTION

The geography of Israel

Israel is located in the eastern part of the Mediterranean Basin in the northern part of the Syrian-East African Rift Valley. The northern part of Israel includes the southern tip of Anti-Lebanon mountain ridge (2200 m above sea level) with annual snow and typical tragacanth vegetation, while the Dead Sea area is about 400 m below sea level with Ethiopian pockets enriched with the Afrotropical fauna and flora (Bytinski-Salz 1961; Zohary & Orshansky 1949). The centre of the country is typically Mediterranean, whereas Irano-Turanian grassland and deserts occur in the south and east. The Arava Valley and the Negev are known for numerous natural and artificial oases (Orni & Efrat 1980). Many species are found in Israel at their farthest point of geographical distribution (e.g. Bodenheimer 1930, 1932, 1935; Furth 1975; Benyamini 1988; Tchernov & Yom-Tov 1988).

Zohary (1966) divided Israel into five phyto-geographic regions. The Mediterranean temperate zone covers areas that receive an average annual precipitation of 350 mm or more. The hills of Jerusalem and the coastal plain at the same latitude are the

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southernmost parts of the Mediterranean territory in the Near East (Zohary 1962) (Fig. 1). The Mediterranean vegetation is divided into two distinct types, vegetation of the hills and that of the coastal plain. In the hills with its higher precipitation (about 500–700 mm), maquis is dominant. The Irano-Turanian zone is a semi-arid area, a dry steppe or desert steppe, which stretches from its southwest border in Israel through Iran, Turkestan and Inner Asia to the Gobi Desert. The average annual rainfall is 200–300 mm during winter only. Low brush or dwarf bushes with *Artemisetum* plant associations are characteristic for this region.

The Saharo-Arabian eremic zone is a true desert, which centres on the Arabian Peninsula. Winter rainfall of up to 200 mm is followed by a short period of blooming, and afterwards the vegetation dries rapidly up. The Ethiopian tropical zone in Israel is only represented as small enclaves in the lower Jordan Valley, the Dead Sea area and the Arava Valley, where they are surrounded by extreme desert or halophytic vegetation. The tragacanth high altitude zone is restricted to elevations above 1900 m on the Anti-Lebanon ridge. Snow coverage with very low temperatures in winter and hot dry summer favour specific plant communities dominated by spiny, round, dense, cushion-like shrubs such as *Astragalus* and *Onobrychis*. The main water source in this area is melting snow, consequently most of this karstic mountain area is rather arid. Different types of forest are only found along the foothills and in canyons.

The family Crambidae

The grass moths were included in the Pyralidae as a subfamily until Munroe and Solis (1999) raised them to a full family of the Pyraloidea. Most of the Crambidae species are nocturnal, or at least crepuscular, therefore light trapping remains a main method of collecting these moths. Crambid caterpillars are typically stem borers of the Poaceae; they also develop in plants of a broad range of other families. Thus, some Crambidae species have achieved pest status of many important crops.

The grass moths are distributed throughout the world and represented by almost 2000 known species (Slamka 2008). About 490 species have been recorded in Europe (Slamka 2006, 2008, 2013; Leraut 2012), 310 of them are known from the Balkans (Plant & Jakšić 2018). The Crambidae fauna of Turkey is probably very rich, but the data are scattered across a number of publications together with other families in the superfamily Pyraloidea. Only in vicinity of the Van Lake Basin (East Turkey), 304 species of Pyraloidea were collected (Kemal & Koçak 2018). According to Roohigohar *et al*. (2016), 64 species of the Crambidae have been recorded for Iran; however, many more species are expected to occur in this country.

The history of studying Crambidae in Israel

Philipp Christoph Zeller (1849) was apparently the first who mentioned two Crambidae specimens from Palestine (Nablus [= Shchem]) while describing *Crambus cassentiniellus* (now a junior synonym of *Chrysocrambus linetellus*). Almost two decades later, he described *Calamotropha hierichuntica* from the Jordan Valley (Zeller 1867). Adolf Freiherrn von Kalchberg (1897) listed eight grass moth

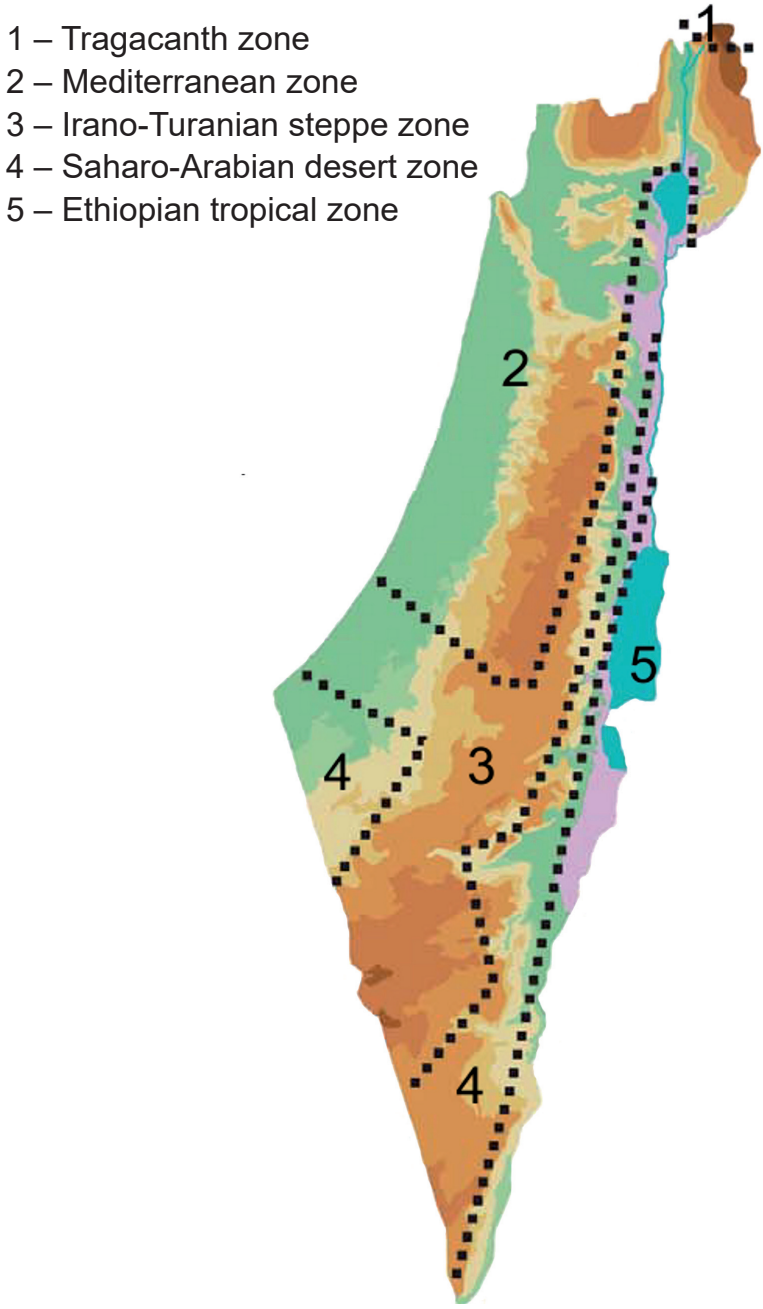

Fig. 1: Chorological types of plant distribution in Israel (after Kravchenko *et al*. 2007*a*).

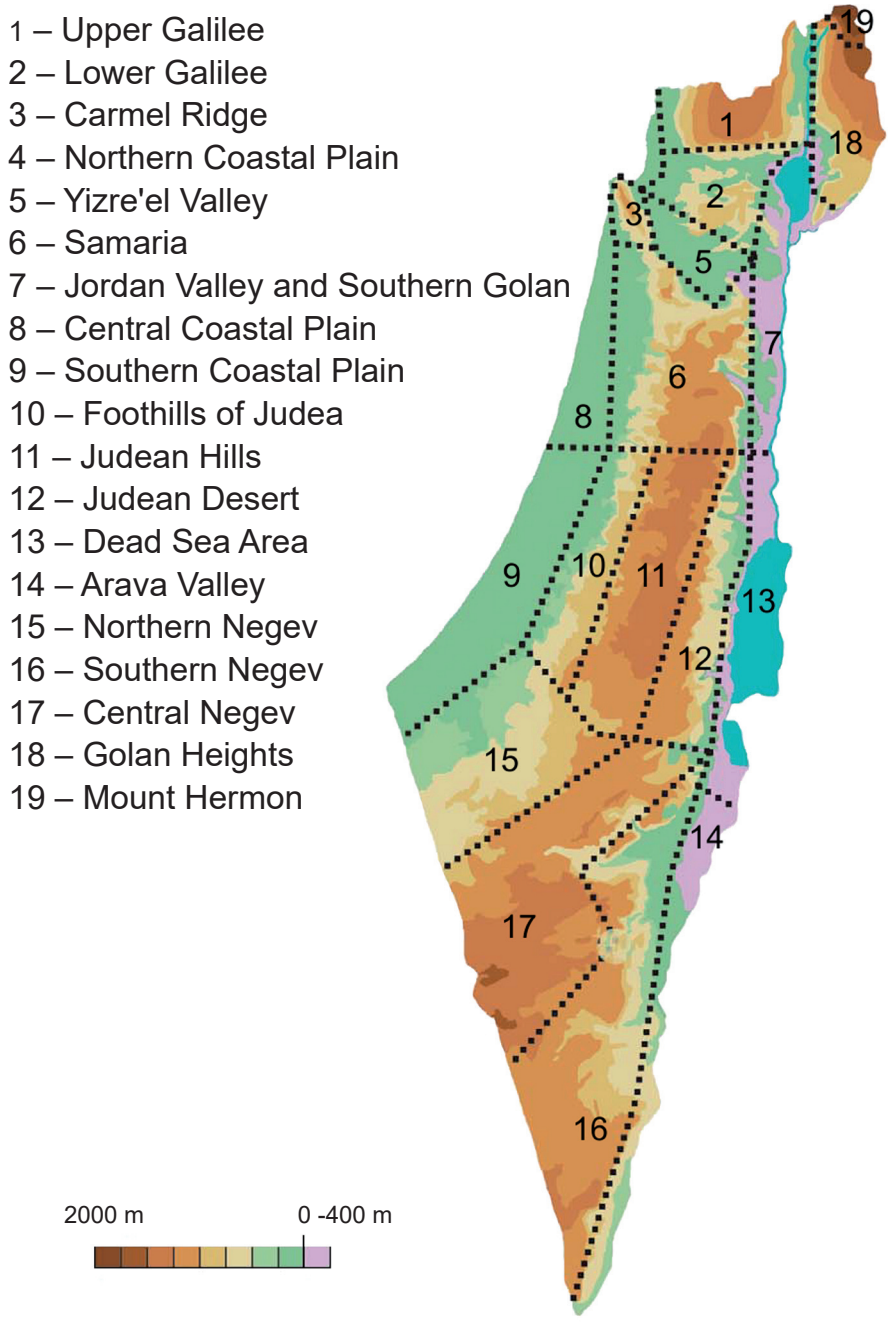

Fig. 2: Geographical areas in Israel (after Kravchenko *et al*. 2007*a*).

species from around Haifa. Twelve Crambidae species were collected by Prince Aristide von Caradja (1916) in the vicinity of Jerusalem. Later, Hans Georg Amsel (1933, 1935) noted already 91 species procured mainly in the Mediterranean zone. Bodenheimer (1937) listed 83 species of Crambinae, Pyraustinae, Schoenobiinae and Scopariinae in his *Prodromus faunae palaestinae*, including those that fell into synonymy since then. Regrettably, he did not provide temporal or spatial provenance data for any of the species, so we omit his work from further analysis. In 1969, a school teacher and naturalist Yaaqov Palmoni published a faunistic pheno-ecological survey covering 53 species collected around the Sea of Galilee (Kinneret) under supervision of Amsel.

Bleszynski (1970) treated the Israeli species of *Chilo* in his world revision of the genus and added one species to the country's fauna. Halperin and Sauter (1992) reported seven species of Crambidae associated with forest and ornamental trees in shrubs, confirmed by rearing. Schouten (1992) noted two *Euchromius* species in Israel, one being new for the country. A particular interest was understandably attracted to noxious species of grass moths like *Chilo agamemnon*, *Ostrinia nubilalis* and *Palpita vitrealis* (Avidov & Rosen 1961; Rivnay 1967; Melamed-Madjar & Tam 1980; Melamed-Madjar 1990). Recently, a new invasive pest *Chilo partellus* has been found in Israel (Ben-Yakir *et al*. 2013). The last record brings the number of the grass moths species published for the Israeli fauna to 104.

MATERIALS AND METHODS

For the purpose of this study, were examined 3822 specimens of the Pyraloidea in the collection of the Steinhardt Museum of Natural History, Tel Aviv University (SMNHTAU), and found 56 Crambidae species, which had not been recorded in Israel. Some of the material was collected in 1960–1970s by a pest control manager Zeev Shoham in Upper Galilee (onwards in the text: "collection of Z. Shoham"). Others were obtained by a network of automatic light traps established within the frame of the German–Israeli project to monitor the Lepidoptera fauna of the Levant (onwards in the text: "German–Israeli project"). This project was a joint effort of the Hebrew University and Tel Aviv University in Israel and the Zoologische Staatssammlungen and Museum Witt, München in Germany (Müller *et al*. 2006).

General biogeographical categories follow Kravchenko *et al*. (2007*a*, *b*; Fig. 2). The general distribution of species is given according to Nuss *et al*. (2003–2020) and De Prins and De Prins (2019), and information about host plants is taken from Robinson *et al*. (2010) and Gerson & Applebaum (2019). On the Amsel's list, 31 species were recorded only by him with general remarks about distribution and with no information on their flight period; therefore, only general distribution and host plants information are provided for these species.

Asterisked are species new to the Israeli fauna.

ANNOTATED CHECKLIST

Family Crambidae Latreille, 1810

Subfamily Acentropinae Stephens, 1836

1. *Elophila nymphaeata* (Linnaeus, 1758)

Records: Amsel (1933); collection of Z. Shoham.

General distribution: Palaearctic. North Africa, all over Europe except polar areas, Middle East eastward to Mongolia and China.

Distribution in Israel: All over the Mediterranean part.

Period of flight in Israel: May–September.

Host plants: Water plants: *Potamogeton* sp. (Potamogetonaceae), *Sparganium* sp. (Typhaceae), *Hydrocharis* sp. (Hydrocharitaceae).

Remarks: The population of the brown china mark in Israel and Lebanon is remarkably differentiated. It is *Elophila hederalis* Amsel, 1935 that was described as a full species from Palestine, but later erroneously synonymized with *Elophila nymphaeata auralis* Osthelder, 1935 from Turkey by Amsel (1935) himself. The moth populations in Asia Minor are rather different from those in Israel and Lebanon and quite similar, if not identical, to the nominotypical *E. nymphaeata nymphaeata* (Speidel 2002; Goater *et al*. 2005).

2. *Nymphula nitidulata* (Hufnagel, 1767)*

Records: German–Israeli project. New to Israel.

General distribution: Palaearctic. All over Europe except polar areas, Middle East, Mongolia. The species is replaced by *Nymphula distinctalis* (Ragonot, 1894) in the Far East Palaearctic Region (Sasaki & Kasai 1994; Goater *et al*. 2005).

Distribution in Israel: Upper Jordan Valley.

Period of flight in Israel: May–September.

Host plants: Water plants: *Sparganium* sp. (Typhaceae), *Nuphar lutea* (Nymphaeaceae).

3. *Parapoynx affinialis* Guenée, 1854

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Asiatropical. The Caucasus, Middle East, Egypt, Turkey, Iran, Iraq, Saudi Arabia, Yemen, India and Australia.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: August–November.

Host plants: *Potamogeton perfoliatus* (Potamogetonaceae).

Subfamily Schoenobiinae Duponchel, 1846

4. *Donacaula forficella* (Thunberg, 1794)*

Records: German–Israeli project. New to Israel.

General distribution: Eurasiatic. Morocco, all over Europe except polar areas, Middle East, along South Siberia to Far East and China.

Distribution in Israel: Upper Galilee and Golan Heights.

Period of flight in Israel: May–August.

Host plants: *Carex* spp. (Cyperaceae), *Glyceria maxima* and *Phragmites* spp. (Poaceae). The caterpillars are semi-aquatic.

5. *Donacaula nilotica* (Zeller, 1867)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Eurasiatic. South and Central Europe, Morocco, Algeria, Egypt, Saudi Arabia, Middle East, Iran and China.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: April–May.

Host plants: *Phragmites* spp. (Poaceae). The larva is semi-aquatic.

6. *Schoenobius gigantella* ([Denis & Schiffermüller, 1775])

Records: Amsel (1933).

General distribution: Eurasiatic. South and Central Europe, Middle East, Transcaucasia, Kazakhstan, Iran, Central Asia and China.

Distribution in Israel: Upper Galilee and Golan Heights.

Period of flight in Israel: April–September.

Host plants: Poaceae: *Phragmites* spp., *Glyceria* spp. The larva is semi-aquatic.

Subfamily Musotiminae Meyrick, 1884

7. *Ambia thyridialis* (Lederer, 1855)

Records: Amsel (1933).

General distribution: Sub-endemic of the Levant. Turkey, Lebanon, Israel and Syria.

Distribution in Israel: Mentioned only by Amsel (1933) from the Upper Jordan Valley.

Period of flight in Israel: No information.

Host plants: Unknown.

Subfamily Crambinae Latreille, 1810

8. *Agriphila cyrenaicella* (Ragonot, 1887)

Records: Freiherrn von Kalchberg (1897, as *Crambus permixtellus*); Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Mediterranean–Iranian. South Europe incl. Mediterranean islands, North Africa, Israel, Syria, Iraq, Iran and Central Asia.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: October–November.

Host plants: Various Poaceae species.

9. *Agriphila deliella* (Hübner, [1813])

Records: Palmoni (1969).

General distribution: Mediterranean–Iranian. North Africa, South and Central Europe, Middle East, Turkey, Transcaucasia and Afghanistan.

Distribution in Israel: Sea of Galilee area and Upper Jordan Valley.

Period of flight in Israel: August–September.

Host plants: *Corynephorus canescens*, *Molinia caerulea* (Poaceae), *Carex arenaria* (Cyperaceae).

10. *Agriphila geniculea* (Haworth, 1811)

Records: Freiherrn von Kalchberg (1897); Amsel (1933).

General distribution: Circum-Mediterranean. South and Central Europe and North Africa.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: July–October.

Host plants: *Festuca ovina* and other Poaceae.

11. *Agriphila inquinatella* ([Denis & Schiffermüller, 1775])

Records: Freiherrn von Kalchberg (1897); Amsel (1933); coll. of Z. Shoham.

General distribution: Mediterranean–Turanian. Central and South Europe, Middle East, the Caucasus, Iran and Turkmenistan.

Distribution in Israel: Carmel, Galilee, Upper Jordan Valley and Golan Heights.

Period of flight in Israel: June–November.

Host plants: *Festuca ovina* (Poaceae), *Tortula muralis* (Pottiaceae).

12. *Agriphila tristella* ([Denis & Schiffermüller, 1775])*

Records: German–Israeli project. New to Israel.

General distribution: Palaearctic. South and Central Europe, Turkey, Trancaucasia, Iran, North India, East Siberia and China.

Distribution in Israel: Upper Golan Heights.

Period of flight in Israel: May–September.

Host plants: Poaceae: *Festuca ovina*, *Poa pratensis*, *Triticum aestivum*.

13. *Agriphila tersella* (Lederer, 1855)

Records: Freiherrn von Kalchberg (1897); Amsel (1933).

General distribution: Mediterranean–Iranian. South and Central Europe, Morocco, Algeria, Tunisia, Turkey, Middle East, Transcaucasia, Iran and Turkmestan.
Distribution in Israel: Carmel, Upper Golan Heights.
Period of flight in Israel: June–October.
Host plants: Various species of Poaceae.

14. *Agriphila argentistrigella* (Ragonot, 1888)*

Records: German–Israeli project. New to Israel.
General distribution: Circum-Mediterranean. Spain, France, Sicily, Morocco, Libya and Algeria.
Distribution in Israel: Central and Southern Coastal Plain.
Period of flight in Israel: July.
Host plants: Various Poaceae species.

15. *Amselia heringi* (Amsel, 1935)

Records: Amsel (1935).
General distribution: Probably Pan-Eremic. Morocco, Kuwait, Bahrain, Turkey, Lebanon, Syria, Iraq, Iran and Afghanistan.
Distribution in Israel: Mentioned only by Amsel (1935) from the Coastal Plain.
Period of flight in Israel: No information.
Host plants: Unknown.

16. *Ancylolomia elongata* D. Lucas, 1917*

Records: German–Israeli project. New to Israel.
General distribution: Eremic. Algeria and Morocco.
Distribution in Israel: Arava Valley.
Period of flight in Israel: May.
Host plants: Unknown.

17. *Ancylolomia palpella* ([Denis & Schiffermüller, 1775])

Records: Caradja (1916); Amsel (1933).
General distribution: West Palaearctic.
Distribution in Israel: Sea of Galilee area, Jordan Valley, Judean Hills and Upper Golan Heights.
Period of flight in Israel: June–October.
Host plants: Various Poaceae species.

18. *Ancylolomia pectinatella* (Zeller, 1847)

Records: Freiherrn von Kalchberg (1897); Amsel (1933).

General distribution: Circum-Mediterranean. South Europe, Cyprus, Algeria and Mauritania, Middle East and Iran.

Distribution in Israel: Haifa/Carmel.

Period of flight in Israel: No information.

Host plants: Unknown.

19. *Ancylolomia tentaculella* (Hübner, 1796)

Records: Freiherrn von Kalchberg (1897); Amsel (1933); Palmoni (1969).

General distribution: Ponto-Mediterranean. South and Central Europe, Ukraine, southern European Russia, Turkey and Middle East. Occurs sporadically as far north as southern England.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: October–November.

Host plants: Various Poaceae species, especially *Dactylis* sp.

20. *Ancylolomia tripolitella* Rebel, 1909

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Mediterranean–Iranian. South Europe, North Africa, Middle East and Iran.

Distribution in Israel: All over the country. In desert, the species concentrates in oases.

Period of flight in Israel: October–November.

Host plants: Various Poaceae species.

21. *Angustalius malacellus* (Duponchel, 1836)*

Records: German–Israeli project. New to Israel.

General distribution: Afrotropical. Widespread in sub-Saharan Africa, South and Central Europe and Turkey.

Distribution in Israel: Coastal Plain.

Period of flight in Israel: July–September.

Host plants: Various Poaceae species. Pest of maize.

22. *Calamotropha paludella* (Hübner, [1824])

Records: Palmoni (1969).

General distribution: Old World. Widespread in sub-Saharan Africa, Europe, Asia and Australia.

Distribution in Israel: Coastal Plain and Jordan Valley.

Period of flight in Israel: May–October.

Host plants: Typhaceae: *Typha latifolia* and *T. angustifolia*.

23. *Calamotropha hierichuntica* Zeller, 1867

Records: Zeller (1867); Caradja (1916); Amsel (1933).
General distribution: East Mediterranean. Greece, Turkey, Syria and Jordan.
Distribution in Israel: Coastal Plain, Judean Hills and Jordan Valley.
Period of flight in Israel: May–June.
Host plants: Unknown.

24. *Catoptria dimorphella* (Staudinger, 1882)*

Records: German–Israeli project. New to Israel.
General distribution: Mediterranean. South and Central Europe, Turkey, Syria.
Distribution in Israel: Upper Golan Heights.
Period of flight in Israel: August–September.
Host plants: Various Poaceae species.

25. *Catoptria fulgidella* (Hübner, [1813])*

Records: German–Israeli project. New to Israel.
General distribution: Mediterranean–Iranian. South and central Europe, Middle East, eastward to Kazakhstan.
Distribution in Israel: Upper Golan Heights.
Period of flight in Israel: May–September.
Host plants: Various Poaceae species and *Carex* sp. (Cyperaceae).

26. *Catoptria pinella* (Linnaeus, 1958)*

Records: German–Israeli project. New to Israel.
General distribution: Palaearctic. All over Europe, eastward to Japan.
Distribution in Israel: Upper Golan Heights.
Period of flight in Israel: May–September.
Host plants: Various Poaceae species.

27. *Catoptria staudingeri* (Zeller, 1863)*

Records: German–Israeli project. New to Israel.
General distribution: Mediterranean. Portugal, Spain, Sicily and France.
Distribution in Israel: Upper Golan Heights.
Period of flight in Israel: June–August.
Host plants: *Lycopodium* sp. (Lycopodiaceae), *Festuca ovina* (Poaceae).

28. *Chilo agamemnon* Bleszynski, 1962

Records: Rivnay (1967); Bleszynski (1970); Melamed-Madjar & Tam (1980); Melamed-Madjar (1990); collection of Z. Shoham; German–Israeli project.

General distribution: Afrotropical, southern Palaearctic. Spain, Egypt, Sudan and Uganda.

Distribution in Israel: Southern Coastal Plain.

Period of flight in Israel: May–November.

Host plants: Various grasses, the stem-borer pest of maize, rice and sugar cane.

29. *Chilo luteellus* (Motschulsky, 1866)

Records: Bleszynski (1970); Collection of Z. Shoham.

General distribution: Transpalaearctic.

Distribution in Israel: Upper Jordan Valley and Coastal Plain.

Period of flight in Israel: May–August.

Host plants: The common water reed *Phragmites communis* (Poaceae).

30. *Chilo partellus* (Swinhoe, 1885)

Records: Ben-Yakir *et al*. (2013).

General distribution: Palaeotropical. Widespread in tropical Africa, India, Pakistan and Indonesia.

Distribution in Israel: Invasive species. Discovered in July 2010 on sorghum and corn in Western Galilee.

Period of flight in Israel: Probably November–March. Larvae damaged crops in July (Ben-Yakir *et al.* 2013).

Host plants: Polyphagous. Severe pest of maize, sorghum, pearl millet, rice and sugarcane.

31. *Chilo pulverosellus* Ragonot, 1895

Records: Zerny (1914, as *Ch. brevipalpellus*); Amsel (1933); Bleszynski (1970).

General distribution: Mediterranean. Southern Europe, Ukraine, Transcaucasia, Turkey and Syria.

Distribution in Israel: Jordan Valley.

Period of flight in Israel: No information.

Host plants: Polyphagous, pest of maize.

32. *Chilo suppressalis* (Walker, 1863)

Records: Amsel (1933).

General distribution: Asiatropical. Southeast Asia, India, China, Japan, Taiwan, Malaysia, Indonesia. Introduced to Spain, Hawaii and Australia.

Distribution in Israel: Mentioned only by Amsel (1933) from the Coastal Plain.

Period of flight in Israel: No information.

Host plants: Polyphagous. Pest of rice, maize, sugar cane.

Remarks: The record of this species in Israel by Amsel (1933) was reportedly based on misidentification of *Ch. agamemnon* as *Ch. suppressalis* (Rivnay 1967; Bleszynski 1970). *Chilo suppressalis* is a major pest in South and Southeast Asia, which reaches only as far as Iran and Iraq in the Middle East (CABI 2020). The species would not have been left unnoticed in Israel were it present in the country.

33. *Chrysocrambus craterellus* (Scopoli, 1763)

Records: Amsel (1933).

General distribution: Eurasiatic. Morocco, Central and South Europe, Cyprus, Iran, Jordan, Lebanon, Transcaucasia, Turkmenistan, Far East of Russia.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: June–July.

Host plants: Various Poaceae species.

34. *Chrysocrambus linetellus* (Fabricius, 1781)

Records: Zeller (1849, as *Crambus cassentiniellus*).

General distribution: Mediterranean–Turanian. Central and South Europe, Transcaucasia, Turkey, Syria, Jordan, Iraq, Iran and Turkmenistan.

Distribution in Israel: Samaria.

Period of flight in Israel: Unknown.

Host plants: Various Poaceae species.

35. *Chrysocrambus syriellus* (Zerny, 1934)*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: Mediterranean–Turanian. Turkey, Lebanon, Syria, Iran, Iraq and Afghanistan.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: June–October.

Host plants: Various Poaceae species.

36. *Euchromius bellus* (Hübner, 1796)

Records: Amsel (1933); Palmoni (1969); Schouten (1992).

General distribution: Euroasiatic.

Distribution in Israel: All over Mediterranean part, Dead Sea area.

Period of flight in Israel: July–August and October–November.

Host plants: Various Compositae species. Also larvae feed on dry leaves of *Picris* sp. (Asteraceae) and *Scabiosa* sp. (Caprifoliaceae).

37. *Euchromius cambridgei* (Zeller, 1867)

Records: Amsel (1933); Palmoni (1969); Schouten (1992).

General distribution: Mediterranean–Iranian. Sothern Europe, Northern Africa, Ukraine, Sudan, Jordan, Saudi Arabia, Yemen, Bahrein, Oman, Iran, Afghanistan and Pakistan. The species was also recorded in the UK (Sharpe & Manning 2006).

Distribution in Israel: All over Mediterranean part, Jordan Valley, Dead Sea area.

Period of flight in Israel: March–September.

Host plants: Unknown.

38. *Euchromius gratiosellus* (Caradja, 1910)*

Records: German–Israeli project. New to Israel.

General distribution: Eurasiatic. North Africa, South and Central Europe, Middle East, Turkey, Iran, Kazakhstan, Central Asia and Mongolia.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: April–October.

Host plants: Unknown.

39. *Euchromius jaxartellus* (Erschoff, 1874)

Records: Palmoni (1969).

General distribution: Eurasiatic. The Caucasus, Transcaucasia, Turkey, Iran, Turkmenistan, Kazakhstan, Kyrgyzstan, Tadjikistan, Afghanistan, Pakistan and Mongolia.

Distribution in Israel: Jordan Valley.

Period of flight in Israel: March–June and August–December.

Host plants: Unknown.

40. *Euchromius mouchai* Bleszynski, 1961*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: Mediterranean. Corsica, Sicily, the Caucasus and Turkey.

Distribution in Israel: Sea of Galilee area and Upper Jordan Valley.

Period of flight in Israel: May–July.

Host plants: Unknown.

Remarks: The forewing coloration of this species is very similar to those in *E. rayatella* and *E. superbellus*, so identification has been verified by dissection of the genitalia.

41. *Euchromius ocelleus* (Haworth, 1811)

Records: Caradja (1916); Amsel (1933); Palmoni (1969); coll. of Z. Shoham.

General distribution: Cosmopolitan. Widespread in sub-Saharan Africa, South and Central Europe, Middle East, Central Asia, India, Southeast Asia, Australia and Central America.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: February–June and August.

Host plants: Polyphagous on various grasses, also can develop on dry vegetation. Pest of maize and sorghum.

42. *Euchromius pulverosus* (Christoph, 1886)

Records: Amsel (1933).

General distribution: West Palaearctic.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: April–May and September.

Host plants: Unknown.

43. *Euchromius ramburiellus* (Duponchel, 1836)

Records: Amsel (1933); Palmoni (1969); Schouten (1992).

General distribution: Mediterranean–Iranian. South Europe, North Africa, Middle East, Iran Iraq and Afghanistan.

Distribution in Israel: All over Mediterranean part, Dead Sea area.

Period of flight in Israel: March–October.

Host plants: Various species of Asteraceae. Also can develop on dry leaves.

44. *Euchromius rayatellus* (Amsel, 1949)

Records: Schouten (1992); Collection of Z. Shoham; German–Israeli project.

General distribution: Mediterranean–Iranian. South Europe, Ukraine, Armenia, Turkey, Syria, Jordan, Afghanistan, Iran and Iraq.

Distribution in Israel: Galilee, Upper Jordan Valley and Golan Heights.

Period of flight in Israel: May–September.

Host plants: Polyphagous on various grasses.

45. *Euchromius superbellus* (Zeller, 1849)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Mediterranean–Turanian. South Europe, Turkey, Middle East, Afghanistan, Iran, Iraq and Central Asia.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: May–August and November.

Host plants: Polyphagous on various grasses.

46. *Euchromius vinculellus* (Zeller, 1847)

Records: Schouten (1992).

General distribution: Mediterranean–Iranian, Afrotropical. South Europe, North

Africa, Transcaucasia, Kenya, Niger, Turkey, Jordan, Saudi Arabia, Yemen, Oman, Iran, Afghanistan.

Distribution in Israel: Dead Sea area.

Period of flight in Israel: Unknown.

Host plants: Unknown.

47. *Metacrambus carectellus* (Zeller, 1847)

Records: Freiherrn von Kalchberg (1897); Caradja (1916); Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Mediterranean–Turanian. South Europe, North Africa, Middle East, Turkey, Iraq, Iran and Central Asia.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: July–October.

Host plants: Various Poaceae species.

48. *Metacrambus marabut* Bleszynski, 1965*

Records: German–Israeli project. New to Israel.

General distribution: Circum-Mediterranean. Morocco, Algeria, South Europe.

Distribution in Israel: Judean Desert and Dead Sea area.

Period of flight in Israel: July–October.

Host plants: Unknown.

49. *Pediasia desertella* (Lederer, 1855)

Records: Freiherrn von Kalchberg (1897); Amsel (1933); Palmoni (1969).

General distribution: Mediterranean–Iranian. Algeria, Mauretania, South Europe, Cyprus, Jordan, Lebanon, Iraq and Iran.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: July–September.

Host plants: Unknown.

50. *Pediasia matricella* (Treitschke, 1832)

Records: Amsel (1933); Palmoni (1969).

General distribution: Mediterranean–Iranian. South Europe, Balkans, Ukraine, Transcaucasia, Turkey, Middle East, Iran and Turkmenistan.

Distribution in Israel: Jordan Valley, Dead Sea area and Arava Valley.

Period of flight in Israel: October–November.

Host plants: Unknown.

51. *Pediasia serraticornis* (Hampson, 1900)

Records: Amsel (1933).

General distribution: Circum-Mediterranean. Spain, Algeria, Tunisia, Libya, Jordan and Syria.

Distribution in Israel: Mentioned only by Amsel (1933) as a desert species.

Period of flight in Israel: No information.

Host plants: Unknown.

52. *Pseudobissetia terrestrella* (Christoph, 1885)

Records: Amsel (1933); Palmoni (1969).

General distribution: Mediterranean–Turanian. South Europe, Tunisia, Jordan, Syria, Iran, Transcaucasia and Turkmenstan.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: May–October.

Host plants: Various Poaceae species, pest of maize.

53. *Thopeutis galleriella* (Ragonot, 1892)

Records: Amsel (1933).

General distribution: West Palaearctic.

Distribution in Israel: Mentioned only by Amsel (1933) from the 'Palaestina' sea coast.

Period of flight in Israel: No information.

Host plants: Unknown.

54. *Talis quercella* ([Denis & Schiffermüller, 1775])*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: Palaearctic temperate.

Distribution in Israel: Upper Jordan Valley and Coastal Plain.

Period of flight in Israel: May–September.

Host plants: Various Poaceae species.

Subfamily Cybalomiinae Marion, 1955

55. *Cybalomia pentadalis* (Lederer, 1855)

Records: Caradja (1916); Palmoni (1969); Halperin & Sauter (1992).

General distribution: East Mediterranean. Greece, Turkey and Lebanon; also occurs in Sudan.

Distribution in Israel: Sea of Galilee area, Jordan Valley and Coastal Plain.

Period of flight in Israel: May–June.

Host plants: Halperin and Sauter (1992) reported this species as reared from dry branches of *Faidherbia albida* (Fabaceae) in the Jordan Valley.

56. *Cybalomia lutosalis* Mann, 1862*

Records: Collection of Z. Shoham. New to Israel.

General distribution: Circum-Mediterranean. Morocco, Algeria, Tunisia, South Europe and Turkey.

Distribution in Israel: Upper Jordan Valley and Golan Heights.

Period of flight in Israel: April–June and August.

Host plants: Unknown.

57. *Krombia seghiralis* (Chrétien, 1911)

Records: Amsel (1933).

General distribution: Eremic. Algeria and Tunisia.

Distribution in Israel: Mentioned only by Amsel (1933) in the Eremic area.

Period of flight in Israel: No information.

Host plants: Unknown.

58. *Prochoristis rupicapralis* (Lederer, 1855)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Mediterranean–Turanian. United Arab Emirates, Lebanon, Syria and Turkmenistan.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: June.

Host plants: The caper *Capparis* sp. (Capparaceae).

59. *Stiphrometasia petryi* Amsel, 1935

Records: Amsel (1935).

General distribution: Endemic of the Levant.

Distribution in Israel: Dead Sea area and Arava Valley.

Period of flight in Israel: May.

Host plants: Unknown.

60. *Stiphrometasia sancta* (Hampson, 1900)

Records: Amsel (1933); Palmoni (1969).

General distribution: East Mediterranean–Iranian. Iran, Iraq and Turkey.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: April–September.

Host plants: The caper *Capparis ovata* (Capparaceae).

61. *Thyridiphora furia* (Swinhoe, 1884)

Records: Amsel (1933); Palmoni (1969); Halperin & Sauter (1992); collection of Z. Shoham.

General distribution: South-West Palaearctic.

Distribution in Israel: Jordan Valley, Judean Desert and Arava Valley (Elat).

Period of flight in Israel: April–June and August–November.

Host plants: Halperin and Sauter (1992) recorded the species as reared from twig galls on *Capparis spinosus* (Capparaceae).

Subfamily Glaphyriinae Forbes, 1923

62. *Cornifrons ulceratalis* Lederer, 1858

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Circum-Mediterranean. South and Central Europe, Morocco, Algeria and the Canary Islands.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: October–April and November–January.

Host plants: *Henophyton deserti* (Brassicaceae) and *Sesamum indicum* (Pedaliaceae).

63. *Evergestis boursini* Amsel, 1939*

Records: German–Israeli project. New to Israel.

General distribution: East Mediterranean. Turkey, Iraq and Iran.

Distribution in Israel: Upper Golan Heights.

Period of flight in Israel: July–August.

Host plants: Unknown.

64. *Evergestis desertalis* (Hübner, [1813])*

Records: German–Israeli project. New to Israel.

General distribution: Circum-Mediterranean. South Europe, Crimea, Saudi Arabia and North Africa.

Distribution in Israel: Jordan Valley and Arava Valley.

Period of flight in Israel: March–October.

Host plants: Various Brassicaceae species.

65. *Evergestis extimalis* (Scopoli, 1763)*

Records: German–Israeli project. New to Israel.

General distribution: Palaearctic. Central and South Europe, Turkey, along South Siberia to the Far East of Russia and to Japan.

Distribution in Israel: Upper Galilee and Golan Heights.

Period of flight in Israel: May–August.

Host plants: Various species of Brassicaceae. In Europe pest of cabbage.

66. *Evergestis frumentalis* (Linnaeus, 1761)*

Records: German–Israeli project. New to Israel.

General distribution: West Palaearctic.

Distribution in Israel: Upper Golan Heights.

Period of flight in Israel: April–July.

Host plants: Brassicaceae: *Descurainia sophia*, *Sisymbrium* sp., *Sinapis arvensis* and *Isatis tinctoria*. Pest of cole crops.

67. *Evergestis isatidalis* (Duponchel, 1833)

Records: Caradja (1916); Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Mediterranean–Iranian. North Africa, South Europe, Turkey, Iraq, Iran.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: November–March.

Host plants: Various Braccicaceae, especially *Isatis tinctoria*, *Raphanus raphanistrum* and *Eruca vesicaria*.

68. *Evergestis limbata* (Linnaeus, 1767)*

Records: German–Israeli project. New to Israel.

General distribution: Euroasiatic.

Distribution in Israel: Upper Golan Heights.

Period of flight in Israel: May–September.

Host plants: Various Brassicaceae species.

69. *Evergestis pechi* (Bethune-Baker, 1885)

Records: Palmoni (1969).

General distribution: Circum-Mediterranean. Spain, France, Malta, Jordan, Morocco, Algeria and Tunisia.

Distribution in Israel: Sea of Galilee area and Jordan Valley.

Period of flight in Israel: March–June.

Host plants: Various Brassicaceae species.

70. *Evergestis politalis* ([Denis & Schiffermüller, 1775])*

Records: German–Israeli project. New to Israel.

General distribution: Temperate West Palaearctic.

Distribution in Israel: Upper Galilee and Golan Heights.

Period of flight in Israel: May–August.

Host plants: *Biscutella laevigata* (Brassicaceae).

71. *Evergestis umbrosalis* (Fischer von Röslerstamm, 1842)*

Records: German–Israeli project. New to Israel.

General distribution: Mediterranean. Spain, Greece, Turkey, Ukraine and the Caucasus.

Distribution in Israel: Upper Galilee and Golan Heights.

Period of flight in Israel: May–July.

Host plants: Unknown.

72. *Hellula undalis* (Fabricius, 1781)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Eurasiatic. Widespread from Europe across Asia to the Pacific.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: April–January.

Host plants: Various species of Brassicaceae, Acanthaceae, Capparidaceae. A major pest of crucifer crops in the tropics and subtropics, especially affecting cabbage and radish.

73. *Noorda blitealis* Walker, 1859

Records: Amsel (1933); Halperin & Sauter (1992).

General distribution: Palaeotropical. All over sub-Saharan Africa, Sri Lanka, India and Thailand and Australia.

Distribution in Israel: Mentioned by Amsel (1933) from the Coastal Plain and by Halperin and Sauter (1992) from the Dead Sea area.

Period of flight in Israel: April, September.

Host plants: *Moringa oleifera* and *M. peregrina* (Moringaceae).

74. *Noorda caradjae* (Rebel, 1902)

Records: Amsel (1933); Halperin & Sauter (1992).

General distribution: Sub-endemic of the Levant. Jordan and Iran.

Distribution in Israel: Sea of Galilee area, Jordan Valley and Dead Sea area.

Period of flight in Israel: March–May.

Host plants: Unknown. Halperin and Sauter (1992) reported the species in association with *Moringa peregrina* (Moringaceae) in 'En Gedi.

Subfamily Odontiinae Guenée, 1854

75. *Aeschremon disparalis* (Herrich-Schäffer, 1851)*

Records: German–Israeli project. New to Israel.

General distribution: Mediterranean–Turanian. Greece, the Caucasus, Turkey, Iran, Afghanistan and Uzbekistan.

Distribution in Israel: Upper Galilee.

Period of flight in Israel: June–August.

Host plants: Various Poaceae species.

76. *Aeschremon kabylalis* (Rebel, 1902)

Records: Amsel (1933).

General distribution: Eremic. Algeria.

Distribution in Israel: Mentioned only by Amsel (1933) as a desert species.

Period of flight in Israel: No information.

Host plants: Various Poaceae species.

77. *Aporodes floralis* (Hübner, [1809])

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Asiatropical. Central and South Europe, Algeria, Syria, Yemen, Afghanistan, Central Asia and North India.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: March–November.

Host plants: *Cynara cardunculus* (Asteraceae) and *Convolvulus arvensis* (Convolvulaceae).

78. *Cataonia erubescens* (Christoph, 1877)*

Records: German–Israeli project. New to Israel.

General distribution: Mediterranean–Turanian. South Europe, Turkey, Syria and Turkmenistan.

Distribution in Israel: Southern Coastal Plain.

Period of flight in Israel: April–September.

Host plants: Unknown.

79. *Cynaeda dentalis* ([Denis & Schiffermüller, 1775])

Records: Amsel (1933); collection of Z. Shoham.

General distribution: Mediterranean–Turanian. North Africa, Central and South

Europe, Turkey, Middle East, eastwards to Central Asia.
Distribution in Israel: Sea of Galilee area, Jordan Valley and Coastal Plain.
Period of flight in Israel: May–September.
Host plants: Boraginaceae: *Echium vulgare*, *Anchusa* sp., *Onosma* sp.

80. *Cynaeda flavalis* Leraut, 2012*

Records: German–Israeli project. New to Israel.
General distribution: Probably sub-endemic of the Levant. Iraq.
Distribution in Israel: Sea of Galilee area and Jordan Valley.
Period of flight in Israel: May.
Host plants: Unknown.

81. *Cynaeda gigantea* (Wocke, 1871)*

Records: German–Israeli project. New to Israel.
General distribution: Mediterranean–Turanian. Morocco, Central and South Europe, Armenia, Turkey, South Urals and Central Asia.
Distribution in Israel: Upper Jordan Valley.
Period of flight in Israel: May–June.
Host plants: Boraginaceae: *Anchusa* sp., *Onosma* sp.

82. *Dentifovea fulvifascialis* (Christoph, 1887)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.
General distribution: Eurasiatic. Greece, Lebanon, Middle East and India.
Distribution in Israel: All over Mediterranean part.
Period of flight in Israel: May–July and September.
Host plants: *Heliotropium* sp. (Boraginaceae).

83. *Epascestria pustulalis* (Hübner, [1823])

Records: Amsel (1933); Palmoni (1969).
General distribution: East-Mediterranean.
Distribution in Israel: All over Mediterranean part.
Period of flight in Israel: May–August.
Host plants: Boraginaceae: *Anchusa officinalis*, *A. strigosa*, *Echium* sp. Damages beet foliage.

84. *Ephelis cruentalis* (Geyer, 1832)

Records: Amsel (1933).
General distribution: Mediterranean–Turanian. France, Italy, Greece, the Caucasus, Turkey, Middle East and Central Asia.

Distribution in Israel: Mentioned only by Amsel (1933) from the 'Palaestina' mountains.

Period of flight in Israel: No information.

Host plants: *Hypericum* sp. (Hypericaceae).

85. *Ephelis pudicalis* (Duponchel, 1832)*

Records: German–Israeli project. New to Israel.

General distribution: Circum-Mediterranean. France, Spain, Portugal, Morocco and Algeria.

Distribution in Israel: Arava and Jordan Valley.

Period of flight in Israel: May–July.

Host plants: Unknown.

86. *Noctuelia rebeli* Amsel, 1935

Records: Amsel (1935).

General distribution: Endemic of Israel.

Distribution in Israel: Mentioned only by Amsel (1935) from Jordan Valley.

Period of flight in Israel: No information.

Host plants: Unknown.

87. *Tegostoma baphialis* (Staudinger, 1871)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Mediterranean–Turanian. Greece, Turkey, the Caucasus, Middle East, Egypt, Turkmenistan and Afghanistan.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: April–September.

Host plants: Unknown.

88. *Tegostoma comparalis* (Hübner, 1796)

Records: Amsel (1933).

General distribution: Palaeotropical. South Europe, Ukraine, Northern and sub-Saharan Africa, Middle East, Kyrgyzstan, India, Pakistan, Turkmenistan, United Arab Emirates and Yemen.

Distribution in Israel: Coastal Plain.

Period of flight in Israel: May–October.

Host plants: *Salsola kali* (Amaranthaceae), *Tribulus terrestris* (Zygophyllaceae).

89. *Tegostoma moeschleri* (Christoph, 1862)

Records: Amsel (1933).

General distribution: Mediterranean–Turanian. The Caucasus, Cyprus, Turkey, Middle East and Afghanistan.

Distribution in Israel: Mentioned only by Amsel (1933) from the 'Palaestina' mountains.

Period of flight in Israel: No information.

Host plants: Unknown.

90. *Turania russulalis* (Christoph, 1877)*

Records: German–Israeli project. New to Israel.

General distribution: Mediterranean–Turanian. Morocco, Iraq, Iran and Turkmenistan.

Distribution in Israel: Judean Desert.

Period of flight in Israel: May.

Host plants: *Lamium* sp. (Lamiaceae).

91. *Usgentia vespertalis* (Herrich-Schäffer, 1851)*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: East Mediterranean. Greece, Sicily, Turkey and Caucasus.

Distribution in Israel: Sea of Galilee area and Upper Jordan Valley.

Period of flight in Israel: May–July.

Host plants: Unknown.

Subfamily Pyraustinae Meyrick, 1890

92. *Achyra coelatalis* (Walker, 1859)*

Records: German–Israeli project. New to Israel.

General distribution: Palaeotropical. Widespread in Africa, India, Sri Lanka.

Distribution in Israel: Arava Valley and Dead Sea area.

Period of flight in Israel: November–January.

Host plants: Poaceae: *Sorghum* sp., *Oryza sativa*, *Pennisetum americanum* and *Zea mays*.

Remarks: *Loxostege fredi* Amsel, 1961, described from Afghanistan, was synonymized with *A. coelatalis* by Shaffer and Munroe (2007). *Achyra coelatalis* is often recorded as *Achyra massalis* (Walker, 1859), a sibling species apparently confined to the Australian Region (Shaffer & Munroe 2007).

93. *Anania crocealis* (Hübner, 1796)*

Records: German–Israeli project. New to Israel.

General distribution: Mediterranean–Turanian. Central and Southern Europe, the Caucasus.

Distribution in Israel: Upper Golan Heights.

Period of flight in Israel: May–July.

Host plants: *Pulicaria dysenterica*, *Inula conyza*, *I. salicina* (Asteraceae), *Cotinus coggygria* (Anacardiaceae).

94. *Achyra nudalis* (Hübner, 1796)

Records: Caradja (1916); Amsel (1933); Palmoni (1969).

General distribution: Asiatropical, Afrotropical.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: May–August.

Host plants: *Camphorosma* sp., *Beta vulgaris*, *Amaranthus graecizans* (Amaranthaceae), *Echium* sp. (Boraginaceae).

95. *Anania ochrofascialis* (Christoph, 1882)

Records: Amsel (1933).

General distribution: Mediterranean–Turanian. Ukraine, Turkey, the Caucasus, Transcaucasia, Daghestan, Egypt, Tunisia, Kazakhstan and Turkmenistan.

Distribution in Israel: Mentioned only by Amsel (1933) in the Eremic area.

Period of flight in Israel: No information.

Host plants: Unknown.

96. *Anania stachydalis* (Germar, 1821)*

Records: German–Israeli project. New to Israel.

General distribution: Mediterranean. South and Central Europe, Turkey and the Caucasus.

Distribution in Israel: Upper Golan Heights.

Period of flight in Israel: May–August.

Host plants: *Stachys* sp. (Lamiaceae).

97. *Anania testacealis* (Zeller, 1847)

Records: Amsel (1933).

General distribution: Mediterranean. South and Central Europe.

Distribution in Israel: Mentioned only by Amsel (1933) from the ‘Palaestina’ mountains.

Period of flight in Israel: No information.

Host plants: Chicory *Cichorium intybus* (Asteraceae).

98. *Anania verbascalis* ([Denis & Schiffermüller], 1775)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Mediterranean. South and Central Europe and Turkey.
Distribution in Israel: All over Mediterranean part.
Period of flight in Israel: May–September.
Host plants: *Teucrium scorodonia* (Lamiaceae), *Verbascum thapsus*, *Scrophularia* sp. (Scrophulariaceae).

99. *Duzulla subhyalinalis* (Hampson, 1900)

Records: Amsel (1933).
General distribution: Asiatropical. Syria, Jordan, Turkey, Iran, Afghanistan and India.
Distribution in Israel: Mentioned only by Amsel (1933) as a desert species.
Period of flight in Israel: No information.
Host plants: Unknown.

100. *Ecpyrrhorrhoe diffusalis* (Guenée, 1854)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.
General distribution: Mediterranean. South and Central Europe, the Caucasus and Turkey.
Distribution in Israel: All over Mediterranean part.
Period of flight in Israel: August–November.
Host plants: *Marrubium vulgare* (Lamiaceae), *Lavatera trimestris* (Malvaceae).

101. *Euclasta splendidalis* (Herrich-Schäffer, 1848)*

Records: German–Israeli project. New to Israel.
General distribution: Mediterranean–Turanian. South Europe, Turkey, Transcaucasia and Turkmenistan.
Distribution in Israel: Judean Desert.
Period of flight in Israel: April–August.
Host plants: Unknown.

102. *Loxostege leuconeuralis* (Hampson, 1908)*

Records: German–Israeli project. New to Israel.
General distribution: Probably Mediterranean–Turanian. Afghanistan.
Distribution in Israel: Upper Golan Heights.
Period of flight in Israel: May.
Host plants: Unknown.

103. *Loxostege peltaloides* (Rebel, 1932)*

Records: German–Israeli project. New to Israel.

General distribution: Probably sub-endemic of the Levant. Turkey.

Distribution in Israel: Upper Golan Heights.

Period of flight in Israel: May.

Host plants: Unknown.

104. *Loxostege sticticalis* (Linnaeus, 1761)*

Records: German–Israeli project. New to Israel.

General distribution: Holarctic. Central and South Europe, Ukraine, Turkey, Turkmenistan, Tajikistan, South Siberia, Kazakhstan, Mongolia, Far East of Russia, China and Canada.

Distribution in Israel: Upper Golan Heights.

Period of flight in Israel: June.

Host plants: Polyphagous on various herbs, a pest of sugar beet and tobacco. Also recorded on *Malus pumila* (Rosaceae).

105. *Nascia cilialis* (Hübner, 1796)*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: Holarctic. Central and South Europe, from European part of Russia through South Siberia to Far East of Russia, North America.

Distribution in Israel: Upper Jordan Valley.

Period of flight in Israel: May–August.

Host plants: Cyperaceae: *Carex riparia*, *Cladium mariscus*.

106. *Ostrinia nubilalis* (Hübner, 1796)

Records: Amsel (1933); Palmoni (1969); Melamed-Madjar & Tam (1980); collection of Z. Shoham.

General distribution: Holarctic. Central and South Europe, North Africa, Ukraine, European part of Russia, South Siberia, Kazakhstan and North America.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: April–November.

Host plants: Polyphagous on various herbs, pest of maize and other crops.

107. *Sitochroa palealis* ([Denis & Schiffermüller], 1775)

Records: Amsel (1933).

General distribution: Palaearctic. North Africa, Central and South Europe, the Caucasus, Ukraine, Turkey, Middle East, South Siberia, India and Japan.

Distribution in Israel: Mentioned only by Amsel (1933) from the Coastal Plain.

Period of flight in Israel: No information.

Host plants: Apiaceae: *Daucus carota*, *Peucedanum oreoselinum*, *Heracleum* sp., *Foeniculum* sp., *Silaum* sp.

108. *Sitochroa concoloralis* (Lederer, 1857)

Records: Amsel (1933).

General distribution: Endemic of the Levant. Lebanon and Syria.

Distribution in Israel: Mentioned only by Amsel (1933) from the 'Palaestina' mountains and sea coast.

Period of flight in Israel: No information.

Host plants: Unknown.

109. *Palepicorsia ustrinalis* (Christoph, 1877)

Records: Amsel (1933).

General distribution: Mediterranean–Turanian. North Africa, Central and South Europe, Saudi Arabia, Yemen, Turkmenistan, Iran and Pakistan.

Distribution in Israel: Mentioned only by Amsel (1933) from the 'Palaestina' mountains and Eremic area.

Period of flight in Israel: No information.

Host plants: Unknown.

110. *Paracorsia repandalis* ([Denis & Schiffermüller], 1775)*

Records: German–Israeli project. New to Israel.

General distribution: Holarctic. Central and South Europe, North Africa, Ukraine, Turkey. Recently introduced to America.

Distribution in Israel: Upper Golan Heights.

Period of flight in Israel: May–September.

Host plants: Different species of *Verbascum* (Scrophulariaceae): *V. lychnitis*, *V. thapsus*, *V. phlomoides*.

111. *Pyrausta aerealis* (Hübner, 1793)*

Records: German–Israeli project. New to Israel.

General distribution: Eurasiatic. Central and South Europe, Algeria, North-East Caucasus, Turkey, Kyrgyzstan, Kazakhstan, Afghanistan and China.

Distribution in Israel: Upper Galilee.

Period of flight in Israel: June–August.

Host plants: *Artemisia vulgaris* (Asteraceae), *Thymus serpyllum* (Lamiaceae), *Scrophularia* sp. (Scrophulariacea), *Gnaphalium* sp., *Helichrysum* sp. (Asteraceae), *Thalictrum* sp. (Ranunculaceae).

112. *Pyrausta aurata* (Scopoli, 1763)

Records: Amsel (1933); collection of Z. Shoham.

General distribution: Eurasiatic. Central and South Europe, Northern Africa, Turkey, Lebanon, Syria, Iran, Afghanistan, Eastern Siberia, Mongolia, Northern China, Korea and Japan.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: April–September.

Host plants: Lamiaceae: *Mentha spicata*, *M. rotundifolia*, *Origanum vulgare*, *Salvia pratensis*, *Melissa officinalis*, *Nepeta cataria*, *Calamintha* sp.

113. *Pyrausta castalis* Treitschke, 1829*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: Mediterranean. South and Central Europe, the Caucasus and Turkey.

Distribution in Israel: Upper Galilee and Golan Heights.

Period of flight in Israel: July–August.

Host plants: Lamiaceae: *Mentha longifolia*, *Mentha* sp.

114. *Pyrausta despicata* (Scopoli, 1763)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Eurasiatic. All over Europe except polar areas, Turkey, South Ural and South Yakutia.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: April–October.

Host plants: Plantaginaceae: *Plantago lanceolata*, *P. major*.

115. *Pyrasia gutturalis* (Staudinger, 1879)*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: Sub-endemic of the Levant. East Turkey.

Distribution in Israel: Upper Jordan Valley.

Period of flight in Israel: August.

Host plants: Unknown.

116. *Pyrausta limbopunctalis* (Herrich-Schaffer, 1849)*

Records: German–Israeli project. New to Israel.

General distribution: Circum-Mediterranean.

Distribution in Israel: Coastal Plain.

Period of flight in Israel: May–July.

Host plants: *Thymus* sp. (Lamiaceae).

117. *Pyrausta pauperalis* (Staudinger, 1879)

Records: Amsel (1933).

General distribution: East Mediterranean. Greece, Turkey and Lebanon.

Distribution in Israel: Mentioned only by Amsel (1933) from the 'Palaestina' mountains.

Period of flight in Israel: No information.

Host plants: Unknown.

118. *Pyrausta purpuralis* (Linnaeus, 1758)

Records: Amsel (1933); Palmoni (1969).

General distribution: Eurasiatic. South and Central Europe, Turkey, Middle East and South Siberia.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: December and April–May.

Host plants: Lamiaceae: *Mentha* sp., *Thymus* sp., *Origanum* sp., *Prunella* sp.

119. *Pyrausta sanguinalis* (Linnaeus, 1767)

Records: Palmoni (1969); collection of Z. Shoham.

General distribution: Eurasiatic. South and Central Europe, North Africa, Turkey, South Siberia and China.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: April–September.

Host plants: Lamiaceae: *Salvia officinalis*, *Rosmarinus officinalis*, *Thymus* sp.

120. *Pyrausta virginalis* Duponchel, 1832

Records: Amsel (1933); Halperin & Sauter (1992).

General distribution: Mediterranean–Turanian. South and Central Europe, Turkey, Armenia and Afghanistan.

Distribution in Israel: Upper Galilee, Golan Heights, Judean Desert.

Period of flight in Israel: April–August.

Host plants: *Ballota saxatilis*, *Salvia* sp. (Lamiaceae).

121. *Uresiphita gilvata* (Fabricius, 1794)

Records: Caradja (1916); Amsel (1933); Palmoni (1969); Halperin & Sauter (1992, as *Uresiphita limbalis*); collection of Z. Shoham.

General distribution: Palaeotropical.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: February–October.

Host plants: *Anagyris foetida*, *Genista tinctoria*, *Pericopsis elata*, *Sophora tomen-*

tosa, *Ulex europaeus*, *Bolusanthus* sp., *Cytisus* sp., *Sarothamnus* sp., *Spartium* sp. (Fabaceae), *Cedrela* sp. (Meliaceae), *Putterlickia* sp. (Celastraceae).

Subfamily Spilomelinae Guenée, 1854

122. *Antigastra catalaunalis* (Duponchel, 1833)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Cosmopolitan. Widespread in sub-Saharan Africa, South and Central Europe, Middle East, Iran, introduced to Northern and Central America and Australia.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: Early June, September–November.

Host plants: *Anarrhinum brevifolium*, *Antirrhinum* sp. (Plantaginaceae), *Linaria vulgaris*, *L. fruticosa* (Scrophulariaceae), *Sesamum angustifloium*, *S. angolense*, *S. indicum*, *S. orientale* (Pedaliaceae), *Solanum* sp. (Solanaceae), *Megathyrsus maximus* (Poaceae), *Duranta erecta* (Verbenaceae).

123. *Arnia nervosalis* Guenée, 1849

Records: Amsel (1933).

General distribution: Circum-Mediterranean. France, Spain, Portugal, Corsica, Sardinia, Sicily, Algeria and Morocco.

Distribution in Israel: Mentioned only by Amsel (1933) from the Coastal Plain.

Period of flight in Israel: No information.

Host plants: Unknown.

124. *Diaphania indica* (Saunders, 1851)*

Records: German–Israeli project. New to Israel.

General distribution: Pantropical. All over tropical Africa, Middle East, India, Southeast Asia, introduced to Australia and Central America.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: April–October.

Host plants: *Luffa acutangula*, *Luffa aegyptiaca*, *Trichosanthes anguina*, *Trichosanthes palmata* (Cucurbitaceae), *Erythrina corallodendron* (Fabaceae), *Achyranthes aspera* (Amaranthaceae), *Gossypium herbaceum* (Malvaceae). Severe pest of cucurbits.

125. *Diasemiopsis ramburialis* (Duponchel, 1833)*

Records: German–Israeli project. New to Israel.

General distribution: Cosmopolitan. Widespread in sub-Saharan Africa, South and Central Europe, Middle East, Central Asia, Southeast Asia, India, Central America, Australia and Polynesia.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: May–October.

Host plants: Various *Brassica* (Brassicaceae) species. A potential biocontrol agent for the water fern *Azolla filiculoides* (Salviniaceae) (Farahpour-Haghani *et al*. 2016).

126. *Dolicharthria aetnaealis* (Duponchel, 1833)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Circum-Mediterranean. South Europe, Morocco and Algeria.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: May–July.

Host plants: Unknown. Probably withered leaves.

Remarks: *Dolicharthria aetnaealis* is sometimes considered a senior synonym of *D. concoloralis* Oberthür, 1876 (Leraut 2003). The latter seems to be a merely North African species, which is very large and not represented in Europe or the Middle East. A common European species with *D. punctalis*, which apparently occurs with white and yellow discal spots. It is possible that specimens with yellow spots from South Europe belong to *D. aetnaealis*.

127. *Dolicharthria bruguieralis* (Duponchel, 1833)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Eurasiatic. Morocco, Algeria, all over South Europe, Turkey, India, eastwards to Japan and Taiwan.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: March–June and October–November.

Host plants: *Gynura bicolor* (Compositae), *Ipomoea batatas* (Convolvulaceae).

128. *Dolicharthria daralis* (Chrétien, 1911)

Records: Caradja (1916); Amsel (1933).

General distribution: Mediterranean-Eremic. Morocco, Algeria, Tunisia, Spain and Canary Islands.

Distribution in Israel: Dead Sea area and Arava Valley.

Period of flight in Israel: April–November.

Host plants: Unknown.

129. *Dolicharthria intervacatalis* (Christoph, 1877)

Records: Amsel (1933).

General distribution: East Mediterranean. Turkey, Iraq and Iran.

Distribution in Israel: Mentioned only by Amsel (1933) as a desert species.

Period of flight in Israel: No information.

Host plants: Unknown.

130. *Dolicharthria punctalis* ([Denis & Schiffermüller], 1775)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Mediterranean-Turanian. The species has also been recorded in the UK (Bradley 2000).

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: February–June and September–December.

Host plants: *Artemisia vulgaris*, *Centaurea* sp. (Asteraceae), *Plantago* sp. (Plantaginaceae), *Trifolium* sp. (Fabaceae), *Zostera marina* (Zosteraceae). Also on dry leaves, plant waste and old roots.

131. *Duponchelia caidalis* Oberthür, 1888

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Mediterranean-Eremic. Algeria, Egypt, Israel and United Arab Emirates.

Distribution in Israel: Jordan Valley and Judean Desert.

Period of flight in Israel: September–October.

Host plants: Unknown.

132. *Duponchelia fovealis* Zeller, 1847

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Asiatropical. South and Central Europe, Algeria, Middle East, Iran, North India. Invasive pest in the US and Brazil (Zawadneak *et al*. 2016).

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: March–July and September–November.

Host plants: Broadly polyphagous. Severe pest of ornamentals.

133. *Herpetogramma licarsisalis* (Walker, 1859)

Records: Amsel (1933); Palmoni (1969).

General distribution: Cosmopolitan. Widespread in sub-Saharan Africa, South Europe, China, New Zealand, Australia. Introduced to many other parts of the world, including Hawaii and the Canary Islands.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: March–January.

Host plants: Various Poaceae species. Pest of rice.

134. *Hodebertia testalis* (Fabricius, 1794)*

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham. New to Israel.

General distribution: Asiatropical. Widespread in Africa, South Europe, Syria, Yemen, Saudi Arabia, India, Sri Lanka, Taiwan, Indonesia and Australia. Introduced to North America (Hayden & Minno 2016).

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: March and September–October.

Host plants: *Mammillaria heyderi* (Cactaceae), *Caralluma europaea* ssp. *marocana*, *Asclepias curassavica*, *Calotropis gigantea*, *C. procera*, *Gomphocarpus* sp., *Leptadenia madagascariensis*, *Pergularia daemia*, *Stapelia* sp. (Apocynaceae), *Citrus* sp. (Rutaceae), *Hibiscus* sp., *Sida rhombifolia* (Malvaceae).

135. *Hydriris ornatalis* (Duponchel, 1832)

Records: Amsel (1933); Palmoni (1969).

General distribution: Cosmopolitan. Widespread in sub-Saharan Africa, South Europe, Middle East, India, Southeast Asia, Australia, North America (Florida).

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: September and November.

Host plants: Various Convolvulaceae, damages batata leaves.

136. *Leucinodes laisalis* (Walker, 1859)*

Records: German–Israeli project. New to Israel.

General distribution: Afrotropical. Also recorded from Belgium, Spain, Portugal and the UK (Mally *et al*. 2015).

Distribution in Israel: Coastal Plain.

Period of flight in Israel: September–October.

Host plants: Solanaceae: *Solanum anguivi*, *S. incanum*, *S. linnaeanum*, *S. macrocarpon*, *S. melongena*, *Lycopersicon esculentum*, *Capsicum annuum*, *C. frutescens*.

137. *Mecyna flavalis* ([Denis & Schiffermüller], 1775)*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: Eurasiatic. South and Central Europe, Turkey, all over South Siberia to Far East and Japan.

Distribution in Israel: Upper Galilee and Golan Heights.

Period of flight in Israel: June–August.

Host plants: *Galium mollugo* (Rubiaceae), *Artemisia campestris* (Asteraceae), *Ballota* sp. (Lamiaceae), *Reseda* sp. (Resedaceae), *Urtica urens* (Urticaceae).

138. *Mecyna lutealis* (Duponchel, 1833)*

Records: German–Israeli project. New to Israel.

General distribution: Circum-Mediterranean. All over South Europe, North Africa and Syria.

Distribution in Israel: Upper Galilee and Golan Heights.

Period of flight in Israel: June–August.

Host plants: Unknown.

139. *Mecyna marcidalis* (Fuchs, 1879)

Records: Amsel (1933).

General distribution: Mediterranean. South Europe, Transcaucasia, Middle East (Turkey, Syria and Iran).

Distribution in Israel: Mentioned only by Amsel (1933) from the 'Palaestina' mountains.

Period of flight in Israel: No information.

Host plants: Unknown.

140. *Mecyna subsequalis* (Herrich-Schäffer, 1855)*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: East Mediterranean. Bulgaria, Greece, Crete, Turkey, Armenia, the Caucasus and Syria.

Distribution in Israel: Sea of Galilee area and Upper Jordan Valley.

Period of flight in Israel: August.

Host plants: Unknown.

141. *Mecyna trinalis* ([Denis & Schiffermüller], 1775)*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: Eurasiatic. North Africa, all over South and Central Europe, Turkey, eastwards to Mongolia.

Distribution in Israel: Upper Jordan Valley.

Period of flight in Israel: June–August.

Host plants: *Helianthemum* sp. (Cistaceae).

142. *Metasia carnealis* (Treitschke, 1829)*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.

General distribution: East Mediterranean. Italy, Balkans, Middle East and Turkey.

Distribution in Israel: Sea of Galilee area and Upper Jordan Valley.

Period of flight in Israel: July.
Host plants: Unknown.

143. *Metasia cuencalis* Ragonot, 1894*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.
General distribution: Circum-Mediterranean. Spain, Portugal, France and Morocco.
Distribution in Israel: Sea of Galilee area and Upper Jordan Valley.
Period of flight in Israel: June–August.
Host plants: Unknown.

144. *Metasia octogenalis* Lederer, 1863

Records: Caradja (1916); Amsel (1933); Palmoni (1969); coll. of Z. Shoham.
General distribution: East Mediterranean. Syria, Iran, Iraq and Turkey.
Distribution in Israel: All over Mediterranean part.
Period of flight in Israel: April–July and September.
Host plants: Unknown.

145. *Metasia rosealis* Ragonot, 1895*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.
General distribution: East Mediterranean. Greece, Cyprus, Turkey, Lebanon and Syria.
Distribution in Israel: Upper Jordan Valley and Coastal Plain.
Period of flight in Israel: July.
Host plants: Unknown.

146. *Metasia suppandalis* (Hübner, 1823)*

Records: Collection of Z. Shoham; German–Israeli project. New to Israel.
General distribution: Circum-Mediterranean. South and Central Europe, Morocco, Algeria and Tunisia.
Distribution in Israel: Upper Jordan Valley and Upper Golan Heights.
Period of flight in Israel: May–September.
Host plants: Unknown.

147. *Metasia inustalis* Ragonot, 1894

Records: Amsel (1933).
General distribution: East Mediterranean–Iranian. Turkey, Iraq and Iran.
Distribution in Israel: Mentioned only by Amsel (1933) as a desert species.

Period of flight in Israel: No information.
Host plants: Unknown.

148. *Metasia ophialis* (Treitschke, 1829)

Records: Amsel (1933).
General distribution: Mediterranean. South and Central Europe, Turkey.
Distribution in Israel: Mentioned only by Amsel (1933) from the Coastal Plain.
Period of flight in Israel: No information.
Host plants: Unknown.

149. *Nomophila noctuella* ([Denis & Schiffermüller], 1775)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.
General distribution: Holarctic.
Distribution in Israel: All over country. In desert concentrates in oases.
Period of flight in Israel: All year around except June. Peaks in February, July and September.
Host plants: *Medicago sativa*, *Trifolium* sp. (Fabaceae), *Polygonum aviculare* (Polygonaceae), *Vaccinium* sp. (Ericaceae). Pest of leguminous crops.
Remarks: *Nomophila noctuella* belongs to a complex of 12 distinct species, six of which are South American endemics (Munroe 1973).

150. *Palpita vitrealis* (Rossi, 1794)

Records: Amsel (1933); Avidov & Rosen (1961, as *Glyphodes unionalis*); Palmoni (1969); Halperin & Sauter (1992, as *Palpita unionalis*); collection of Z. Shoham.
General distribution: Almost cosmopolitan. Widespread in sub-Saharan Africa, South Europe, Middle East, tropical Asia, Australia, North and South Americas. In Europe, it is a migratory species.
Distribution in Israel: All over country. In desert concentrates in oases.
Period of flight in Israel: February–August and October–December.
Host plants: *Forsythia* sp., *Fraxinus americana*, *Fraxinus angustifolia*, *Jasminum azoricum*, *Jasminum officinale*, *Jasminum sambac*, *Ligustrum japonicum*, *Ligustrum lucidum*, *Ligustrum ovalifolium*, *Ligustrum sinense*, *Olea europaea*, *Phillyrea latifolia* (Oleaceae), *Arbutus* sp. (Ericaceae), *Funtumia* sp. (Apocynaceae). The larvae of the jasmine moth did not develop on *Jasminum mesnyi* or *J. humile* in experiment (Avidov & Rosen 1961). The species cause severe damage to olive groves, with both leaves and fruits being damaged.

151. *Patania balteata* (Fabricius, 1798)

Records: Amsel (1933).
General distribution: Almost cosmopolitan. Widespread in Africa, South Europe,

Turkey, Ukraine, Japan, Korea, Madagascar, Taiwan, Thailand, Australia and Hawaii.

Distribution in Israel: Mentioned only by Amsel (1933) as a montane species.

Period of flight in Israel: No information.

Host plants: *Anacardium occidentale* (Anacardiaceae), *Quercus serrata*, *Castanea* sp. (Fagaceae).

152. *Marasmia trapezalis* (Guenée, 1854)

Records: Amsel (1933).

General distribution: Almost cosmopolitan. Widespread in Africa, Central and South America, Southeast Asia.

Distribution in Israel: Mentioned only by Amsel (1933) from the Coastal Plain.

Period of flight in Israel: No information.

Host plants: Various Poaceae, incl. corn, rice, millet, sugar cane and sorghum.

153. *Spoladea recurvalis* (Fabricius, 1775)

Records: Palmoni (1969); collection of Z. Shoham.

General distribution: Cosmopolitan. Widespread in sub-Saharan Africa, South and Central Europe, Middle East, India, Southeast Asia, Australia, the Americas.

Distribution in Israel: All over country. In desert concentrates in oases.

Period of flight in Israel: April–June and August–December.

Host plants: *Beta vulgaris*, *Spinacia oleracea* (Amaranthaceae), *Gossypium* sp. (Malvaceae), *Zea* sp. (Poaceae), *Glycine* sp. (Fabaceae).

154. *Synclera traducalis* (Zeller, 1852)

Records: Caradja (1916); Amsel (1933); Palmoni (1969); coll. of Z. Shoham.

General distribution: Palaeotropical. Widespread in Africa, Central and South Europe, Cyprus, Lebanon, Syria, Saudi Arabia, United Arab Emirates, Yemen, Egypt, India and Sri Lanka.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: May–June.

Host plants: Rhamnaceae: *Gouania polygama*, *Ziziphus jujuba*, *Z. mauritiana*.

155. *Udea ferrugalis* (Hübner, 1796)

Records: Amsel (1933); Palmoni (1969); collection of Z. Shoham.

General distribution: Palaeotropical. All over Africa, South and Central Europe, Ukraine, eastward to Japan, Turkey, Iran and India.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: January–June, November.

Host plants: *Stachys* sp. (Lamiaceae), *Eupatorium cannabinum* (Asteraceae), *Fragaria vesca* (Rosaceae).

156. *Udea fimbriatralis* (Duponchel, 1833)

Records: Amsel (1933).

General distribution: Mediterranean–Iranian. Algeria, South Europe, Crimea, Syria, Turkey and Iran.

Distribution in Israel: Mentioned only by Amsel (1933) as a montane species.

Period of flight in Israel: No information.

Host plants: Unknown.

157. *Udea languidalis* (Eversmann, 1842)

Records: Amsel (1933); Palmoni (1969).

General distribution: Mediterranean–Iranian. Algeria, South Europe, Ukraine, Turkey, Syria and Iran.

Distribution in Israel: All over Mediterranean part.

Period of flight in Israel: May–July.

Host plants: Polyphagous on various species of Apiaceae, Asteraceae, Lamiaceae, Plantaginaceae, Rosaceae.

Subfamily Scopariinae Guenée, 1854

158. *Anarpia incertalis* (Duponchel, 1832)

Records: Caradja (1916).

General distribution: Mediterranean–Turanian. Morocco, Algeria, South and Central Europe, Turkey, Iraq, Kazakhstan and Kyrgyzstan.

Distribution in Israel: Judean Desert.

Period of flight in Israel: April–September.

Host plants: Unknown.

159. *Cholius luteolaris* (Scopoli, 1772)*

Records: German–Israeli project. New to Israel.

General distribution: Circum-Mediterranean. Morocco, South and Central Europe, Turkey and Lebanon.

Distribution in Israel: Southern Coastal Plain.

Period of flight in Israel: May–August.

Host plants: Unknown.

160. *Scoparia pyralella* ([Denis & Schiffermüller], 1775)

Records: Amsel (1933).

General distribution: Mediterranean–Turanian. Algeria, Morocco, Central and South Europe, Turkey, Middle East, Kazakhstan and Kirghyzstan.

Distribution in Israel: Mentioned only by Amsel (1933) as a montane species.

Period of flight in Israel: No information.

Host plants: Decaying leaves of various low-growing plants.

DISCUSSION

There is only one common species, *Metacrambus carectellus*, among those recorded by Freiherrn von Kalchberg (1897) and Caradja (1916), which is of little surprise given the distance and ecological differences between Haifa and Jerusalem. There is also a high rate of discrepancy between the lists of species compiled by Amsel (1933, 1935) and Palmoni (1969) (Fig. 3). Out of 91 species collected by Amsel, 46 were confirmed by Palmoni, another four species we found in the SMNHTAU (*E. nymphaeata*, *A. inquinatella*, *C. dentalis* and *P. aurata*), whereas 31 species have not been confirmed by other collectors, including ourselves. Palmoni's collection with 53 species from around Sea of Galilee (Kinneret) does not overlap with Shoham's collection of 56 species from the Upper Galilee by 24 species. Three species — *Anarpia incertalis*, *Chrysocrambus linetellus* and *Euchromius vinculellus* — were recorded in Israel only once (Zeller 1849; Caradja 1916; Schouten 1992), despite their fairly broad general distribution and collecting efforts of other researchers.

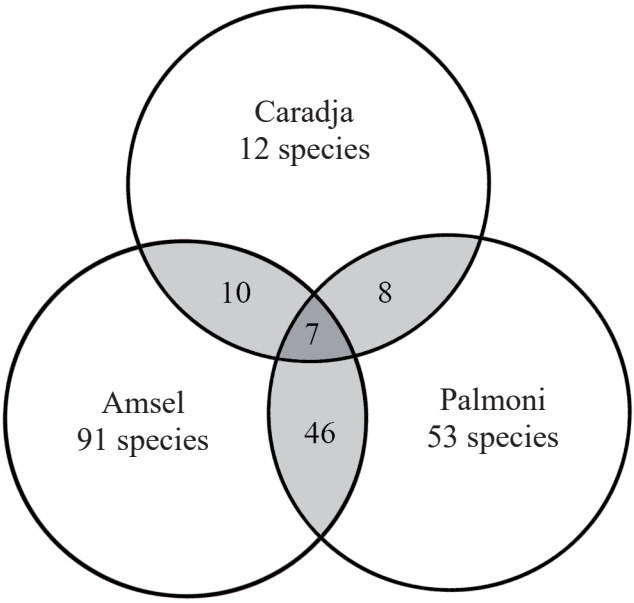

Fig. 3: Overlapping of Crambidae species lists published by Caradja (1916), Amsel (1933, 1935) and Palmoni (1969).

Table 1. Distribution of the Crambidae species according to subfamilies and biogeographical categories.

Biogeographical categories	Crambinae	Spilomelinae	Pyraustinae	Odontiinae	Cybalomiinae	Glaphyriinae	Acentropinae	Schoenobiinae	Scopariinae	Musotiminae	Total
Cosmopolitan	2	8									10
Holarctic		1	4								5
Eurasiatic	4	3	4	1		2		3			17
Palaearctic	7		1		1	3	2				14
Pantropical		1									1
Palaeotropical	1	2	2	1		1					7
Asiatropical	1	3	2	1			1				8
Afrotropical	2										2
Mediterranean	5	2	7		2	1					17
Circum-Mediterranean	5	5	1	1	1	3			1		17
Mediterranean–Turanian	7	1	5	8	1				2		24
Mediterranean–Iranian	9	2			1	1					13
East Mediterranean	1	6	1	2		1					11
Eremic	2	2		1	1						6
Endemic and sub-endemics			3	2		1	1			1	8
Total	46	36	30	17	7	13	4	3	3	1	160

Forty-two species added to the fauna of Israel during the German–Israeli project clearly form two clusters: (1) species, collected in the extreme south of the country (Arava Valley and Southern Negev) and (2) species, collected in the extreme north (Upper Golan Heights and southern tip of the Anti-Lebanon Ridge). This is probably a result of under-collecting in these areas in the past.

The checklist includes representatives of 10 subfamilies, but most of species (70 %) belong to the Crambinae, Spilomelinae and Pyraustinae (Table 1). As regards the biogeographical distribution of species, the commonest categories are Mediterranean in general and Mediterranean with a far extension to the East (Mediterranean, Mediterranean–Turanian, Mediterranean–Iranian, Circum-Mediterranean, East Mediterranean), which are represented by 82 species (51.3 %). The Tropical group with an extension to the Mediterranean area (Asiatropical, Afrotropical, Palaeotropical, Pantropical) is represented by 18 species (11.3 %). The group with a broad distribution (Cosmopolitan, Palaearctic, Holarctic and Euroasiatic) is represented by 46 species (28.8 %). Endemics and sub-endemics are represented by eight species, and six species are defined as Eremic.

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