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A contribution to the Israeli fauna of Microlepidoptera: Oecophoridae, Autostichidae, Depressariidae, Cryptolechiidae and Lecithoceridae with ecological and zoogeographical remarks (Lepidoptera: Gelechioidea)

A. L. Lvovsky, S. Yu. Sinev, V. D. Kravchenko & G. C. Müller

Abstract

A checklist of 67 Israeli species of families Oecophoridae (17 species), Autostichidae (16), Depressariidae (25), Cryptolechiidae (3), and Lecithoceridae (6) is presented. The checklist is based on material collected by the authors in 2003 in Israel and existing published records. Eight species are new records for the fauna of Israel: *Dasycera intermediella* Stainton, 1867, *Batia internella* Jäckh, 1972, *Carcina quercana* (Fabricius, 1775), *Oegoconia deauratella* (Herrich-Schäffer, 1854), *Oegoconia caradjai* Popescu-Gorj & Căpuşe, 1965, *Agonopterix ferulae* (Zeller, 1847), *Agonopterix kaekeritziana* (Linnaeus, 1767) and *Lecithocera anatolica* Gozmány, 1978. Two new combinations are proposed: *Epicallima einsleri* (Amsel, 1934), **comb. n.** from *Borkhausenia* Hübner, [1825], and *Promalactis splendidella* (Amsel, 1934), **comb. n.** from *Epicallima* Dyar, [1903].
KEY WORDS: Lepidoptera, Gelechoidea, Oecophoridae, Autostichidae, Depressariidae, Cryptolechiidae, Lecithoceridae, new records, new combinations, Israel.

Una contribución a la fauna israelí de Microlepidoptera: Oecophoridae, Autostichidae, Depressariidae, Cryptolechiidae y Lecithoceridae con detalles ecológicos y zoogeográficos (Lepidoptera: Gelechioidea)

Resumen

Se presenta una lista de 67 especies israelies de las familias Oecophoridae (17 species), Autostichidae (16), Depressariidae (25), Cryptolechiidae (3) y Lecithoceridae (6). La lista está basada sobre el material recogido por los autores en 2003 en Israel y las citas publicadas. Ocho especies son nuevos registros para la fauna de Israel: *Dasycera intermediella* Stainton, 1867, *Batia internella* Jäckh, 1972, *Carcina quercana* (Fabricius, 1775), *Oegoconia deauratella* (Herrich-Schäffer, 1854), *Oegoconia caradjai* Popescu-Gorj & Căpuşe, 1965, *Agonopterix ferulae* (Zeller, 1847), *Agonopterix kaekeritziana* (Linnaeus, 1767) y *Lecithocera anatolica* Gozmány, 1978. Se proponen dos nuevas combinaciones: *Epicallima einsleri* (Amsel, 1934), **comb. n.** from *Borkhausenia* Hübner, [1825] y *Promalactis splendidella* (Amsel, 1934), **comb. n.** de *Epicallima* Dyar, [1903].
PALABRAS CLAVE: Lepidoptera, Gelechioidea, Oecophoridae, Autostichidae, Depressariidae, Cryptolechiidae, Lecithoceridae, nuevos registros, nuevas combinaciones, Israel.

Introduction

The Microlepidoptera fauna of the Middle East is until today poorly known. Most records are from the mid-1930's and little or nothing is known about the ecology of most species. H. G. Amsel, a

German entomologist, was one of the pioneers collecting Lepidoptera in general (but with a strong emphasis on Micros) in the former British Mandate of Palestine, long before the formation of the State of Israel. In his fundamental manuscript "Die Lepidopteren Palästinas" and subsequent papers, AMSEL (1933, 1934, 1935) listed 1,335 Lepidoptera species including 58 species of the families that are discussed in this article. Seven of them were subsequently synonymized, four species were misidentified, and four species were recorded for the territory that is presently part of Jordan and Syria. Since AMSEL (1955), BACK (1973), HANNEMANN (1976), GOZMANY (1978, 2000, 2008) and HALPERIN & SAUTER (1992) and prior to the present study, 59 species of Microlepidoptera were recorded for Israel, including Oecophoridae (14), Autostichidae (14), Depressariidae (23), Cryptolechiidae (3) and Lecithoceridae (5).

Material and methods

This survey is based on literature data, analysis of material in several museums (see list of abbreviations below) and more recent material collected in CDC miniature light-traps within the frame of a mosquito project by the two last authors in May and June 2003 (MÜLLER *et al*., 2012). We use chorotype classification accepted for the Levant in our previous publications (KRAVCHENKO *et al*., 2007a, 2007b).

Material was identified in the Zoological Institute of the Russian Academy of Sciences in St. Petersburg. Altogether 860 specimens of the families Oecophoridae, Autostichidae, Depressariidae, Cryptolechiidae and Lecithoceridae were examined and identified. The identification was carried out using the latest keys to the fauna of Europe and the Palearctic (BACK, 1973; HANNEMANN, 1995, 1997; GOZMÁNY, 1978, 2000, 2008; HUEMER, 1998; TOKAR *et al*., 2005). Whenever necessary additional genitalia preparations were made.

Abbreviations of Museums:

LSNK - Landessammlungen für Naturkunde, Karlsruhe, Germany.
MZHF - Finnish Museum of Natural History, Helsinki, Finland.
SIZ - I.I. Schmalhausen Institute of Zoology, National Academy of Sciences, Kiev, Ukraine.
TAU - Tel Aviv University, Israel.
ZIN - Zoological Institute, Academy of Sciences, St. Petersburg, Russia.

OECOPHORIDAE
OECOPHORINAE

Dasycera intermediella Stainton, 1867. **New Record for Israel**

Material examined: 1 ♂, 1 ♀, Nanal Keziv, south-facing slope, 26-V-2003, leg. Z. Gershenson; 3 ♂♂, Meron, 600 m, 28-V-2003, leg. Z. Gershenson (ZIN).

General distribution: Turkey and Israel. Probably sub-endemic to the Levant. In Israel: Mediterranean Zone.

Biology: Unknown. Adults are on the wing from May until June.

Esperia sulphurella (Fabricius, 1775)

Material examined: 1 ♀, East Galilee, Yftach, 28-V-2003, leg. G. Müller & V. Kravchenko (TAU).

General distribution: Central and Southern Europe, Northern Africa, Turkey; introduced to the West Coast of USA (HODGES, 1974). Holarctic. In Israel: Mediterranean Zone. Coastal Plain (HALPERIN & SAUTER, 1992).

Biology: Larvae feed under the bark of old deciduous trees from summer to spring of the following year, with hibernation (HALPERIN & SAUTER, 1992; FETZ, 1994; HANNEMANN, 1997; HARPER *et al*., 2002). Adults are day active and on wing from April until June.

Epicallima einsleri (Amsel, 1934), **comb. n.**

Material examined: 1 ♂ (holotype), Jerusalem, 29-V-1930, leg. H. Amsel (LSNK); 2 ♂♂ (paratypes), Jerusalem, 1-V-1930, leg. H. Amsel (ZIN); 1 ♂, 3 ♀♀, East Galilee, Yftach, 28-V-2003, leg. G. Müller & V. Kravchenko (TAU).

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone. Jerusalem, East and Lower Galilee (AMSEL, 1934, 1935; HALPERIN & SAUTER, 1992).

Biology: Larvae feed on decaying material under the bark of *Quercus ithaburensis* (Fagaceae) and dry stems of *Vitex agnus-castus* (Verbenaceae). Adults are on the wing from May until June (HALPERIN & SAUTER, 1992).

Remarks: The species was originally described in the genus *Borkhausenia* Hübner, [1825], but its large labial palpi and long aedeagus in males and its ductus bursae with sclerotization in female (Figs. 1, 2) correspond more to the characters of genus *Epicallima* Dyar, [1903].

Epicallima formosella ([Denis & Schiffermüller], 1775)

General distribution: Central and Southern Europe, Caucasus, Egypt, Central Asia, USA. Holarctic. In Israel: Mediterranean Zone. Haifa (KALCHBERG, 1897).

Biology: Larvae feed on decaying material under the bark of different deciduous trees and on lichens from summer to spring of the following year, with hibernation. Adults are on the wing from late May until late August (LHOMME, 1935; FETZ, 1994; HANNEMANN, 1997; LVOVSKY, 2006).

Epicallima icterinella (Mann, 1867)

Material examined: 4 ♂♂, N. District, Dan, 10-11-VI-1986, leg. R. Linnavuori (ZMUH); 1 ♂, Campus of Tel Aviv University, 27-V-2003, leg. Z. Gershenson (ZIN); 5 ♂♂, Judean Hills, Jerusalem, 31-V / 6-VI-2003; 2 ♂♂, East Galilee, Yftach, 28-31-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Bulgaria, former Yugoslavia, Greece, Turkey, Syria, Lebanon and Iraq. (East-)Mediterranean. In Israel: Mediterranean Zone (TOKAR et al., 2005).

Biology: Larvae probably feed under the bark of old trees from summer to spring of the following year, with hibernation (SPULER, 1910; TOKAR *et al*., 2005). Adults are on the wing from mid-May until August.

Promalactis splendidella (Amsel, 1934), **comb. n.**

Material examined: 1 ♂ (holotype), Hedera, 15-V-1930, leg. H. Amsel (LSNK).

General distribution: Turkey and Cyprus. Probably sub-endemic to the Levant. In Israel: Mediterranean Zone. Hedera, Lower Galilee, Mt. Carmel, Samaria, Coastal Plain, Judean Desert (AMSEL, 1934; HALPERIN & SAUTER, 1992).

Biology: Larvae feed on decaying material under the bark of different deciduous trees from summer to spring of the following year, with hibernation. Adults are on the wing from May until July (HALPERIN & SAUTER, 1992).

Remarks: The species was originally described in genus *Borkhausenia* Hübner, [1825] and then transferred to genus *Epicallima* (ARENBERGER & WIMMER, 2003). However, the forewing pattern with bright orange background and 3 narrow white transversal stripes corresponds more to genus *Promalactis* Meyrick, 1908.

Denisia augustella (Hübner, 1796)

General distribution: Central and Southern Europe, Cyprus, Caucasus. (East-) Mediterranean. In Israel: Mediterranean Zone. Hebron (STAINTON, 1867).

Biology: Larvae feed on decaying material under the bark of different deciduous trees and on

lichens from summer to spring of the following year, with hibernation. Adults are on the wing from the end of April until July (LHOMME, 1935; HANNEMANN, 1997; LVOVSKY, 2006).

Batia internella Jäckh, 1972. **New Record for Israel**

= *Borkhausenia lambdella* Jäckh, 1942 *nec* Donovan, 1793

Material examined: 1 ♂, 2 ♀♀, Judean Hills, Jerusalem, 31-V / 6-VI-2003; 1 ♀, East Galilee, Yftach, 28-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Western Europe from southern Norway and Sweden to Italy, Greece. Probably (East-) Mediterranean. In Israel: Mediterranean Zone.

Biology: Larvae live under a fine web covered with frass and pieces of lichens on the trunks of pine (*Pinus* sp.) and larch (*Larix* sp.) trees from August to June of the following year, with hibernation. Adults are on the wing from the end of May until early August, resting on the trunks of conifers in daytime (JÄCKH, 1972; HARPER *et al*., 2002; TOKAR *et al*., 2005).

Batia lambdella (Donovan, 1793)

= *Plutella metznerella* Treitschke, 1835

General distribution: Central and Southern Europe, Northern Africa, Turkey. (Circum-) Mediterranean. In Israel: Mediterranean Zone (HARPER *et al*., 2002).

Biology: Larvae live under the dead bark of different deciduous trees and bushes, particularly *Ulex* L. (Fabaceae) from August until June of the following year, with hibernation. Adults are on the wing from June until mid-September (FETZ, 1994; HANNEMANN, 1997; HARPER *et al*., 2002; TOKAR *et al*., 2005).

Batia lunaris (Haworth, 1828)

= *Lampros clavella* Herrich-Schäffer, 1854.

Material examined: 12 ♂♂, 2 ♀♀, Judean Hills, Jerusalem, 31-V / 6-VI-2003; 10 ♂♂, 2 ♀♀, East Galilee, Yftach, 28-V-2003; 1 ♂, Coastal Plain, Zichron Yaakov, 12-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Central and Southern Europe, Northern Africa, Turkey; introduced to the western coast of USA (HODGES, 1974). Holarctic. In Israel: Mediterranean Zone. Samaria (HALPERIN & SAUTER, 1992).

Biology: Larvae live on lichens on trees and under the dead bark of different deciduous trees from August to May of the following year, with hibernation. Adults are on the wing from mid-May until mid-August (HALPERIN & SAUTER, 1992; FETZ, 1994; HANNEMANN, 1997; HARPER *et al*., 2002; TOKAR *et al*., 2005).

Carcina quercana (Fabricius, 1775). **New Record for Israel**

= *Tortrix fagana* [Denis & Schiffermûller], 1775.

Material examined: 1 ♂, 1 ♀, Judean Hills, Jerusalem, 6-VI-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Central and Southern Europe, Northern Africa, Turkey, Israel, Caucasus; introduced to Canada (HODGES, 1974). Holarctic. In Israel: Mediterranean Zone.

Biology: Larvae feed on the underside of leaves of many deciduous trees from August to June of the following year, with hibernation. Adults are on the wing from June until mid-September (FETZ, 1994; HANNEMANN, 1997; HARPER *et al*., 2002; TOKAR *et al*., 2005).

PLEUROTINAE

Pleurota aristella (Linnaeus, 1767)

General distribution: Southern and parts of Central Europe, Caucasus, Turkey, Jordan, Central

Asia. (East-)Mediterranean. In Israel: Mediterranean Zone. Ain Karim (Ein Karem) near Jerusalem, Kasr el Jehud (AMSEL, 1935).

Biology: Larvae feed in silken tubes on leaves at the base of various low plants: *Salvia* L., *Thymus* L. (Lamiaceae), *Achillea* L., *Senecio* L. (Asteraceae), *Anthyllis* L. (Fabaceae), etc., from April until early June. Adults are on the wing from late March until September (AMSEL, 1955; FETZ, 1994; HARPER *et al*., 2002; TOKAR *et al*., 2005).

Pleurota elegans Stainton,1867

= *Pleurota tesserapunctella* Amsel, 1933 (nomen nudum).

= *Pleurota taepperi* Amsel, 1934.

Material examined: 1 ♂, holotype of *Pleurota taepperi*, Tabgha, Tiberias, III-1930, leg. H. Amsel; 4 ♂♂, 4 ♀♀, same label, and Palästina, Jericho, 22-II-1931, leg. W. Einsler (LSNK); 2 ♂♂, paratypes, Tabgha, Tiberias, III-1930, leg. H. Amsel (DEI); 3 ♂♂, 1 ♀, Judean Hills, Jerusalem, 31-V / 6-VI-2003; 9 ♂♂, 2 ♀♀, East Galilee, Yftach, 28-31-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Recorded only in Israel and Jordan. Probably endemic to the Levant. In Israel: Mediterranean Zone and oases in Saharo-Sindian Zone. Haifa, Jericho, Tabgha, Jerusalem, Ramallah, Kasr el Jehud (AMSEL, 1934, 1935).

Biology unknown: Adults are on the wing from the end of February until early June. (AMSEL, 1935; BACK, 1973).

Pleurota platyrrhoa Meyrick, 1923

Material examined: 1 ♀, Jerusalem, 18-VI-1930, leg. H. Amsel (LSNK).

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone. Jerusalem (MEYRICK, 1923).

Biology unknown: Adults were so far only observed in mid-May (MEYRICK, 1923, BACK, 1973).

Pleurota proteella Staudinger, 1879

Material examined: 1 ♂, Ain Karim, Jerusalem, 18-V-1930, leg. H. Amsel (DEI).

General distribution: recorded only in Israel and Lebanon. Probably endemic to the Levant. In Israel: Mediterranean Zone. Ain Karim near Jerusalem (AMSEL, 1935).

Biology unknown: Adults are on the wing from May until early June (AMSEL, 1935).

Pleurota sparella (Lederer, 1855)

= *Pleurota karmeliella* Amsel, 1934.

Material examined: 4 ♂♂, paratypes of *Pleurota karmeliella*, Karmel, Haifa, 7-V-1930, leg. H. Amsel (LSNK); 1 ♂, paratype, same label (DEI); 1 ♂, Coastal Plain, Zichron Yaakov, 12-V-2003; 1 ♂, 10 ♀♀, Judean Hills, Jerusalem, V-2003; 38 ♀♀, East Galilee, Yftach, 28-31-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Turkey, Lebanon, Syria and Jordan. Probably sub-endemic to the Levant. In Israel: Mediterranean Zone. Karmel near Haifa, Ain Karim near Jerusalem, Kiriath Anavim (AMSEL, 1934, 1935).

Biology unknown: Adults are on the wing from early April until the end of June (Back, 1973).

Pleurota tetragyra Meyrick, 1928

General distribution: recorded only in Israel and Jordan. Probably endemic to the Levant. In Israel: Mediterranean Zone. Jerusalem (MEYRICK, 1928).

Biology unknown: Adults are on the wing from March until April (Meyrick, 1928; Back, 1973).

AUTOSTICHIDAE
SYMMOCINAE

Oegoconia deauratella (Herrich-Schäffer, 1854). **New Record for Israel**
= *Oegoconia bacescui* Popescu-Gorj & Căpuşe, 1965

Material examined: 37 ♂♂, East Galilee, Yftach, 28-31-V-2003; 3 ♂♂, Judean Hills, Jerusalem, V-2003; 3 ♂♂, Judean Hills, Jerusalem, Kastel, 6-VI-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Central and Southern Europe, Crimea, Middle Volga region, Caucasus, Turkey and Iran. (East-) Mediterranean. In Israel: Mediterranean Zone.

Biology unknown: Adults are on the wing from May until September (GOZMÁNY, 2008).

Oegoconia caradjai Popescu-Gorj & Căpuşe, 1965. **New Record for Israel**

Material examined: 2 ♂♂, Coastal Plain, Hadera, 12-V-2003; 28 ♂♂, East Galilee, Yftach, 28-31-V-2003, 10 ♂♂, Judean Hills, Jerusalem, V-2003; 18 ♂♂, Judean Hills, Jerusalem, Kastel, 6-VI-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN); 1 ♂, Jaffa, Abu-Kabir, 14-IV-1966; 1 ♂, Jaffa, 20-V-1966, leg. V. Trjapitsyn (ZIN).

General distribution: Central and Southern Europe, Northern Africa, Turkey, Lebanon, Israel, Caucasus, Iran and Central Asia. (East-) Mediterranean. In Israel: Mediterranean Zone.

Biology: Larvae in spinnings amongst dead leaves of cultivated *Juniperus* L. (Cupressaceae) and *Quercus* L. (Fagaceae) (Heckford, 1999). Adults are on the wing from June until October (GOZMÁNY, 2008).

Remarks: The European species *Oegoconia quadripuncta* (Haworth, 1828) mentioned by Amsel for Israel (1933, 1935) can be distinguished from *O. caradjai* only by genitalia. However, these references were not checked based on the study of male genitalia (GOZMÁNY, 2008), and most probably should prove to be misidentifications, since *O. quadripuncta* seems to be restricted to Western Europe, from Spain to Great Britain with its eastern limits in Germany.

Apatema mediopallidum Walsingham, 1900

Material examined: 55 ♂♂, 3 ♀♀, East Galilee, Yftach, 28-31-V-2003; 3 ♂♂, Judean Hills, Jerusalem, V-2003; 8 ♂♂, Judean Hills, Jerusalem, Kastel, 6-VI-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Southern Europe, Northern Africa, Turkey, Syria, Jordan, Iran and Afghanistan. (East-) Mediterranean. In Israel: Mediterranean Zone. Qiryat Anavim, Dagania, Jordan-Tal (GOZMÁNY, 2008).

Biology unknown: Adults are on the wing from March until October (GOZMÁNY, 2008).

Apatema sp.

Material examined: 3 ♂♂, Coastal Plain, Hadera, 12-V-2003; 1 ♂, East Galilee, Yftach, 28-V-2003; 7 ♂♂, Judean Hills, Jerusalem, V-2003; 3 ♂♂, 3 ♀♀, Judean Hills, Jerusalem, Kastel, 6-VI-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN); 1 ♂, Jaffa, Abu-Kabir, 6-VI-1966, leg. V. Trjapitsyn (ZIN).

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone.

Biology unknown: Adults are on the wing from May until June.

Remarks: Differs from *A. mediopallidum* by slightly bigger size, dark coloration of the head, and shape of the sacculus in the male genitalia. No other similar species is known in the Palaearctic region (see GOZMÁNY, 2008).

Apiletria luella Lederer, 1855

General distribution: Northern Africa, Cyprus, Turkey, Syria, Lebanon and Jordan. Probably

sub-endemic to the Levant. In Israel: Mediterranean Zone. Hebron, Hedera, Ain Karim, Abu Gosh, Haifa (AMSEL, 1935; GOZMÁNY, 1965, 2008).

Biology unknown: Adults are on the wing from April until early July.

Apiletria nervosa Stainton, 1867

General distribution: Libya, Jordan and Iraq. (South-)Mediterranean. In Israel: Mediterranean Zone. Haifa (GOZMÁNY, 1965, 2008).

Biology unknown: Adults were so far only observed during April (STAINTON, 1867).

Apiletria purulentella Stainton, 1867

Material examined: 2 ♂♂, 3 ♀♀, Judean Hills, Jerusalem, V-2003; 1 ♂, 3 ♀♀, East Galilee, Yftach, 28-31-V-2003; 1 ♀, Dead Sea area, Jericho-Kalia, V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Turkey, Syria, Lebanon, Jordan, Iraq and Iran. Probably sub-endemic to the Levant. In Israel: Mediterranean Zone and oases in Saharo-Sindian Zone. Jerusalem, Haifa, Jericho, Tabgha (GOZMÁNY, 2008).

Biology unknown: Adults are on the wing from April until mid-June (AMSEL, 1935; GOZMÁNY, 1965, 2008).

Parasymmoca latiusculella (Stainton, 1867)

Material examined: 1 ♂, Judean Hills, Jerusalem, V-2003, leg. G. Müller & V. Kravchenko (TAU).

General distribution: Turkey, Syria and Lebanon. Probably sub-endemic to the Levant. In Israel: Mediterranean Zone. Jerusalem, Qiryat Anavim (GOZMÁNY, 2008).

Biology unknown: Adults are on the wing from late March until June (AMSEL, 1935; GOZMÁNY, 2008).

Symmoca saracenica Gozmány, 2008

General distribution: recorded only in Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone. Tel-Aviv, Jaffa (GOZMÁNY, 2008).

Biology unknown.

Symmoca sparsella De Joannis, 1891

Material examined: 53 ♂♂ and ♀♀, Judean Hills, Jerusalem, 31-V / 6-VI-2003; 72 ♂♂ and ♀♀, East Galilee, Yftach, 28-31-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Syria, Lebanon, Jordan, Iraq and Egypt. Probably endemic to the Levant. In Israel: Mediterranean Zone. Tel-Aviv, Jerusalem, Ain Karim, Genezareth, Tabgha, Upper Galilee, Haifa, Artas, Wadi el Kelt (GOZMÁNY, 2008).

Biology unknown: Adults are on the wing from May until October, often found on the trunks of apple trees (AMSEL, 1935; GOZMÁNY, 2008).

Dysspastus djinn Gozmány, 1963

General distribution: Recorded only in Lebanon, Jordan and Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone and oases in Saharo-Sindian Zone. Tel-Aviv, Ramallah, Jerusalem, Genezareth, Beth Gordon, Jericho, Judea (GOZMÁNY, 2008).

Biology: Larvae live on dry stems of *Pinus halepensis* (Pinaceae) and *Tamarix aphylla* (Tamaricaceae). Adults are on the wing from April until June and from August until November (HALPERIN & SAUTER, 1992; GOZMÁNY, 2008).

Dysspastus hebraicus Gozmány, 2008.

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone. Javne (GOZMÁNY, 2008).

Biology: Larvae live on dry stems of *Schinus terebinthifolius* (Anacardiaceae). Adults are on the wing in June and from August until September (GOZMÁNY, 2008).

Chionellidea leucella (Amsel, 1934)

General distribution: Recorded only in Israel and Jordan. Probably endemic to the Levant. In Israel: oases in Saharo-Sindian Zone. Jericho, Georgscloster, Jordan bridge (AMSEL, 1934; GOZMÁNY, 2008).

Biology unknown: Adults are on the wing from March until May.

HOLCOPOGONINAE

Holcopogon croesus Gozmány, 2000

General distribution: Recorded only in Israel and Lebanon. Probably endemic to the Levant. In Israel: Mediterranean Zone. Hedera (GOZMÁNY, 2000).

Biology unknown. Adults are on the wing from May until June.

Charadraula parcella (Lederer, 1855)

= *Charadraula chersopsamma* Meyrick, 1931

Material examined: 1 ♂, Judean Hills, Jerusalem, V-2003; 1 ♂, East Galilee, Yftach, 28-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Syria, Lebanon and Egypt. Probably sub-endemic to the Levant. In Israel: Mediterranean Zone. Jerusalem, Mt. Carmel, Haifa (GOZMÁNY, 2000).

Biology unknown. Adults are on the wing from June until July and from September until October (GOZMÁNY, 2000).

Turatia psammella (Amsel, 1934)

General distribution: Recorded only in Israel and Egypt. Probably sub-endemic to the Levant. In Israel: Mediterranean Zone. Tel-Aviv (GOZMÁNY, 2000).

Biology unknown. Adults were so far only observed during May on coastal sand dunes (AMSEL, 1934; GOZMÁNY, 2000).

DEPRESSARIIDAE

Exaeretia ledereri (Zeller, 1854)

= *Depressaria xyleuta* Meyrick, 1913

= *Depressaria leviella* Amsel, 1934

Material examined: 1 ♂, holotype of *D. leviella*, Palästina expedition, Georgskloster, Wadi el Kelt, 15-IV-1930, leg. H. Amsel; 2 ♂♂, paratypes, Georgskloster, Jericho, 16-XI-1931, leg. W. Einsler (LSNK).

General distribution: Turkey, Caucasus and Central Asia. (East-)Mediterranean. In Israel: Mediterranean Zone and oases in Saharo-Sindian Zone. Jericho (AMSEL, 1934, 1935), Ben Schemen (BODENHEIMER, 1930).

Biology unknown. Adults are on the wing from mid-April until mid-November (AMSEL, 1935; LVOVSKY, 2006).

Exaeretia lutosella (Herrich-Schäffer, 1854)

Material examined: 1 ♀, Dead Sea area, Jericho-Kalia, V-2003, leg. G. Müller & V. Kravchenko (TAU).

General distribution: Southern Europe, Morocco, Turkey and Syria. (Circum-) Mediterranean. In Israel: Mediterranean Zone and oases in Saharo-Sindian Zone. Haifa, Jerusalem (CARADJA, 1920) and Jericho-Kalia.

Biology: Larvae feed on leaves of *Ruta* L. (Rutaceae) from March to April. Adults are on the wing from mid-April until mid-September (LHOMME, 1935; FETZ, 1994).

Agonopterix adspersella (Kollar, 1832)

= *Depressaria amanthicella* Heinemann, 1870

= *Depressaria karmeliella* Amsel, 1934

= *Depressaria rubripunctella* Amsel, 1934

Material examined: 3 ♂♂, Judean Hills, Jerusalem, V-2003; 2 ♀♀, East Galilee, Yftach, 28-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Central and Southern Europe, Caucasus, Turkey, Iran and Central Asia. (East-) Mediterranean. In Israel: Mediterranean Zone. Karmel near Haifa, Ain Karim near Jerusalem (AMSEL, 1934).

Biology: Larvae feed on leaves of *Bupleurum* L., *Meum* L., *Athamanta* L., *Seseli* L. (Apiaceae) from April to mid-June. Adults are on the wing from June until spring of the following year (SPULER, 1910; LHOMME, 1935; LVOVSKY, 2006).

Agonopterix atomella ([Denis & Schiffermüller], 1775)

General distribution: Central and Southern Europe, Northern Africa, Turkey and Syria. (Circum-) Mediterranean. In Israel: Mediterranean Zone. Haifa (KALCHBERG, 1897), inhabits mountains (AMSEL, 1933).

Biology: Larvae feed on leaves of *Genista* L., *Cytisus* L., *Sarothamnus* Wimm. (Fabaceae) from May to July. Adults are on the wing from mid-July until May of the following year (FETZ, 1994; HANNEMANN, 1995; LVOVSKY, 2006).

Agonopterix comitella (Lederer, 1855)

General distribution: Greece, Turkey, Syria, Lebanon and Iran. (East-) Mediterranean. In Israel: Mediterranean Zone. Kiriath Anavim 20 km W Jerusalem (AMSEL, 1935).

Biology: Larvae feed on leaves of *Anagyris foetida* (Fabaceae) from March to April. Adults are on the wing from May until July (AMSEL, 1935; ELLISON, WILTSHIRE, 1939).

Agonopterix ferulae (Zeller, 1847). **New Record for Israel**

Material examined: 1 ♀, East Galilee, Yftach, 28-V-2003, leg. G. Müller & V. Kravchenko (TAU).

General distribution: Southern Europe and Morocco. (Circum-) Mediterranean. In Israel: Mediterranean Zone.

Biology: Larvae feed on leaves of *Ferula communis* L. (Apiaceae) from February to March. Adults are on the wing from May until August (SPULER, 1910; LHOMME, 1935; GOZMÁNY, 1958).

Agonopterix irrorata (Staudinger, 1870)

General distribution: Southern Europe, Turkey, Syria and Lebanon. (East-) Mediterranean. In Israel: Mediterranean Zone. Ain Karim 10 km W Jerusalem (AMSEL, 1935).

Biology: Larvae feed on leaves of *Anthriscus silvestris* Hoffm. (Apiaceae) from January to June. Adults are on the wing from April until September (AMSEL, 1935; LHOMME, 1935; ELLISON, WILTSHIRE, 1939; LVOVSKY, 2006).

Agonopterix kaekeritziana (Linnaeus, 1767). **New Record for Israel**

= *Tinea liturella* [Denis & Schiffermüller], 1775.

= *Tinea flavella* Hübner, 1796.

Material examined: 4 ♂♂, 1 ♀, East Galilee, Yftach, 28-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Europe, Russia, Turkey, Iran and Mongolia. Palearctic. In Israel: Mediterranean Zone.

Biology: Larvae feed on the leaves of *Centaurea* L., *Cirsium* L., *Saussurea* DC., *Scabiosa* L., *Knautia* L. (Asteraceae) from May to June. Adults are on the wing from late June until May of the following year (FETZ, 1994; HANNEMANN, 1995; HARPER *et al*., 2002; LVOVSKY, 2006).

Agonopterix liodryas (Meyrick, 1921)

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone (Nazareth).

Biology unknown: Only one female was collected 2-IV-1920 (MEYRICK, 1921).

Agonopterix remota (Meyrick, 1921)

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone. Haifa (MEYRICK, 1921; AMSEL, 1933).

Biology unknown: Only one male was collected 21-I-1920 (MEYRICK, 1921).

Agonopterix rutana (Fabricius, 1794)

General distribution: Southern Europe, Northern Africa, Caucasus, Turkey and Central Asia. (East-)Mediterranean. In Israel: Mediterranean Zone. Upper Galilee, Coastal Plain, Judean Mts. (HALPERIN & SAUTER, 1992).

Biology: Larvae feed on leaves of *Ruta* L. (Rutaceae) from January to July. Adults are on the wing from mid-March until September, probably in 2 generations (STAINTON, 1870; HALPERIN & SAUTER, 1992; FETZ, 1994).

Agonopterix scopariella (Heinemann, 1870)

Material examined: 1 ♂, Judean Hills, Jerusalem, 6-VI-2003, leg. G. Müller & V. Kravchenko (TAU).

General distribution: Central and Southern Europe, Turkey and Lebanon. Mediterranean. In Israel: Mediterranean Zone. Jerusalem (AMSEL, 1935).

Biology: Larvae feed on leaves of *Sarothamnus* Wimm., *Cytisus* L., *Genista* L., *Lupinus* L., *Calicotome* Link. (Fabaceae) from April to mid-July. Adults are on the wing from May until the spring of the following year (LHOMME, 1935; FETZ, 1994, HANNEMANN, 1995; HARPER *et al*., 2002).

Agonopterix squamosa (Mann, 1864)

General distribution: Southern Europe, Turkey and Lebanon. Mediterranean. In Israel: Mediterranean Zone. Abu Gosch near Kiriath Anavim (AMSEL, 1935).

Biology unknown. Adults are on the wing from the end of June until April of the following year (SPULER, 1910; AMSEL, 1935; LHOMME, 1935).

Agonopterix straminella (Staudinger, 1859)

General distribution: Southern Europe, Northern Africa, Jordan and Iran. (Circum-) Mediterranean. In Israel: Mediterranean Zone. Kiriath Anavim 20 km W Jerusalem (AMSEL, 1935).

Biology: Larvae feed in the stems of *Echinops* L. and *Carduus* L. (Asteraceae) in March. Adults are on the wing from April until June (SPULER, 1910; AMSEL, 1935; LHOMME, 1935).

Agonopterix subpropinquella (Stainton, 1849)

= *Depressaria rhodochrella* Herrich-Schäffer, 1854

= *Depressaria keltella* Amsel, 1935

Material examined: 1 ♂, holotype of *Depressaria keltella*, Palästina, Jericho, ex larva on *Cirsium*, moth 2-V-1930, H. Amsel (LSNK).

General distribution: Central and Southern Europe, Northern Africa, Caucasus, Turkey, Syria, Lebanon and Iran. (Circum-) Mediterranean. In Israel: Mediterranean Zone and oases in Saharo-Sindian Zone. Jerusalem, Jericho, Tabgha (AMSEL, 1935).

Biology: Larvae feed on leaves of *Cirsium* L., *Centaurea* L., *Carduus* L., *Onopordum* L., *Arctium* L., *Cynara* L. (Asteraceae) from May to the beginning of July. Adults are on the wing from July until the end of spring of the following year (LHOMME, 1935; FETZ, 1994; HANNEMANN, 1995; LVOVSKY, 2006).

Agonopterix tabghaella (Amsel, 1934)

Material examined: 1 ♀, holotype, Tabgha, Tiberias, 1-V-1930, leg. H. Amsel (LSNK).

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone. Tabgha (AMSEL, 1934).

Biology: The only specimen was bred from larva on *Carduus* L. (Asteraceae). (AMSEL, 1935).

Agonopterix vasta (Amsel, 1934)

Material examined: 1 ♀, holotype, Palästina, Jericho, 28-XII-1930, leg. H. Amsel (LSNK).

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: oases in Saharo-Sindian Zone. Jericho.

Biology unknown. Only one specimen was collected (AMSEL, 1934, 1935).

Depressaria chaerophylli Zeller, 1839

General distribution: Central and Southern Europe, Libya, Caucasus and Turkey. Mediterranean. In Israel: Mediterranean Zone. Nazareth (BODENHEIMER, 1930).

Biology: Larvae feed in inflorescence (sometimes on leaves) of *Chaerophyllum* L., *Anthriscus* Hoffm., *Athamanta* L. (Apiaceae) from June to July. Adults are on the wing from mid-July until the end of spring of the following year (FETZ, 1994; HANNEMANN, 1995; LVOVSKY, 2006).

Depressaria chlorothorax Meyrick, 1921

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone. Nzareth (MEYRICK, 1921).

Biology unknown. Only one female was collected 15-II-1920 (MEYRICK, 1921).

Depressaria corticinella Zeller, 1854

General distribution: Southern Europe and Turkey. (East-)Mediterranean. In Israel: Mediterranean Zone. Ain Karim 10 km W Jerusalem (AMSEL, 1935).

Biology unknown. Adults are on the wing from May until July (AMSEL, 1935; GOZMÁNY, 1958).

Depressaria depressana (Fabricius, 1775)

General distribution: Central and Southern Europe, Northern Africa, Caucasus, Middle East, Central Asia and Southern Siberia. Palaearctic. In Israel: Mediterranean Zone and oases in Saharo-Sindian Zone. Tel-Aviv, Jericho (AMSEL, 1935).

Biology: Larvae feed in inflorescence (sometimes on leaves) of *Pimpinella* L., *Peucedanum* L., *Daucus* L. and other Apiaceae from June until July. Adults are on the wing from July until the end of spring of the following year (FETZ, 1994; HANNEMANN, 1995; LVOVSKY, 2006).

Depressaria floridella Mann, 1864

General distribution: Greece and Turkey. (East-) Mediterranean. In Israel: Mediterranean Zone. Haifa (KALCHBERG, 1897), in mountains (AMSEL, 1933).

Biology unknown. Adults were so far only observed in July.

Depressaria marcella Rebel, 1901

= *Depressaria cuprinella* Walsingham, 1907

Material examined: 1 ♀, Jerusalem, 2-V-1930, leg. H. Amsel (LSNK).

General distribution: Southern Europe, Northern Africa, Caucasus, Turkey, Syria and Iran. (Circum-)Mediterranean. In Israel: Mediterranean Zone. Haifa, mountains near Jerusalem (KALCHBERG, 1897; AMSEL, 1933).

Biology: Larvae feed in inflorescence of *Daucus carota* L. (Apiaceae) during June. Adults are on the wing from July until spring of the following year (LHOMME, 1935; LVOVSKY, 2006).

Depressaria ruticola Christoph, 1873

Material examined: 1 ♀, Georgskloster (Jericho), ex larva on *Haplophyllum*, 18-V-1930, leg. H. Amsel (LSNK).

General distribution: Northern Africa, Iran and Central Asia. (East-) Mediterranean. In Israel: oases in Saharo-Sindian Zone. Jericho (AMSEL, 1935).

Biology: Larvae feed on leaves of *Ruta* L. (Rutaceae) and *Haplophillum* Juss. (Tetradiclidaceae) from April to May. Adults are on the wing from May until spring of the following year (AMSEL, 1935; LVOVSKY, 2006).

Depressaria tenebricosa Zeller, 1854

= *Depressaria albiocellata* Staudinger, 1870.

= *Depressaria amblyopa* Meyrick, 1921.

Material examined: 1 ♂, Kiriath Anavim 20 km W Jerusalem, 22-IV-1930, leg. H. Amsel (DEI); 1 ♀, same label (LSNK); 1 male, East Galilee, Yftach, 28-V-2003, leg. G. Müller & V. Kravchenko (TAU).

General distribution: Southern Europe, Turkey, Syria, Jordan and Iran. (East-) Mediterranean. In Israel: Mediterranean Zone. Haifa (KALCHBERG, 1897; MEYRICK, 1921).

Biology: Unknown. Adults are on the wing all year around (SPULER, 1910; MEYRICK, 1921; AMSEL, 1935).

CRYPTOLECHIIDAE

Orophia imbutella (Christoph, 1888)

General distribution: Georgia and Turkey. (East-) Mediterranean. In Israel: Jerusalem (CARADJA, 1920).

Biology unknown: Adults are on the wing from end of May until July.

Zizyphia zizyphella Amsel, 1934

Material examined: 1 ♂, holotype, Jericho, 28-IV-1930, leg. H. Amsel; 3 ♂♂, 1 ♀, paratypes, Jericho, 28-IV / 4-V-1930, leg. H. Amsel (LSNK); 3 ♂♂, 1 ♀, Jericho, 30-IV-1930, leg. H. Amsel (ZIN).

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: oases in Saharo-Sindian Zone. Jericho.

Biology: Larvae feed on leaves of *Ziziphus spinachristi* Willd. (Rhamnaceae). Adults are on the wing from end of April until May (AMSEL, 1935).

Cacochroa permixtella (Herrich-Schäffer, 1854)

General distribution: Southern Europe and Turkey. (East-) Mediterranean. In Israel: Mediterranean Zone. Jerusalem (AMSEL, 1935).

Biology: Larvae are leaf-miners in *Phillyrea* L. (Oleaceae) during autumm, and after hibernation feed on spun leaves. Adults are on the wing from end of May until August (AMSEL, 1935; FETZ, 1994; TOKAR *et al*., 2005).

LECITHOCERIDAE
LECITHOCERINAE

Homaloxestis briantiella (Turati, 1879)

Material examined: 5 ♂♂, East Galilee, Yftach, 28-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Southern Europe, Northern Africa and Turkey. (Circum-) Mediterranean. In Israel: Mediterranean Zone. Hedera (AMSEL, 1935).

Biology: Larvae feed on plant debris from August to October. Adults are on the wing from late May until November, in 1-2 generations (GOZMÁNY, 1978).

Lecithocera anatolica Gozmány, 1978 **New Record for Israel**

Material examined: 21 ♂♂, 1 ♀, East Galilee, Yftach, 28-31-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Israel and Turkey. Probably sub-endemic to the Levant. In Israel: Mediterranean Zone.

Biology: Unknown. Adults are on the wing during May.

Lecithocera syriella Gozmány, 1978

General distribution: Turkey and Syria. Probably sub-endemic to the Levant. In Israel: Mediterranean Zone (GOZMÁNY, 1978).

Biology: Unknown. Adults are on the wing from June until August.

Nyctocyrma fraudatrix Gozmány, 1978

General distribution: Recorded only in Israel. Probably endemic to the Levant. In Israel: Mediterranean Zone. Haifa.

Biology: Unknown. Adults are on the wing during May.

Remarks: According to GOZMÁNY (1978), one male of this species was erroneously determined as *Lecithocera luticornella* (Zeller, 1839) by AMSEL (1935).

ODITINAE

Odites kollarella (Costa, 1832)

= *Lita luteella* Duponchel, 1840

Material examined: 114 ♂♂ and ♀♀, Judean Hills, Jerusalem, 31-V / 6-VI-2003; 301 ♂♂ and ♀♀, East Galilee, Yftach, 28-31-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Southern Europe, Caucasus, Turkey and Turkmenistan. (East-) Mediterranean. In Israel: Mediterranean Zone. East Galilee, Ain Karim near Jerusalem (AMSEL, 1935).

Biology: Larvae feed on interlaced leaves of *Salvia officinalis* L. (Lamiaceae) during May. Adults are on the wing from May until August (SPULER, 1910; AMSEL, 1935; LHOMME, 1935; GOZMÁNY, 1958; LVOVSKY, 1996).

Odites ternatella (Staudinger, 1859)

Material examined: 3 ♂♂, 4 ♀♀, East Galilee, Yftach, 28-V-2003, leg. G. Müller & V. Kravchenko (TAU, ZIN).

General distribution: Mauritania, Portugal, Spain, Italy and Cyprus. (Circum-) Mediterranean. In Israel: Mediterranean Zone (AMSEL, 1933).

Biology: Unknown. Adults are on the wing from late May until July (SPULER, 1910; LVOVSKY, 1996).

Discussion

The Oecophoridae are distributed worldwide, in the Levant (Lebanon, Syria, Israel, Jordan) 32 species are known altogether (AMSEL, 1933, 1934, 1935, 1955; ZERNY, 1934; OSTHELDER, 1936; HARIRI, 1971; BACK, 1973; HALPERIN, SAUTER, 1992; HANNEMANN, 1997), of which 17 species are known from Israel including three species recorded for Israel for the first time: *Dasycera intermediella*, *Batia internella* and *Carcina quercana*. Most species of the Oecophoridae are associated with forest habitats, but the subfamily Pleurotinae (6 species in Israel) occurs mainly in open and xerophilous habitats.

The Autostichidae are represented by 31 species in the Levant (AMSEL, 1933, 1935; HARIRI, 1971; GOZMÁNY, 2000, 2008), among which 16 are found in Israel including 2 species recorded for Israel for the first time: *Oegoconia deauratella* and *O. caradjai*. The larvae of the Autostichidae prefer xerophytic habitats.

Species of the family Depressariidae are distributed mainly in the forest zone of the northern hemisphere, penetrating far to the south in mesophilic, especially intrazonal biotopes. In Israel 25 species of this family have been recorded so far including 2 species recorded for Israel for the first time: *Agonopterix ferulae* and *A. kaekeritziana*. 10 more species are known from the other parts of Levant (CARADJA, 1920; AMSEL, 1933, 1934, 1935; OSTHELDER, 1936; ELLISON, WILTSHIRE, 1939; HARIRI, 1971; HANNEMANN, 1976, 1995; HALPERIN & SAUTER, 1992).

Only four species of the poorly known family Cryptolechiidae are know from the Levant (CARADJA, 1920; AMSEL, 1933, 1935; SATTLER, 1968). Three were found in Israel by CARADJA (1920) and AMSEL (1933, 1935).

Species of the family Lecithoceridae are common in subtropical and tropical forests of the Old World. Eight species of this family are recorded from the Levant (GOZMÁNY, 1978). In Israel the Lecithoceridae are represented by six species, including *Lecithocera anatolica* recorded for Israel for the first time.

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A. L. L.
Zoological Institute
Russian Academy of Sciences
1 Universitetskaya Emb.
RF-St. Petersburg 199034
RUSIA / *RUSSIA*
E-mail: alexander.lvovsky@zin.ru
https://orcid.org/0000-0003-3165-6654

S. Y. S.
Zoological Institute
Russian Academy of Sciences
1 Universitetskaya Emb.
RF-St. Petersburg 199034
RUSIA / *RUSSIA*
E-mail: sergey.sinev@zin.ru
https://orcid.org/0000-0002-2467-5403

*V. D. K.
Department of Zoology
Faculty of Life Sciences
Tel Aviv University
Tel Aviv 69978
ISRAEL / *ISRAEL*
E-mail: vasiliy@post.tau.ac.il
https://orcid.org/0000-0003-4523-0291

G. C. M.
Department of Parasitology
Kuvin Centre for the Study of Infectious and Tropical Diseases
The Hebrew University - Hadassah Medical School
Jerusalem 91120
ISRAEL / *ISRAEL*
E-mail: guntercmuller@hotmail.com
https://orcid.org/0000-0002-7024-0179

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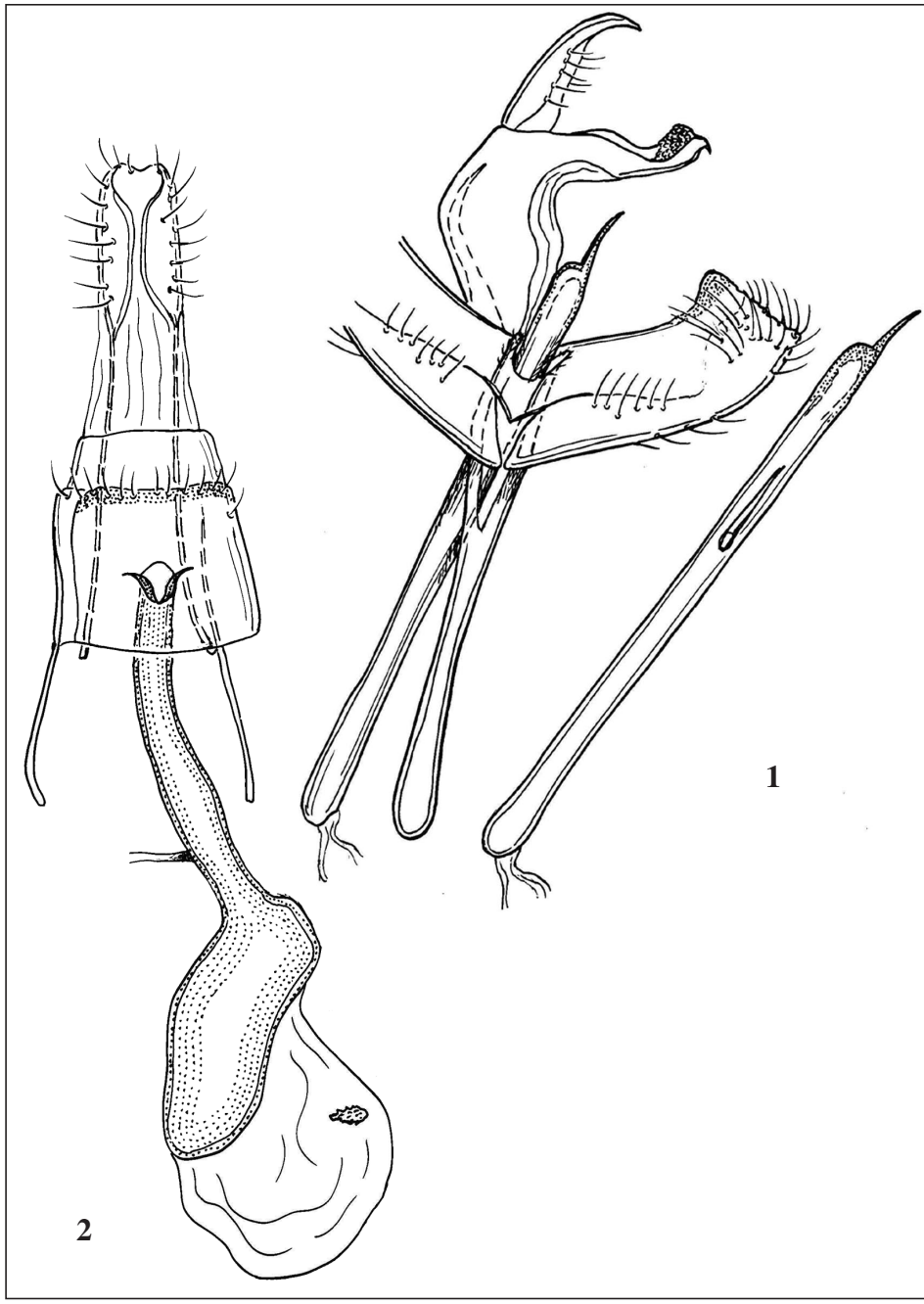

Figs. 1-2.– *Epicallima einsleri* (Amsel). **1.** Male genitalia, paratype, **2.** Female genitalia, paratype.