

Cossidae of Israel

by

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received 13.XI.2010

Abstract: An annotated list of the Cossidae (Lepidoptera) of Israel is provided. The checklist includes 24 species.

The examination of Asian carpenter moths (Cossidae) in the museums of Germany involved abundant collections from Israel preserved mostly in the THOMAS WITT Museum, Munich (MWM). Hitherto data on Cossidae of Israel were mentioned only in few papers (KALCHBERG, 1897; STAUDINGER, 1897; PÜNGELER, 1902; GAUCKLER, 1906; AMSEL, 1933; PLAUT, 1965, 1973). Hereby I communicate data on the distribution in Israel of 24 species, reporting 10 of them for the first time.

Subfamily *Cossinae* LEACH, [1815] 1830

1. *Paropota paradoxa* (HERRICH-SCHÄFFER, [1851])

Type locality: Smyrna [Izmir, Turkey].

General distribution pattern: Mediterranean-Iranian. Cyprus, Rhodos, Lebanon, Syria, Egypt, Saudi Arabia, Israel, Iran, Jordan. Distribution in the Levant: Israel, Syria, Cyprus and Jordan.

First record for Israel: KALCHBERG (1897).

Distribution in Israel: 5♂♂, 1♀, 15 km S of Tel Aviv, 100 m, Dec. 1999, leg. LI & MÜLLER; 7♂♂, 1♀, Central coastal plain south of Haifa, 25 m, end of Feb. 2001, leg. LI & MÜLLER, 5♂♂, 1♀, Gaza strip, 100 m, M. Dec. 1999, leg. LI & MÜLLER; 6♂♂, Hadassah, En Keren, 10 km W of Jerusalem, 800 m, M. Dec. 2000, leg. LI & MÜLLER (MWM).

Phenology: in Israel collected from December - February.

Host-plants: In Israel *Vitis* sp. (PLAUT, 1965, 1973); in Egypt *Ficus carica* (ANDRES & SEITZ, 1924); *Albizzia lebbek*, *Ficus pseudosyramorus* (WILSHIRE, 1949). Oliven, *Acacia arabica*, *Cercis siliquastrum*, *Crataegus* sp. (DE FREINA & WITT, 1990)

2. *Semitocossus johannes* (STAUDINGER, 1899)

Type locality: Jordan.

General distribution pattern: South-Western Palaearctic. Israel, Jordan, SW Turkey.

Distribution in the Levant: Israel and Jordan.

First record for Israel: SEITZ (1912).

Distribution in Israel: 2♂♂, Dead Sea, Gedda, 10.X.[19]19, BYTINSKI-SALZ (MWM), 3♂♂, Zahar Zomet, near Dead Sea, Central part, 5.VIII.1999, leg. G. MÜLLER (MWM), 1♂, 10 km E Tel' Aviv, 150 m, end Oct. 2000, leg. LI & MÜLLER (MWM), 1♂, Sinai, Bir Tabah, April 2000, leg. G. MÜLLER (MWM).

Phenology: In Israel collected in April, August and October.

Host-plants: Unknown.

3. *Acossus terebrus* ([DENIS & SCHIFFERMÜLLER], [1775])

Type locality: [Wien].

General distribution pattern: Palaearctic. Israel, Turkey, Middle and S. Europe, S. Sweden, Finland, Baltic States, the Ukraine, central part of European Russia, Caucasus, S. Siberia including the Altai and Sayan Mts. to S. Yakutia, S. part of Fre East, Korea, Heilongjiang, Jilin, Manchuria, Inner Mongolia.

Distribution in the Levant: Recorded only from Israel. First record for Israel: New for Israel.

Distribution in Israel: Known only from Southern Golan Heights, Hamat Gader.

Phenology: In Israel collected in July.

Host-plants: In Israel unknown. In Europe: *Populus tremula*, *P. alba*, *P. nigra* (GOMEZ BUSTILLO & FERNÁNDEZ-RUBIO, 1976; BERTACCINI et al., 1997; BUSER et al., 2000).

4. *Cossus cossus* (LINNAEUS, 1758)

Type locality: [Sweden].

General distribution pattern: Palaearctic. Europe, Caucasus, Middle East, Iran, Siberia, East Russia, Mongolia, C. Asia, Korea, N. and Central China, Japan, Algeria, Mauritania.

Distribution in the Levant: Israel, Lebanon, Syria, Jordan. Distribution in Israel: Recorded only for Mt. Hermon.

Phenology: In Israel collected in July.

Host-plants: In Israel unknown. In Palaearctic: *Cydonia* MILL., *Betula* L., *Fraxinus* L., *Malus* L., *Pirus* L., *Populus* L., *Alnus* L., *Salix* L., *Sorbus* L., *Quercus* L., *Ulmus* L., *Sambucus* L. (SCHOORL, 1990; BERTACCINI et al., 1997; BUSER et al., 2000). In Turkey: *Salix alba* and *Populus alba* (DE FREINA, 1994). In Spain: *Populus alba*, *Salix alba*, *Ulmus campestris*, *Quercus robur*, *Fraxinus excelsior*, *Morus alba*, *M. nigra*, *Juglans regia*, *Tilia*, *Alnus*, *Platanus*, *Betula*, *Aesculus*, *Cydonia*, *Fagus*, *Acer*, etc. (GOMEZ BUSTILLO & FERNÁNDEZ-RUBIO, 1976). In Kirgizia on *Caragana* (BARAKANOVA, 1986). In Germany (Baden-Württemberg): *Populus nigra pyramidalis*, *Salix alba*, *S. caprea*, *S. babylonica*, *S. viminalis*, *Juglans regia*, *Betula pendula*, *Alnus glutinosa*, *A. incana*, *Quercus robur*, *Pyrus communis*, *Malus domestica*, *Prunus avium*, *Tilia* sp., *Hippophae rhamnoides*, *Lonicera xylosteum* (SPEIDEL, 1994). Systematic notes: Very similar with subspecies *Cossus cossus gueruenensis* FRIEDEL, 1977 from Turkey (Prov. Sivas).

5. *Dyspessacossus fereidun* (GRUM-GRSHIMAILO, 1895)

Type locality: Persia septentr. (Demavend) [N. Iran, prov. Tehran, Demavend].

General distribution pattern: Mediterranean-Iranian. Turkey, Azerbaizhan, Armenia, Iraq, Iran, Syria, Israel.

Distribution in the Levant: Israel, Syria.

First record for Israel: New for Israel.

Distribution in Israel: known only from Northern Golan Heights, Majdal Shams.

Phenology: in Israel collected in August.

Host-plants: Unknown.

Systematic notes: Population from Israel *D. f. osthederi* (DANIEL, 1932).

6. *Wiltshireocossus aries* (PÜNGELER, 1902)

Type locality: Palaestina (Jerusalem) [Israel].

General distribution pattern: Mediterranean-Arabian. S. Spain, Mauritania, Israel, Saudi Arabia, UAE, Yemen, Oman, Algeria, Tunisia, Egypt (YAKOVLEV, 2007).

Distribution in the Levant: Recorded only from Israel. First record for Israel: PÜNGELER (1902).

Distribution in Israel: Recorded only from Jerusalem.

Habitat: Deserts and semidesert area.

Phenology: In Israel unknown. In Northern Africa flying from February to April. In Spain flying from April to May.

Host-plants: "parasite de l'*Acacia*" (DUMONT, 1932).

7. *Holocerus gloriosus* (ERSCHOFF, 1874)

Type locality: „in monte Karak in parte orientali desertorum Kisil-Kum sito“ [Karak Mt., Kizil-Kum desert, Turkmenistan].

General distribution pattern: Turkmenistan, Uzbekistan, S. Kazakhstan, Iran, Afghanistan, Iraq, Jordan, Israel, N. Egypt, Saudi Arabia, Bahrain, Oman.

Distribution in the Levant: Israel, Jordan.

First record for Israel: STAUDINGER & REBEL (1901).

Distribution in Israel: 6 ♂♂, 1 ♀, Neot Ha Kikar southern Dead Sea, 15.-17.02.1999, Lf., leg. LI & MÜLLER; 3 ♂♂, 1 ♀ Southern Dead Sea, Neot Ha, 20.-23.V.1999, leg. LI & MÜLLER. Jordan Valley (GAUCKLER, 1906)

Phenology: in Israel collected in February- May.

Host-plants: unknown.

Systematic notes: Population from Israel *H. g. laudabilis* STAUDINGER, 1899.

8. *Holocerus holosericeus* STAUDINGER, 1884

Type locality: Ashkabad [Turkmenistan].

General distribution pattern: Central Asian-Mediterranean, Eremic. Kazakhstan, Mongolia, Kirgizia, Uzbekistan, Tadzhikistan, Turkmenia, NW China, Afghanistan, Iran, Israel, Jordan, UAE, Egypt, Algeria, Tunisia, Libya, Morocco.

Distribution in the Levant: Israel, Jordan. First record for Israel: DANIEL (1959).

Distribution in Israel: 1 ♂, Region südl. des Toten Meeres, Arvat Sedom Umg., Ne'ot HaKikkar, minus 335m, 25.-26.IV.1999, leg. DE FREINA; 1 ♂, Southern Dead Sea, Neot Ha, 20.-23.V.1999, leg. LI & MÜLLER; 4 ♂♂, Bet Shean Valley, Faqq'a, 200 m, E. Dec. 2000, leg. LI & MÜLLER; Sinai: 3 ♂♂, 1 ♀, Sharm ash Shaykh-South tip, Ende IV.2000, Lf., leg. LI & MÜLLER; 1 ♂, East Coast, Nuwaybi al Muzayyinah, end Apr. 2000, leg. LI & MÜLLER (MWM).

Phenology: In Israel collected in April - May and December.

Host-plants: Unknown.

Systematic notes: Population from Israel *H. h. faroulti* OBERTHÜR, 1911.

9. *Deserticossus pulverulentus* (PÜNGELER, 1898)

Type locality: Merw [Mary, Turkmenistan].

General distribution pattern: Central-Asiatic, Mediterranean. Kazakhstan, Kirgizia, Uzbekistan, Turkmenia, NW China (Xingjian), Israel.

Distribution in the Levant: Israel.

First record for Israel: YAKOVLEV (2006).

Distribution in Israel: Mt. Hermon, 2100m, Upper Cable, mid. Jun.2000, Lf., leg. LI & MÜLLER.

Phenology: in Israel collected in June.

Host-plants: unknown.

10. *Deserticossus arenicola* (STAUDINGER, 1879)

Type locality: [Narün, nordöstlich von Astrachan zwischen Wolga- und Ural-Fluß, etwa 15 deutsche Meilen ostwärts von der Wolga] (NW Kazakhstan, european part).

General distribution pattern: West-Palaearctic. Russia (Dagestan), Armenia, Azerbaijan, Georgia, Turkmenia, Kazakhstan, Uzbekistan, Kirgiziya, NW China, Iran, Afghanistan, Pakistan, Egypt (Sinai), Jordan.

Distribution in the Levant: Jordan.

First record for Israel: New for Israel.

Phenology: In Sinai collected in May, in Jordan in March.

Host-plants: In Israel unknown. In Tadzhikistan (Tigrovaya balka Reserve) *Tamarix ramosissima*, *T. hispida* (STSCHETKIN, 1963).

11. *Cossulus sheljuzhkoi* (ZUKOWSKY, 1936)

Type locality: Thianshan occ., Bolshoj Tsimgan [Uzbekistan, Chatkal Mts. Range, Bol'shoi Chimgan].

General distribution pattern: Central-Asian, Mediterranean. Kazakhstan, Kirgiziya, Uzbekistan, Tadzhikistan, Israel.

Distribution in the Levant: Israel. First record for Israel: New for Israel.

Distribution in Israel: 1 ♂, Israel, Mt. Hermon, 2100 m, Upper Cable, mid June 2000, LI & MÜLLER.

Phenology: In Israel collected in June.

Host-plants: unknown.

12. *Parahypopta caestrum* (HÜBNER, 1804)

Type locality: [Europe].

General distribution pattern: Western-Palaearctic. Jordan, Israel, Syria, Iraq, Turkey, Italy, Spain, Bulgaria, ex-Yugoslavia, Hun-

gary, SW Russia, Kazakhstan.

Distribution in the Levant: Jordan, Israel, Syria.

First record for Israel: KALCHBERG (1897).

Distribution in Israel: 1 ♂, Nablus northern West Bank, 8.VI.[19]99, Lf, leg. LI & MÜLLER, 3 ♂♂, Givat Yearim, 20 km west of Jerusalem, Anf. V.[19]99, Lf, leg. LI & MÜLLER; 5 ♂♂, Even, Sapir, 5 km west of Jerusalem, 16.V.1999, Lf, leg. LI & MÜLLER; 3 ♂♂, Rosh Pina, N. Israel, 500 m, June 2003, leg. G. MÜLLER; 1 ♂, C. Israel, Shefela, 5 km W Tirosh, 20 km E. Ashdod, 200 m, 8.V.1999, LI & MÜLLER. Haifa (KALCHBERG, 1897)

Phenology: In Israel collected in May.

Host-plants: Unknown in Israel. In Hungary and Spain: *Asparagus officinalis* L., *A. maritime*, *A. tenuifolius*, *A. albus*, *A. acutifolius*, *Celtis australis* (HRUBÝ, 1964; GOMEZ BUSTILLO & FERNÁNDEZ-RUBIO, 1976).

13. *Eremocossus vaulogeri* (STAUDINGER, 1897)

Type locality: Chellata, Prov. Algier.

General distribution pattern: Western-Palaearctic. Eremic. Senegal, Mauretania, Morocco, Algeria, Lybia, Tunisia, Egypt, Jordan, Israel, Syria, Egypt, Oman, Yemen, UAE, Saudi Arabian, Iraq, S. Iran.

Distribution in the Levant: Jordan, Israel, Syria.

First record for Israel: STAUDINGER (1897) as *Hypopta jordana* STGR.

Distribution in Israel: Palaestina, coll. STGR. (MWM); 3 ♂♂, Central Arava Ein, Yahav, April 2001, leg. LI & MÜLLER (MWM); 4 ♂♂, Bet Shean Valley, Faqq'a, 200 m, E. Dec. 2000, leg. LI & MÜLLER. Valley of Jordan (STAUDINGER, 1897)

Phenology: In Israel collected in April and December.

Host-plants: unknown.

Systematic notes: In Israel *E. v. jordana* (STAUDINGER, 1897)

14. *Mormogystia reibelli* (OBERTHÜR, 1876)

Type locality: Biskra [Algeria].

General distribution pattern: Western-Palaearctic. Eremic. Saudi Arabia, Oman, UAE, Yemen, Israel, Syria, Jordan, Tunisia, Egypt, Algeria, Chad.

Distribution in the Levant: Israel, Syria, Jordan. First record for Israel: New for Israel.

Distribution in Israel: 6 ♂♂, 1 ♀, Neot Ha Kikar, southern Dead Sea, 15.-17.II.1999, Lf, leg. LI & MÜLLER; 8 ♂♂, 2 ♀♀, Southern Dead Sea, Neot Ha, 20.-23.V.1999, leg. LI & MÜLLER.

Phenology: In Israel collected in February and May.

Host-plants: unknown.

15. *Dyspessa pallidata* (STAUDINGER, 1892)

Type locality: Amasia [Turkey].

General distribution pattern: Western-Palaearctic. Transcaucasia, Caucasus, Turkey, Iran, Jordan, Israel, N. Egypt.

Distribution in the Levant: Jordan, Israel.

First record for Israel: AMSEL (1933).

Distribution in Israel: 1 ♂, area of Acco, 20 m, May 2003, leg. G. MÜLLER; 1 ♂, nothern shore of lake Kineret, M. Sept. 2000, leg. LI & MÜLLER; 4 ♂♂, west Galil Aramsha, 600 m, near Lebanese Border, early Aug. 2000, leg. LI & MÜLLER (MWM).

Phenology: In Israel collected in May-September.

Host-plants: Unknown. Probably *Allium* sp.

16. *Dyspessa kabyllaria* A. BANG-HAAS, 1906

Type locality: Tunis (Gafsa).

General distribution pattern: Mediterranean-Iranian. Iran, Israel, Jordan, Tunisia, Algeria, Egypt, Saudi Arabia.

Distribution in the Levant: Israel, Jordan.

First record for Israel: New for Israel.

Distribution in Israel: 12 ♂♂, South West Negev Nitzana, early Apr. 2001, LI & MÜLLER; 3 ♂♂, Upper Jordan Valley, 25 km S. Kineret, 200 m, Mid. Dec. 2001, LI & MÜLLER; 7 ♂♂, 1 ♀, Southern coastal Plain south of Ashdod, 20 m, Feb. 2001, LI & MÜLLER; 5 ♂♂, 10 km west of Ramallah, 500 m, March 2001, leg. LI & MÜLLER; 16 ♂♂, Southern coastal Plain south of Ashelon, 20 m, mid. March 2001, LI & MÜLLER (MWM).

Phenology: In Israel collected in December-April.

Host-plants: Unknown. Probably *Allium* sp.

17. *Stygioides colchicus* (HERRICH-SCHÄFFER, 1851)

Type locality: Amasia (Turkey).

General distribution pattern: Mediterranean. South Europe, Turkey and Armenia, Lebanon, Israel.

Distribution in the Levant: Israel, Lebanon.

First record for Israel: GRUM-GRSHIMAILO (1899) as *Stygia dercetis* Gr.-Gr.

Distribution in Israel: Reported only for type locality of *Stygia dercetis* - valle fl. Arnon, in Moabia (Palaestine).

Phenology: In Israel collected in May (GRUM-GRSHIMAILO, 1899).

Host-plants: Unknown.

Systematic notes: In Israel ssp. *dercetis* (GRUM-GRSHIMAILO, 1899).

18. *Isoceras bipunctata* (STAUDINGER, 1887)

Type locality: SW Kleinasien, Merw, Marash.

General distribution pattern: Western-Palaearctic. Georgia, Azerbaijan, Turkey, Iran, Lebanon, Jordan, Syria, Israel, Iraq.

Distribution in the Levant: Lebanon, Jordan, Syria, Israel.

First record for Israel: SEITZ (1912).

Distribution in Israel: 14 ♂♂, Gazit, 20 km east of Nazareth, 400m, early March 2001, Lf, leg. LI & MÜLLER; 1 ♂, 10 km east of Jerusalem,

ca.700m, mid. April 1990, Lf, leg. G. MÜLLER; 2♂♂, 1♀, Mt. Hermon Upper Cable Station, 2200m, end June 2000, Lf, leg. LI & MÜLLER; 1♂, 1♀, South Golan Hights, mid. 05.99, Lf, leg. LI & MÜLLER; 3♂♂, Area of Acco, 20 m, May 2003, leg. G. MÜLLER (MWM). Phenology: In Israel collected in March-June.

Host-plants: Unknown.

19. *Dieida ledereri* (STAUDINGER, 1871)

Type locality: Taurus [Turkey].

General distribution pattern: Iran, Syria, Israel, Turkey.

Distribution in the Levant: Syria, Israel.

First record for Israel: New for Israel.

Distribution in Israel: 1♀ deposited in MWM without geographical label (only date 29.III.1955).

Phenology: In Israel collected in March.

Host-plants: Unknown.

20. *Dieida judith* YAKOVLEV, 2008

Type locality: Israel, Northern Negev.

General distribution pattern: Israel.

Distribution in the Levant: Israel. Distribution in Israel: Nothern Negev.

Phenology: In Israel collected in March.

Host-plants: Unknown.

21. *Meharia semilactea* (WARREN & ROTHSCHILD, 1905)

Type locality: Nakheila, R. Atbara [NW Sudan].

General distribution pattern: Sakharian-Arabia, Jordan, Saudi Arabia, Oman, UAE, Yemen, Egypt, N. Sudan.

Distribution in the Levant: Jordan.

First record for Israel: New for Israel.

Phenology: In Jordan and Sinai Peninsula collected in October-December.

Host-plants: Unknown.

Subfamily **Zeuzerinae** BOISDUVAL, [1828]

22. *Phragmacossia territa* (STAUDINGER, 1878)

Type locality: Amasia [Turkey].

General distribution pattern: Turanian-Mediterranean. Lebanon, Syria, Israel, Jordan, Egypt, Iran, Turkey, Turkmenistan, Uzbekistan, Tadzhikistan, Kirgizia.

Distribution in the Levant: Lebanon, Syria, Israel, Jordan.

First record for Israel: AMSEL (1933).

Distribution in Israel: 2♂♂, Mt. Hermon Upper Cable, 2100m, A. August 2000, Lf, leg. LI & MÜLLER; 2♂♂, Modi'im, ca. 60 km W. Jerusalem, Dec. 1999, Leg. LI & MÜLLER (MWM).

Phenology: In Israel collected in August and December.

Host-plants: Unknown.

23. *Phragmataecia castaneae* (HÜBNER, 1790)

Type locality: Europe.

General distribution pattern: Central and Southern Europe, Middle East, Caucasus, Transcaucasia, Turkmenistan, Kazakhstan, Kirgizia, Tadzhikistan, Uzbekistan, Iran, Iraq, Syria, Lebanon, Israel, Jordan, Turkey, W. China (Xingjian), SW. Siberia, Egypt.

Distribution in the Levant: Syria, Lebanon, Israel, Jordan.

First record for Israel: GAUCKLER (1906).

Distribution in Israel: 20♂♂, South of Jericho, Northern part of Dead Sea, mid. March 2000, Lf, leg. LI & MÜLLER; 21♂♂, South of Jericho, Northern part of Dead Sea, mid. April 2000, Lf, leg. LI & MÜLLER; 1♂, Jericho, 250 m, 15.-17.III.2001, Lf, leg. LI & MÜLLER; 1♂, Neot Ha Kikar southern Dead Sea, 15.-17.II.1999, Lf, leg. LI & MÜLLER; 12♂♂, Arvat, Region südl. des Toten Meeres, Umg. Neot Ha Kikar, 400m, 17.-21.III.[19]95, leg. DE FREINA; 3♂♂, Qalva (Totes Meer), -350 m, 3.IV.2000, leg. M. BERGER & H. SULAK (MWM). Valley Jordan (GAUCKLER, 1906). Phenology: In Israel collected in February-March.

Host-plants: In Israel unknown. In Europe: *Phragmites communis*, *Ph. gigantea*, *Ph. pumila*, *Ph. australis* (HRUBÝ, 1964; GOMEZ BUSTILLO & FERNÁNDEZ-RUBIO, 1976; SPEIDEL, 1994).

24. *Zeuzera pyrina* (LINNAEUS, 1761)

Type locality: Sweden.

General distribution pattern: Holarctic. Europe, N. Africa (Egypt, Algeria, Mauritania), Iran, Lebanon, Syria, Israel, Turkmenistan, Turkey, Caucasus, Transcaucasia, SW Siberia, N. America (Massachusetts, Connecticut, New York, New Jersey), Central Africa (Ghana).

Distribution in the Levant: Jordan, Lebanon, Syria.

First record for Israel: KALCHBERG (1897).

Distribution in Israel: 1♂, 1♀, North Israel, Rosh Pina, 500 m, June 2003, leg. MÜLLER; 1♂, 15 km S of Tel Aviv, 100 m, Dec. 1999, leg. LI & MÜLLER (MWM). Haifa (KALCHBERG, 1897).

Phenology: in Israel collected in June and December.

Host-plants: In Israel unknown. In Europe: *Fraxinus excelsior*, *Viscum album*, *Ligustrum* sp., *Malus* sp., *Prunus padus*, *Quercus* sp., *Betula* sp., *Aesculus* sp., *Hippopae rhammoides*, *Ulmus* sp., *Crataegus* sp., *Salix* sp., *Populus tremula*, *Acer pseudoplatanus*, *Syringa vulgaris*, *Carpinus betulus*, *Fagus sylvatica*, *Viburnum* sp., *Tilia* sp., *Frangula alnus*, *Lonicera* sp., *Ribes* sp., *Pyrus* sp., *Prunus* sp., *Sorbus aucuparia*, *Corylus* sp., *Platanus* sp., *Castanea* sp., *Tamarix* sp., *Mahonia* sp., *Spiraea* sp., *Syringa* sp., *Sambucus* sp. (ANFINNIKOV, 1962; GOMEZ BUSTILLO & FERNÁNDEZ-RUBIO, 1976; BERTACCINI et al., 1997; BUSER et al., 2000). In Germany (Baden-Württemberg): *Populus tremula*, *Betula pendula*, *Fagus sylvatica*, *Quercus robur*, *Quercus* sp., *Viscum album*, *Pyrus communis*, *Malus domesticus*,

Sorbus aucuparia, *Acer saccharinum*, *Aesculus hippocastanum*, *Ilex aquifolium*, *Tilia* sp., *Frangula alnus*, *Fraxinus excelsior*, *Syringa vulgaris*, *Viburnum lantana* (SPEIDEL, 1994). In the United States: *Liriodendron tulipifera* (HOWARD & CHITTENTEN, 1909).

Acknowledgements: The author is grateful to all persons who offered their collections for treatment: T. WITT (Munich), Dr. W. MEY (Berlin), Dr. D. STÜNING (Bonn), Dr. A. HAUSMANN (Munich), Dr. G. MÜLLER (Jerusalem).

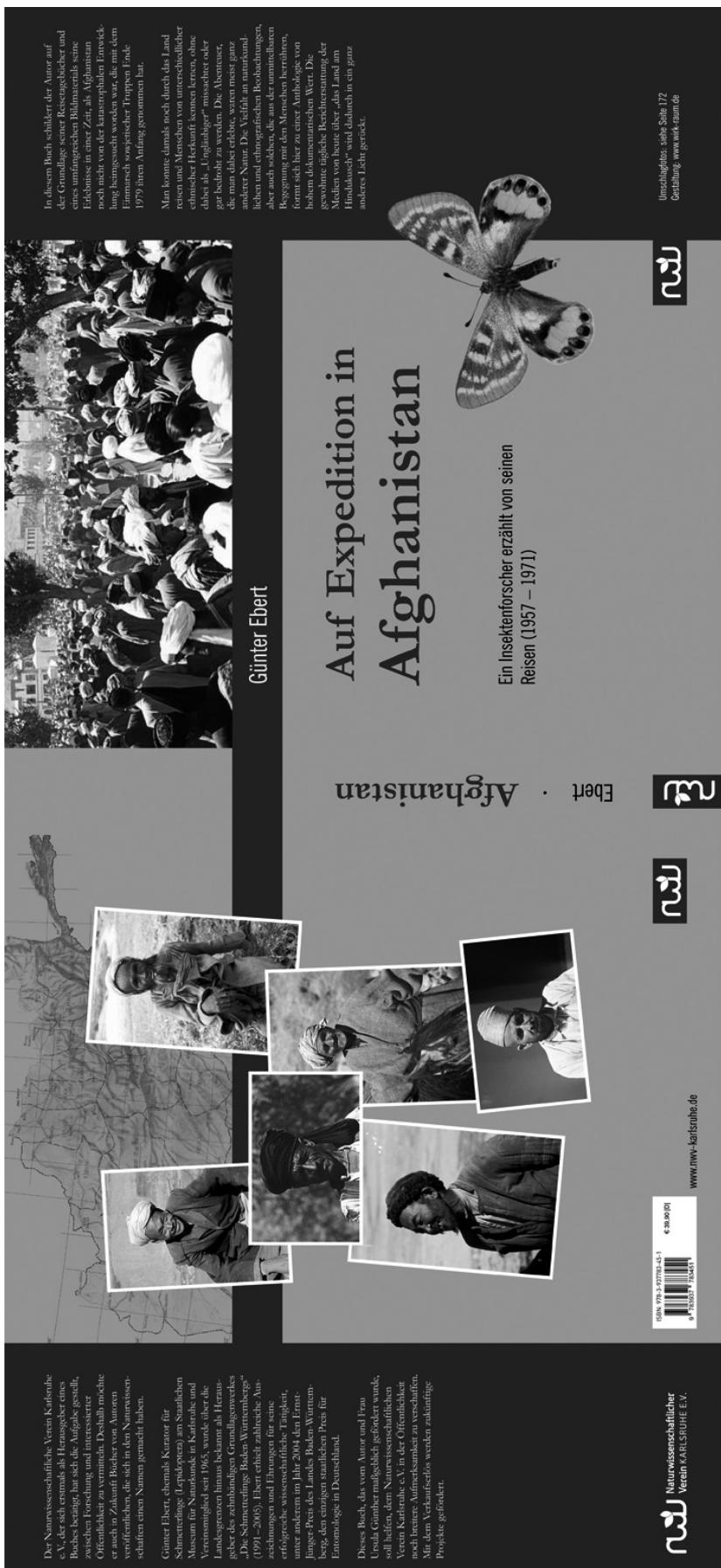
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Buchbesprechung



Das Faksimile des Buchumschlags des Erlebnisbuchs von GÜNTER EBERT „Auf Expedition in Afghanistan. Ein Insektenforscher erzählt von seinen Reisen (1957-1971)“, sollte in Atalanta 41 (1/2) eigentlich auf der Seite 184 abgedruckt werden. Ich habe es aber bei allen Vorbereitungen der Atalanta für den Druck einfach vergessen dorthin zu plazieren. Um das Versäumte auszugleichen, erfolgt an dieser Stelle der Abdruck.

Die Schriftleitung

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Atalanta](#)

Jahr/Year: 2010

Band/Volume: [41](#)

Autor(en)/Author(s): Yakovlev Roman V.

Artikel/Article: [Cossidae of Israel 465-469](#)