

Records of jewel beetles (Coleoptera: Buprestidae) from Jordan, with stray finds from North Africa

Manfred NIEHUIS & Wolfgang WAITZBAUER

Abstract

The authors report on 49 species and subspecies of jewel beetles (Buprestidae) from Jordan, most of them collected by the second author in the years 1990 to 2020. Eight species represent first country records: *Julodis ehrenbergii ehrenbergii* LAPORTE & GORY, 1835, *Acmaeodera (Acmaeotethya) biseriata* REITTER, 1890, *Acmaeoderella (Euacmaeoderella) squamosa* (THÉRY, 1914), *Acmaeoderella (Liogastrina) maculipennis* (PIC, 1897), *Sphenoptera (Deudora) sculpticollis* HEYDEN, 1886, *Sphenoptera (Deudora) vittaticollis* LUCAS, 1844, *Sphenoptera (Paradeudora) kermanshahensis* OBENBERGER, 1952, and *Sphenoptera (Sphenoptera) tragacanthae* KLUG, 1829. Additional distribution data of eight species from Morocco, Tunisia, Israel, and the West Bank are reported. *Julodis aequinoctialis deserticola* FAIRMAIRE, 1859 is recorded from Tunisia for the first time. The 54 collection sites are characterised with regard to the relevant flora. Localities from Jordan are placed in a biogeographical context. Supplementary information on the overall distribution and the ecology of the taxa are added. For comparison and to complete the overview, further jewel beetles species from Jordan mentioned in the literature are supplemented.

Key words. Buprestidae, jewel beetles, faunistics, entomology of Jordan, Morocco, Tunisia, Israel, West Bank.

Zusammenfassung

Die Autoren berichten über 49 Arten und -unterarten der Prachtkäfer (Buprestidae) aus Jordanien, die hauptsächlich vom Zweitautor in den Jahren 1990 bis 2020 gesammelt wurden. Acht Arten repräsentieren Erstnachweise: *Julodis ehrenbergii ehrenbergii* LAPORTE & GORY, 1835, *Acmaeodera (Acmaeotethya) biseriata* REITTER, 1890, *Acmaeoderella (Euacmaeoderella) squamosa* (THÉRY, 1914), *Acmaeoderella (Liogastrina) maculipennis* (PIC, 1897), *Sphenoptera (Deudora) sculpticollis* HEYDEN, 1886, *Sphenoptera (Deudora) vittaticollis* LUCAS, 1844, *Sphenoptera (Paradeudora) kermanshahensis* OBENBERGER, 1952 und *Sphenoptera (Sphenoptera) tragacanthae* KLUG, 1829. Zusätzliche Verbreitungsangaben aus Marokko, Tunesien, Israel und dem Westjordanland werden angefügt. *Julodis aequinoctialis deserticola* FAIRMAIRE, 1859 wird zum ersten Mal aus Tunesien gemeldet. Die insgesamt 54 Sammelpunkte werden mit Bezug auf die relevante Flora beschrieben. Die Sammellokalitäten in Jordanien werden in einen biogeografischen Kontext gebracht. Informationen über die Gesamtverbreitung und die Ökologie der Prachtkäferarten werden ergänzt. Zum Vergleich und zur Abrundung der Übersicht werden weitere Prachtkäferarten gelistet, welche in der Literatur für Jordanien gemeldet wurden.

Introduction

Since the mid-1970s, the second author has been leading scientific excursions for biologists to the desert regions of North Africa and Jordan. His 16 trips in the years 1990–2020, which served to research the fauna and flora of Jordan (WAITZBAUER & KATBEH-BADER 2002, WAITZBAUER et al. 2004, WAITZBAUER 2019), yielded quite a few finds of jewel beetles (Buprestidae), which he left to the first author for determination and his private collection. The authors considered it appropriate to publish these finds because they clearly complement the list of the Buprestidae of Jordan (KATBEH-BADER 1996). Occasionally, we have added records of other coleopterists in the collection of the second author, but only as far as they concern Jordan; in some cases, our reports also complement the distribution data of KUBÁŇ (2016), who lists considerably more species. We elaborate on 59 of the species, eight of which are new for Jordan and one for Tunisia.

Material and methods

There was no systematic search for buprestids. All collections by the second author were made either by hand or with help of a landing net. Scraping or tapping vegetation was often a successful method. All collected individuals are in the Manfred Niehuis collection in Albersweiler, Germany. The locality sites are listed below, those in Jordan are mapped in Figure 1.

The systematics are based on KUBÁŇ (2016). The general distribution of species follows KUBÁŇ (2016); the following abbreviations are used:

Europe: AB Azerbaijan; AL Albania; AR Armenia; AU Austria; BE Belgium; BH Bosnia and Herzegovina; BU Bulgaria; BY Belarus; CR Croatia; CT Russia: Central European Territory; CZ Czech Republic; FR France incl. Corsica; GE Germany; GG Georgia; GR Greece incl. Crete; HU Hungary; IT Italy; KO Kosovo; MA Malta; MC Macedonia; MD Moldavia; ME Montenegro; PL Poland; PT Portugal; RO Romania; SB Serbia; SK Slovakia; SL Slovenia; SP Spain; ST Russia (SW Territory); SV Sweden; SZ Switzerland; UK Ukraine.

North Africa: AG Algeria; EG Egypt; LB Libya; MO Morocco; TU Tunisia.

Western Asia: AE Arabian Emirates; CY Cyprus; IN Iran; IQ Iraq; IS Israel; JO Jordan; KI Kyrgyzstan; KU Kuwait; KZ Kazakhstan; LB Lybia; LE Lebanon; OM Oman; PA Pakistan; SA Saudi Arabia; SI Egypt (Sinai); SY Syria; TD Tajikistan; TM Turkmenistan; TR Turkey; UZ Uzbekistan; YE Yemen.

Records are arranged per country and chronologically.

Sample numbers:

Jordan

JO1. Abdallah, 6 km N Ajloun (Adschlun), near Debeen Nature Reserve, 32°20' N, 35°45' E, 910 m a. s. l. Mediterranean forest stand; dominant plants: *Arbutus andrachne*, *Crataegus aronia*, *Pinus halepensis*, *Quercus coccifera*, marginal maquis: *Anemone coronaria*, *Cistus salviifolius*, *Rosmarinus officinalis*, *Drimia maritima*.

JO2. Ajloun, near Qala'at ar-Rabad castle, 32°19' N, 35°43' E and 35°20' N, 35°45' E, 825–960 m a. s. l. and 32°38' N, 35°76' E, 1010 m a. s. l. (Fig. 2). Loose Mediterranean oak forest of *Quercus coccifera*. East Mediterranean rock garrigue (= batha); dominant plants: *Asphodelus tenuifolius*, *Calicotome villosa*, *Cistus salviifolius*, *Rosmarinus officinalis*, *Sarcopoterium spinosum*, *Drimia maritima*.

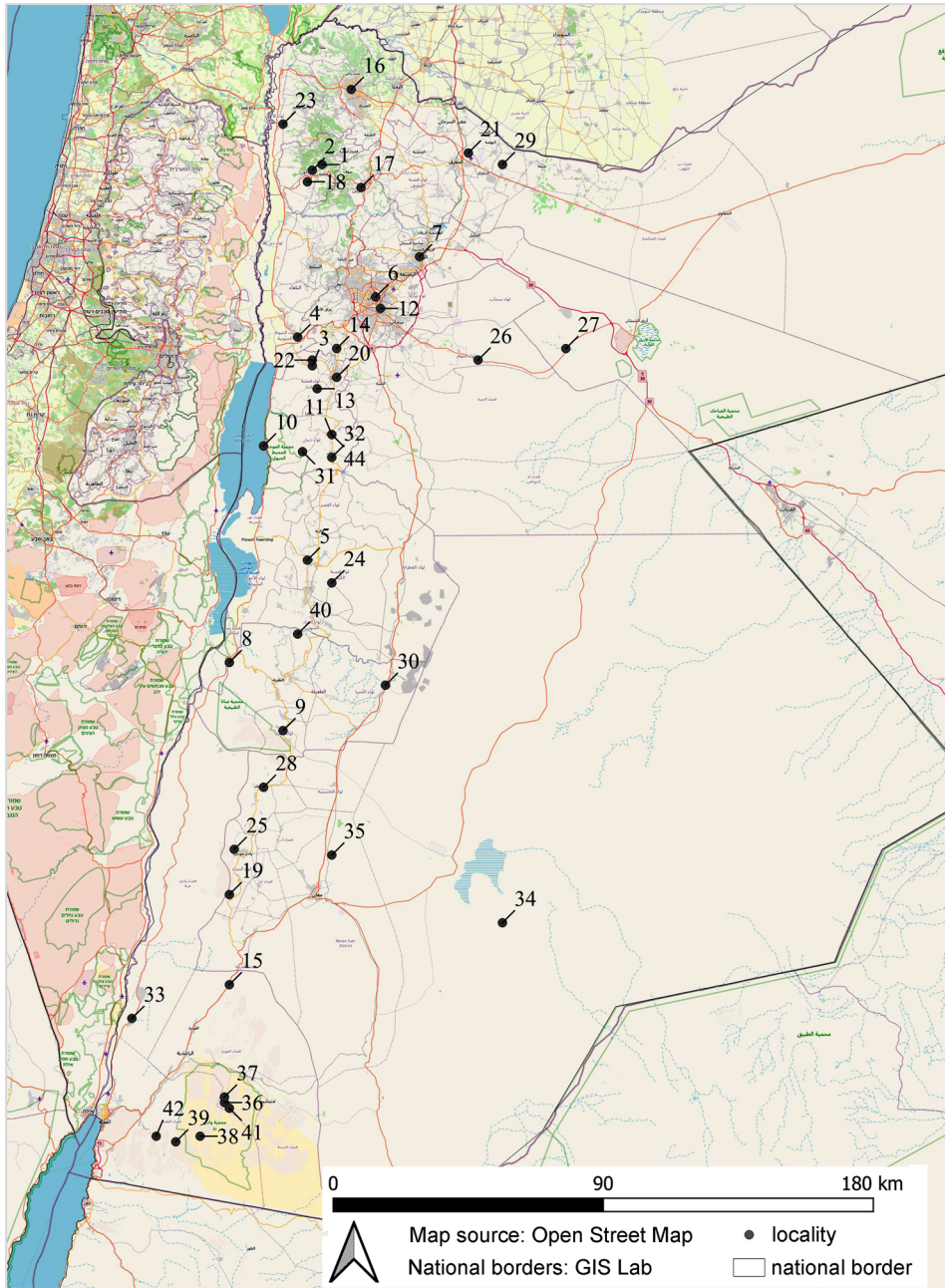


Fig. 1. Collecting sites of jewel beetles in Jordan. © M. Frauendienst.



Figs2–3. (2) JO2, wood with pines and holm oaks near Aljoun. (3) Tamarisk shrubs at JO3, Oasis Azraq, Shaumari reserve. © 2: C. Riegler; 3: W. Waitzbauer.



Figs4–5. (4) JO3, Basaltic desert 5 km E of Azraq with Wadi Rajil. (5) JO 19, Wadi Abu Tarafa, 20km E of Ma'an. © W. Waitzbauer.



Fig. 6. JO 42, Wadi Yutim al Umran, SW of Wadi Rum, rocky slope with dense spring vegetation.
© W. Waitzbauer.

JO3. Al Azraq, 31°45' N, 36°43' E, 500 m a. s. l. (Figs 3, 4). Shaumari Nature Reserve, stands of *Eucalyptus globulus*, sporadic *Pistacia atlantica*; dominant plants: *Alhagi maurorum*, *Anabasis articulata*, *Haloxylon scoparium*, *Juncus acutus*, *Lycium shawii*, *Salix acmophylla*, *Tamarix* sp. – Basalt desert E of Azraq; dominant plants: *Artemisia herba-alba*, *Astragalus spinosus*, *Lycium shawii*, *Zilla spinosa*.

JO4. Al Balqa / Al Kafren, Wadi Al Gadaba, 31°50' N, 35°40' E, 159 m a. s. l. Mediterranean cultivated landscape, olive groves, in the wadi *Calicotome villosa*, *Crataegus aronia*, *Lycium shawii*, *Nerium oleander*.

JO5. Al Karak, 31°11' N, 35°42' E, 930 m a. s. l. Rocky vegetation; dominant plants: *Otoglyphis* sp., *Astragalus* sp., *Centaurea aegyptiaca*, *Diplotaxis harra*, *Zygophyllum molle*, *Gynandriris sisyrinchium*, *Stipellula capensis*, *Drimia maritima*.

JO6. Amman, 3 km N, 31°57' N, 35°56' E, 777 m a. s. l. East Mediterranean rocky garrigue (batha); dominant plants: *Alkanna tinctoria*, *Astragalus* sp., *Calicotome villosa*, *Crataegus aronia*, *Ferula sinaica*, *Lycium shawii*, *Deverra tortuosa*, *Podonosma orientalis*, *Stipellula capensis*.

JO7. Arda near Zarqa, 32°04' N, 36°51' E, 619 m a. s. l.; no further biotope details.

JO8. Dana Biosphere Reserve, Wadi Faynan, 30°53' N, 35°26' E, 300 m a. s. l. Wadi bed partially waterlogged; dominant plants: *Arundo donax*, *Juncus acutus*, *Lycium shawii*, *Nerium oleander*, *Ochradenus baccatus*, *Panicum turgidum*, *Tamarix* sp., *Ziziphus lotus*. Transitions to Saharan-Arabic vegetation.

JO9. Dana Biosphere Reserve, Dana village and camp site area, 30°41' N, 35°37' E, 1240 m a. s. l. and 30°42' N, 35°35' E, 1420 m a. s. l. Rock plateau; dominant plants: *Artemisia herba-alba*, *Atriplex halimus*, *Rhamnus disperma*.

JO 10. Dead Sea, Mazra, 31°31' N, 35°33' E, 410 m below s. l. (Fig. 12). Slope between road and shoreline; dominant plants: *Alhagi maurorum*, *Anabasis articulata*, *Atriplex halimus*, *Calotropis procera*, *Cleome arabica*, *Launaea mucronata*, *Nitraria retusa*, *Ochradenus baccatus*, *Pergularia tomentosa*, *Ruppia maritima*, *Tamarix nilotica*.

JO 11. Dead Sea, river Mujib near Nature Reserve, 31°33' N, 35°47' E, 400 m below s. l. Degraded rocky vegetation; dominant plants: *Artemisia herba-alba*, *Bromus madritensis*, *Euphorbia hierosolymitana*, *Gymnocarpus decandrum*, *Limonium pruinosum*, *Ochradenus bacchatus*, *Cleome droserifolia*, *Haloxylon scoparium*, *Haplophyllum tuberculatum*, *Lycium shawii*, *Ochradenus baccatus*, *Trichodesma africanum*, *Zilla spinosa*.

JO 12. Fifa (Feifa), 18 km N At-Tafilah, 31°55' N, 35°57' E, 250 m a. s. l.; no further biotope details.

JO 13. Hammamat Ma'in, Wadi Main: 31°41' N, 35°44' E, 280 m a. s. l. Rocky semi-desert, dominant plants: *Otoglyphis factorovskyi*, *Astragalus* sp., *Lycium depressum*, *Lythrum tribracteatum*, *Tamarix* sp., *Ziziphus lotus*.

JO 14. Hisban (Hesbon): 31°48' N, 35°48' E, 685 m a. s. l.; no further biotope information.

JO 15. Humayma, 45 km S Petra, 29°56' N, 35°26' E, 1060 m a. s. l., no further biotope information.

JO 16. Irbid, 17 km S, 32°33' N, 35°51' E, 620 m a. s. l. Mediterranean agricultural landscape with meadows; dominant plants: *Anchusa aegyptiaca*, *Anemone coronaria*, *Asphodelus aestivus*, *Calendula arvensis*, *Calicotome villosa*, *Echium judaeum*, *Gundelia tournefortii*, *Scandix pecten-veneris*, *Sinapis alba*.

JO 17. Jerash (Gerasa), 32°16' N, 35°53' E, 600 m a. s. l. Archaeological site, grazed meadows; dominant plants: *Anchusa aegyptiaca*, *Anemone coronaria*, *Asphodelus tenuifolius*, *Calendula arvensis*, *Capsella bursa-pastoris*, *Helianthemum vesicarium*, *Reichardia tingitana*, *Trifolium* sp., *Vicia sativa*.

JO 18. Kafren (Kufrinja), 2 km N, 32°17' N, 35°42' E, 700 m a. s. l.; no further biotope details.

JO 19. Ma'an, 20 km SE, Wadi Abu Tarafa, 29°59' N, 35°56' E, 1100 m a. s. l. (Fig. 5). Hamada, dry wadi, banks with tree and shrub fringe, sand dunes; dominant plants: *Acacia raddiana*, *Alhagi maurorum*, *Astragalus spinosus*, *Diploaxis harra*, *Eremobium aegyptiacum*, *Forsskaolea tenacissima*, *Kickxia aegyptiaca*, *Launaea* sp., *Stipellula capensis*, *Zilla spinosa*.

JO 20. Madaba City and surroundings, 31°43' N, 35°48' E, 450–763 m a. s. l. Mediterranean agricultural landscape; dominant plants: *Calicotome villosa*, *Cupressus sempervirens*, *Ferula sinaica*, *Olea europaea*, *Sinapis alba*.

JO 21. Mafraq, 5 km NW, 32°22' N, 36°15' E, 700 m a. s. l. Mediterranean small shrub community with transition to steppe, pastureland; dominant plants: *Artemisia herba-alba*, *Asperula arvensis*, *Asphodelus aestivus*, *Astragalus spinosus*, *Atractylis cancellata*, *Centaurea eryngioides*, *Crataegus aronia*, *Diploaxis harra*, *Erucaria rostrata*, *Haloxylon scoparium*, *Rosmarinus officinalis*.

JO 22. Mount Nebo, 31°46' N, 35°43' E, 820 m a. s. l. Mediterranean rocky batha degraded by overgrazing, many thorny plant species; dominant plants: *Artemisia herba-alba*, *Asphodelus* sp., *Astragalus caprinus* subsp. *caprinus*, *Pseudodictamnus undulatus*, *Noaea mucronata*, *Ononis natrix*, *Salvia dominica*, *Sarcopoterium spinosum*.

JO 23. Pella (Tabaqat Fah), ruined area, 32°27' N, 35°37' E, 60 m a. s. l. Gapped batha with steppe character, strongly degraded by overgrazing; dominant plants: *Alkanna tinctoria*, *Asphodelus aestivus*, *Diploaxis harra*, *Echium judaeum*, *Erucaria rostrata*, *Lamarckia aurea*, *Ononis natrix*, *Panicum turgidum*.

JO 24. Petra, Beidha, Wadi Muágsra, 31°07' N, 35°47' E, 800 m a. s. l. Dry wadi bed, heavy grazing pressure; dominant plants: *Bryonia cretica*, *Capparis spinosa*, *Ceratonia siliqua*, *Daphne mucronata* subsp. *linearifolia*, *Ficus carica*, *Gomphocarpus sinaicus*, *Ononis natrix*, *Podonosma orientalis*, *Rhamnus disperma*, *Solanum sinaicum*.

JO 25. Petra, archaeological site, 30°20' N, 35°27' E, 1100–1300 m a. s. l. and surroundings, 30°24' N, 35°29' E, 1649 m a. s. l. Rocky terrain, scree slopes, sandy, overgrazed ruderal areas; dominant plants: *Asphodelus tenuifolius*, *Daphne mucronata* subsp. *linearifolia*, *Juniperus phoenicea*, *Rhamnus disperma*, *Drimia maritima*.

JO 26. Qasr el Kharranah, 31°46' N, 36°17' E, 659 m a. s. l. Sandy-stony, extremely overgrazed, nearly vegetationless plain; no further information on vegetation.

JO 27. Qusayr Amra, Wadi Buhtm, 31°48' N, 36°35' E, 568 m a. s. l. Sandy flint desert, extremely overgrazed, Wadi Buthm with remnant of ancient steppe forest of *Pistacia atlantica* along the wadi; dominant plants: *Prunus arabica*, *Atriplex halimus*, *Soda rosmarinus*.

JO 28. Shawbak (Shobek) 3 km NW of the castle ruins, 30°31' N, 35°33' E, 1440 m a. s. l. Wormwood steppe of the Iranian-Turanian small shrub formation, heavily grazed; dominant plants: *Artemisia herba-alba*, *Asphodeline lutea*, *Astragalus spinosus*, *Pseudodictamnus undulatus*, *Carex pachystylis*, *Colutea istria*, *Noaea mucronata*, *Ononis natrix*, *Chiliadenus iphionoides*.

JO 29. Umm el Jimal, ruined area, 32°20' N, 36°22' E, 674 m a. s. l. Basalt desert; dominant plants: *Haloxylon scoparium*, *Anabasis articulata*.

JO 30. Wadi Al Hasa, rocky slope, 30°49' N, 35°58' E, 540 m a. s. l. Rock steppe, degraded by overgrazing, *Asphodelus tenuifolius*, *Astragalus cruciatus*, *Atriplex halimus*, *Gymnocarpos decander*, *Hamada* sp., *Helianthemum vesicarium*, *Hordeum murinum* subsp. *glaucom*, *Noaea mucronata*.

JO 31. Wadi Al Mujib, Nature Reserve, 31°3' N, 35°41' E, 700 m a. s. l. Rock steppe, partly degraded wormwood steppe (*Artemisia herba-alba*); dominant plants: *Astragalus cruciatus*, *Atriplex halimus*, *Solanum luteum*, *Drimia maritima*; dense annual vegetation dominant: *Erucaria rostrata*, *Silene damascena*, *Trigonella arabica*, *Vicia hybrida*.

JO 32. Wadi Araba, 20 km N Al Aqabah, 31°29' N, 35°47' E, 60 m below s. l. Thorny acacia savanna (*Vachellia tortilis* subsp. *raddiana*, *V. tortilis*), scree fan hamada, heavily degraded by overgrazing, *Cleome droserifolia*, *Haloxylon scoparium*, *Haplophyllum tuberculatum*, *Lycium shawii*, *Ochradeanus baccatus*, *Trichodesma africanum*, *Zilla spinosa*, *Zygophyllum simplex*.

JO 33. Wadi Araba, Rahma, 35 km N Al Aqabah, 29°50' N, 35°06' E, 70 m below s. l. Hamada with thorn acacia savanna, see JO 32.

JO 34. Wadi Araba, 10 km N Gharandal, 30°07' N, 36°22' E, 130 m below s. l. (Fig. 11). Extensive alluvial fan in front of the rim of the Rift Valley, heavily overgrazed; dominant plants: *Vachellia tortilis* subsp. *raddiana*, *Haloxylon scoparium*, *Nitraria retusa*, *Tamarix* sp.

JO 35. Wadi Musa, 6 km E Petra, 30°19' N, 35°47' E, 1530 m a. s. l. Mosaic of Mediterranean forest and steppe elements, agricultural and pasture areas; dominant plants: *Artemisia herba-alba*, *Astragalus bethlehemiticus*, *Noaea mucronata*, *Pistacia atlantica* (old single trees), *Poa bulbosa*, *Quercus coccifera*.

JO 36. Wadi Rum, close to Rum village, 29°35' N, 35°25' E, 950–1100 m a. s. l. Sand desert, extremely overgrazed; dominant plants: *Anabasis articulata*, *Colchicum ritchii*, *Haloxylon scoparium*, *Lycium shawii*, *Pancratium sickenbergeri*, *Stipellula capensis*, *Drimia maritima*.

JO 37. Wadi Rum, Jebel Khazali, 29°36' N, 35°25' E, 950 m a. s. l. Sand dunes with wet sandstone gully; dominant plants: *Ficus palmata* subsp. *palmata*, *Retama raetam*, *Drimia maritima*.

JO 38. Wadi Rum, close to Jebel Umm Ishrin, Charsa, 29°29' N, 35°20' E, 960 m a. s. l. (Fig. 10). Sand dune between sandstone rocks; dominant plants: *Anabasis articulata*, *Haloxylon persicum*, *Moltkiopsis ciliata*, *Neurada procumbens*, *Retama raetam*, *Drimia maritima*.

JO 39. S Wadi Rum area, Al Hassasiah, 29°28' N, 35°15' E, 820 m a. s. l. (Fig. 9). Sand desert, dense spring flowering after rain; dominant: mainly *Eremobium aegyptiacum*, also *Erodium cicutarium*, *Zygophyllum molle*, *Retama raetam*, *Haloxylon scoparium*, *Peganum harmala*.



Figs 7–8. (7) JO 39, SW of Wadi Rum, Al Hassasiah, sandy fields with dense spring vegetation from *Eremobium aegyptiacum* (Brassicaceae). (8) JO 41, S of Wadi Rum, Rska, sandy-rocky terrain with small wadi. © W. Waitzbauer.



Figs 9–10. (9) JO 40, S of Wadi Rum, Wadi Hisman, sandy drainage channel with *Retama raetam* shrubs. (10) JO 38, Wadi Rum, E of Umm Ishrin, wide sandy fields with stock from *Haloxylon persicum* (Chenopodiaceae). © W. Waitzbauer.



Figs 11–12. (11) JO 34, Wadi Araba, 10 km N of Gharandal, sandy fields and debris fans with acacia trees (*Vachellia tortilis* subsp. *raddiana*). (12) JO 10, Dead Sea near to Mazra, shore slope with shrub vegetation (*Tamarix*, *Ochradenus*, *Lycium*). © W. Waitzbauer.

JO40. S Wadi Rum Wadi Hisman, 30°58' N, 35°40' E, 820 m a. s. l. (Fig. 7). Sand dunes, debris-filled drainage channels; dominant plants: stand-forming *Retama raetam*, also *Aerva javanica*, *Anabasis articulata*, *Artemisia judaica*, *Astragalus spinosus*, *Apteranthes europaea*, *Senna italica*, *Hyparrhenia hirta*.

JO41. SW Wadi Rum area, Rska, 29°34' N, 35°26' E, 878 m a. s. l. (Fig. 8). Sandy rocky terrain, small wadi; dominant plants: *Retama raetam*, *Gymnocarpos decandrum*, *Haloxylon persicum*, *Haloxylon scoparium*, *Podonosma orientalis*, *Drimia maritima*.

JO42. SE Wadi Rum area, Wadi (Yutim) El Umran, 29°29' N, 35°11' E, 722 m a. s. l. (Fig. 6). Sandy-stony broad wadi bed and alluvial fans; dominant plants: *Anabasis articulata*, *Haloxylon scoparium*, *Lycium shawii*, *Vachellia tortilis* subsp. *raddiana*. – Lateral field slopes; dominant plants: *Aerva javanica*, *Artemisia judaica*, *Astragalus spinosus*, *Hyparrhenia hirta*, *Launaea nudicaulis*, *Lycium shawii*, *Ochradenus baccatus*, *Zilla spinosa*.

JO43. Wadi Al Wala, N. of Thiban, 31°33' N, 35°47' E, 362–500 m a. s. l. Wide canyon, stony riparian margin, alluvial fan, water-bearing; dominant plants: *Arundo donax*, *Bromus* sp., *Mentha longifolia*, *Nerium oleander*, *Tamarix* sp.

Morocco

MA 1. Azrou, Middle Atlas, 33°27' N, 05°13' W, 1250–1278 m a. s. l., dense *Cedrus atlantica* forests.

Tunisia

TU 1. El Guettar, 34°20' N, 8°57' E, 250 m a. s. l. Halfa steppe, grazed, transition to Shih steppe; dominant plants: *Artemisia herba-alba*, *Astragalus armatus* subsp. *armatus*, *Scorzoneroideis muelleri*, *Reichardia tingitana*, *Schismus barbatus*, *Stipellula capensis*, *Macrochloa tenacissima*, *Ziziphus lotus*.

TU 2. Kasserine, 35°10' N, 08°50' E, 55 m a. s. l. Shih steppe (wormwood steppe); dominant plants: *Anagallis arvensis*, *Artemisia herba-alba*, *Astragalus cruciatus*, *Calendula arvensis*, *Medicago laciniata*, *Thymelaea hirsuta*.

TU 3. La Skhira, 34°18' N, 10°04' E, 12 m a. s. l. Chenopodiaceous steppe; dominant plants: *Arthrocaulon macrostachyum*, *Halocnemum strobilaceum*, *Limonium pruinosum*, *Suaeda fruticosa*, *Tamarix articulata*, *Targanum nudatum*.

TU 4. Medenine, 33°21' N, 10°30' E, 80 m a. s. l. Shih steppe, transition to semi-desert with dwarf shrubs; dominant plants: *Artemisia herba-alba*, *Cornulaca monacantha*, *Echiochilon fruticosum*, *Halocnemum strobilaceum*, *Muricaria prostrata*, *Plantago coronopus*, *Salvia lanigera*, *Ziziphus lotus*, *Zygophyllum album*.

TU 5. Metlaoui, Seldja gorge, banks of Oued Seldja, 34°19' N, 08°24' E, 231 m a. s. l. Foreland semi-desert with annual species and perennial semishrubs or steppe grasses; dominant plants: *Pallenis hierochuntica*, *Koelpinia linearis*, *Launaea angustifolia*, *Pergularia tomentosa*, *Stipellula capensis*. – River banks with boulders and alluvial sand; dominant plants: *Bassia muricata*, *Rumex vesicarius*, *Salicornia* cf. *arabica*.

TU 6. Bou Grara, Oued Fedje, 33°30' N, 10°41' E, 80 m a. s. l. Dry wadi bed with erosion banks and sand dunes; dominant plants: *Aristida pungens*, *Cucumis pustulatus*, *Echiochilon fruticosum*, *Peganum harmala*, *Salicornia fruticosa*, *Zygophyllum* sp.

TU 7. Tabarka, 36°57' N, 8°57' E, 5 m a. s. l. Mediterranean, grazed maquis; dominant plants: *Calendula arvensis*, *Calycotome villosa*, *Daphne gnidium*, *Erica arborea*, *Ononis variegata*, *Quercus pubescens*, *Smyrniium olusatrum*.

TU 8. Zaghouan, 36°24' N, 10°09' E, 186 m a. s. l. Mediterranean agricultural landscape, olive and fruit plantations, field crops with interspersed maquis remnants; dominant plants: *Calycotome villosa*, *Myrtus communis*, *Pistacia lentiscus*, *Tetraclinis articulata* forest.

Israel

IS1. Chazewa (Hadseva), central Arava (Negev), 31°41' N, 35°07' E, approx. 200 m a. s. l. Sandy desert, dominated by *Vachellia erioloba*, *V. tortilis*, *Artemisia tridentata*, *Asphodelus* cf. *microcarpus*, *Retama raetam*.

West Bank

WE1. Nablus surroundings, 32°13' N, 35°16' E, 60 m a. s. l., no further biotope details.

Jordan's biogeographical regions

Due to its special geographical position, four clearly separated bio-geographical regions meet in Jordan. These were summarised by the phytogeographer ZOHARY (1973) for the classification of the vegetation of the Near and Middle East and are also valid for a bio-geographical classification. In terms of climatic geography, Jordan has a north-south and a west-east profile, resulting in a mosaic-like interlocked climatic distribution of temperate, arid and xeric habitats. The assignment of the collection sites to a zoogeographical zone was necessary, but not always easy, as they are sometimes located in transitional areas of two zones, especially the Eastern Mediterranean and the Iranian-Turanian.

The eastern Mediterranean region

This region is influenced by the Mediterranean Sea and extends from the north-west along the wetter mountain ranges – especially on the west-facing slopes – with an annual rainfall of about 650 mm far into the south to Petra (annual rainfall 350 mm). Mediterranean cultivated areas (olive, almond) with colourful spring meadows (*Calendula arvensis*, *Anemone coronaria*, *Ranunculus asiaticus*, *Chrysanthemum* species, *Cistus* species), but also oak forests (*Quercus coccifera*), pine forests (*Pinus halepensis*, *Arbutus andrachne*, *Pistacia lentiscus*), maquis and rocky garigue (= batha) (*Calicotome villosa* with small shrub communities of *Rosmarinus officinalis* and *Euphorbia hierosolymitana*) characterise the landscape – depending on exposure and precipitation (ALBERT et al. 2004).

Assigned localities: JO 1, JO 2, JO 4–JO 8, JO 16–JO 18, JO 20–JO 25, JO 30, JO 35, JO 43.

The Iranian-Turanian region

This region is characterised by increased continentality with high summer and cold winter temperatures and decreasing precipitation (< 350 mm/a). This also means that the “xeric tree line” has been reached and the green of the Mediterranean landscape dissolves like a mosaic or even abruptly. The drought-tolerant species *Juniperus phoenicea*, *Pinus halepensis* and *Quercus coccifera* form only sparse stands even at altitudes around 1000 m and give way to a species-poor wormwood (= sirh) over large areas with the dominant leading species *Artemisia herba-alba*, mainly accompanied by *Noaea mucronata*, *Atriplex halimus*, *Astragalus spinosus*, and *Asphodeline lutea*. This dry area extends as a broad belt to the east and southeast into the Syrian-Iraqi desert with decreasing rainfall of 200 and even 100 mm/a (ZOHARY 1973).

Assigned localities: JO 3, JO 9, JO 12–JO 15, JO 26–JO 29.

The Saharo-Arabian region

This region covers about 80% of the country's arid area. It is adjacent to the Iranian-Norman region and is characterised by low annual precipitation of around 100 mm, but mostly below 35 mm (ZOHARY 1973). Spatially, it covers large areas in the southeast along the border with Saudi Arabia, the Wadi Rum and the lower slopes of the 200 km long Wadi Araba from the Gulf of Aqaba to the Dead Sea. This region is part of the mighty Saharic desert belt, which stretches across the northern part of Africa eastwards across the Sinai and includes large areas of the Arabian Peninsula. In Jordan, it comprises different desert types such as sand desert (= erg), gravel desert (= reg), stone/rock desert (= hamada) and, as a local special form, the basalt desert (= harra). The species-poor vegetation is highly fragmented, with only a few percent cover. Only along dry rivers (= wadis) with groundwater connection can permanent vegetation consist of bushes (*Lycium shawii*, *Retama raetam*, *Tamarix* sp., *Rhamnus* sp., *Ziziphus lotus*, etc.) and even trees (*Vachellia tortilis* subsp. *raddiana*, *Ficus palmata* subsp. *palmata*). Sand dunes are also good moisture reservoirs at their base, and small areas of vegetation with deep-rooted species, such as *Calligonum comosum* and *Haloxylon scoparium*, also occur here. The lowest diversity characterises the rocky desert. In addition to briars (*Lycium shawii*, *Ziziphus lotus*, *Zilla spinosa*), drought- and salt-tolerant species, mainly Chenopodiaceae, such as *Anabasis articulata* and *Haloxylon scoparium*, as well as various xerophytic Poaceae, are also becoming increasingly common. A typical indicator of massive overgrazing by goats and sheep is the poisonous sea onion, *Drimia maritima* (ALBERT et al. 2004).

Assigned localities: JO 19, JO 31, JO 36–JO 42.

The thermal-extreme region

The Great Rift Valley between Israel and Jordan, which is open to the south towards the Gulf, with the Wadi Araba depression, promotes the immigration of drought-tolerant and heat-loving tropical and subtropical vegetation and fauna, which penetrate into the lower Jordan Valley via the thermal extreme around the Dead Sea (summer temperatures up to over 50°C). Leading species are various trees, such as acacias (especially *Vachellia tortilis raddiana*, *V. tortilis tortilis*) and other Sudanese species, such as *Balanites aegyptiaca*, *Maerua crassifolia*, *Moringa peregrina*, *Ziziphus spina-christi* as well as the large shrubs of *Ochradenus bacchatus* and the extremely poisonous *Calotropis procera* (ZOHARY 1982).

Assigned localities: JO 10, JO 11, JO 32–JO 34.

Systematic list of Buprestidae with unpublished records

Julodis aequinoctialis deserticola FAIRMAIRE, 1859 (Fig. 21)

Material examined. Tunisia: TU 7, Tabarka, Mediterranean maquis, II.1975, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Northern Africa: AG, MO. – Afrotropical Region. – First record from Tunisia.

Julodis ehrenbergii ehrenbergii LAPORTE & GORY, 1835 (Fig. 13)

Material examined. Jordan: JO 24, Petra, Bayda, Wadi Muágsra, IV.1998, 1 ex., leg. W. Waitzbauer; JO 29, ruins, Umm el Jimal, III.1998, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: AL, BU, GR, MC. Northern Africa: EG. Western Asia: CY, IN, IQ, IS, SY, TR. First record from Jordan.



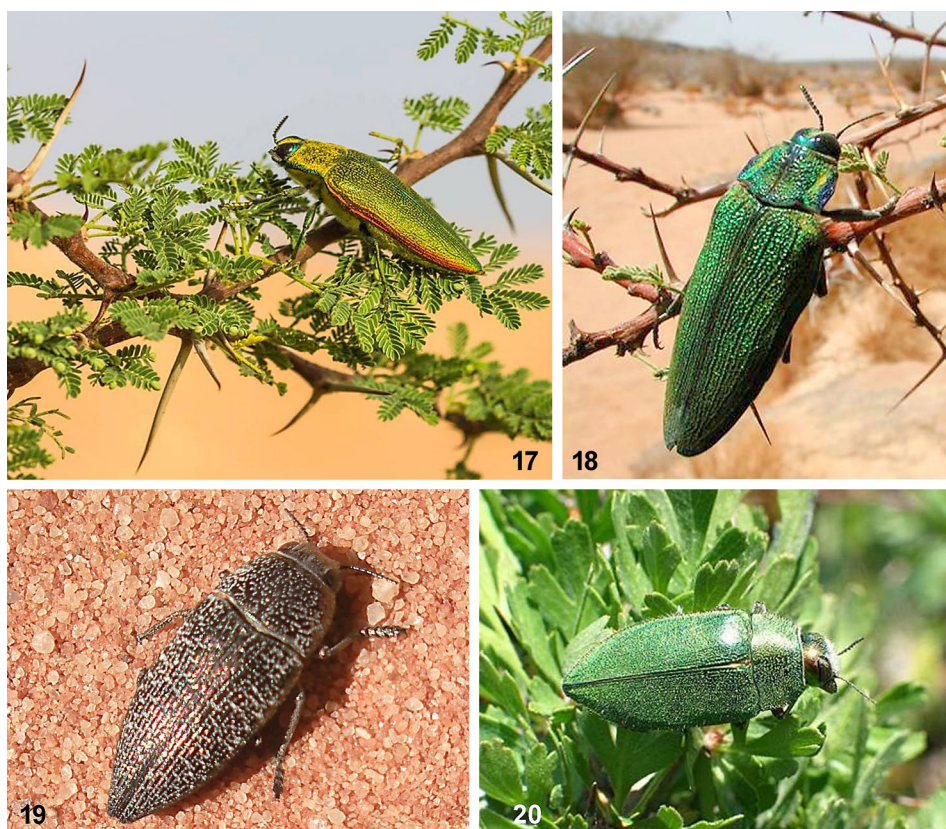
Figs 13–16. (13) *Julodis ehrenbergii ehrenbergii*, Jordan, Wadi Rum. (14) *Julodis iris*, Israel, Hazewa, 21.IV.2013. (15, 16) *Julodis syriaca distincta*, Jordan, Wadi Rum. © 13, 15, 16: W. Waitzbauer; 14: O. Niehuis.

***Julodis iris* LAPORTE & GORY, 1835 (Fig. 14)**

Material examined. Jordan: JO9, Dana National Park, batha, IV.1992, 1 ex., leg. W. Waitzbauer; JO30, Wadi al Hasa, rocky slope, IV.1995, 2 ex., leg. W. Waitzbauer; JO40, Wadi Hisman (Charsa Area), semi-desert, 24.IV.1998, 1 ex., leg. W. Waitzbauer; JO42, Wadi Rum (Wadi El Umran), hamada, IV.2002, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): North Africa: EG. Western Asia: IQ, IS, JO, SI.

Notes. VOLKOVITSH (2004) as well as the ISRAEL'S NATURE SITE (2023) place these animals in *J. aequinoctialis* (OLIVIER, 1790). We follow the catalogue (KUBÁŇ 2016), which lists the Jordanian specimens as *J. iris*.



Figs 17–20. (17, 18) *Steraspis squamosa squamosa*, Jordan, Wadi Araba. (19) *Lampetis mimosae mimosae*, Jordan, Wadi Rum. (20) *Perotis chlorana*, Jordan, Wadi Rum. © W. Waitzbauer.

***Julodis lucasi* SAUNDERS, 1871 (Fig. 22)**

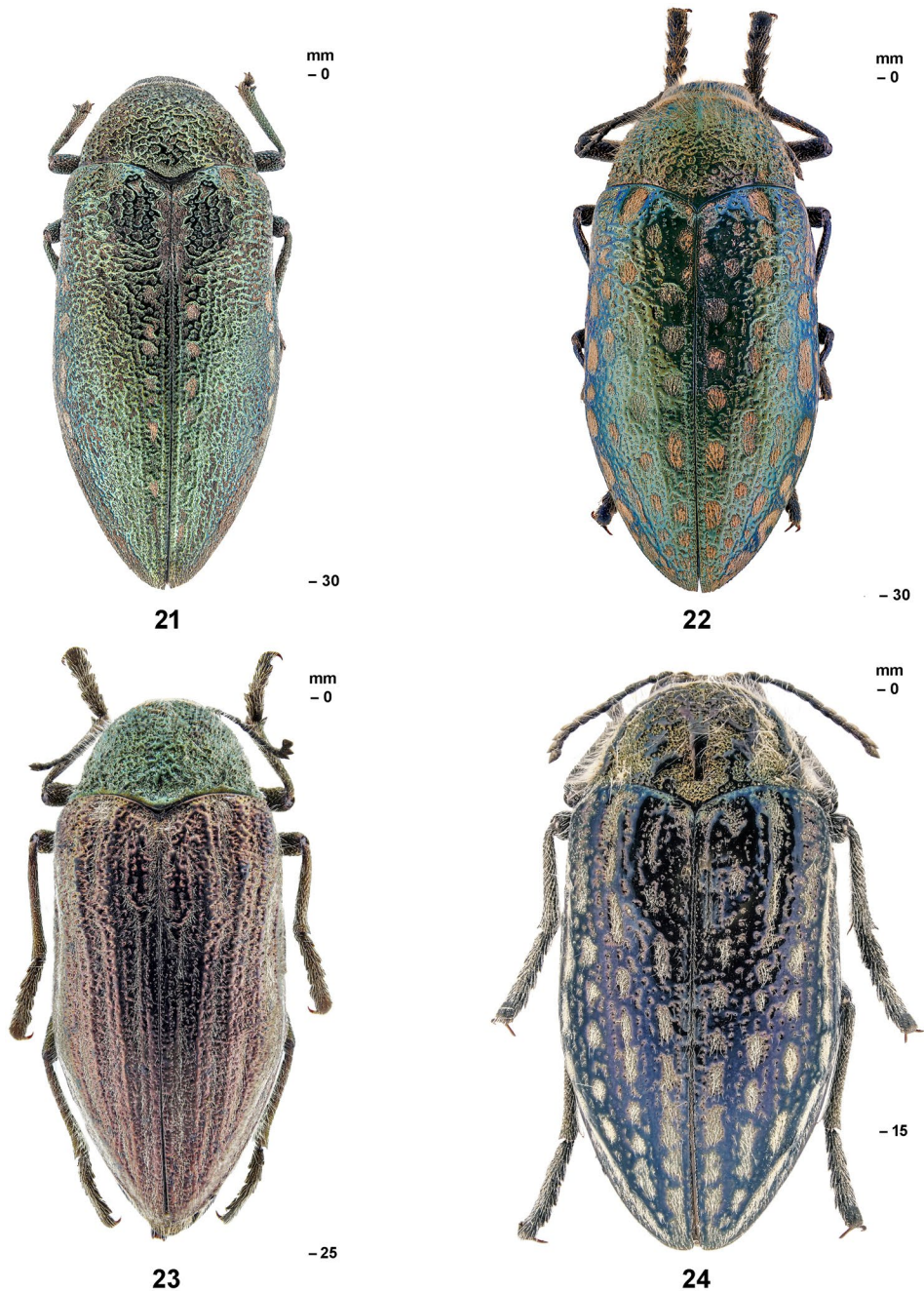
Material examined. Tunisia: TU2, Kasserine, halfa steppe, II.1975, 1 ex., leg. W. Waitzbauer; TU1, El Guettar, semi-desert, IV.1976, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): North Africa: AG, LB, TU.

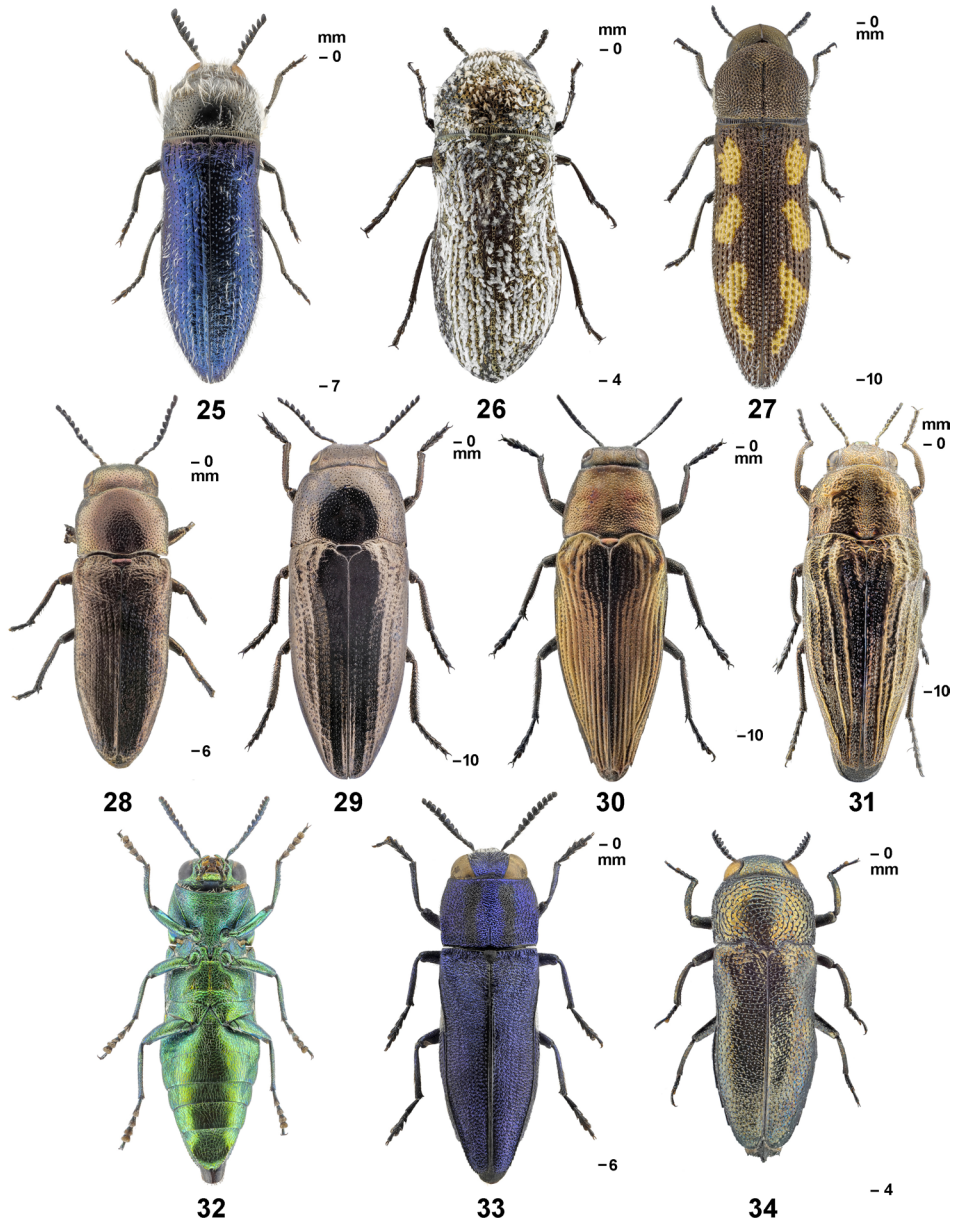
***Julodis* sp. (*onopordi* group) (Fig. 23)**

Material examined. Tunisia: TU7, Tabarka, maquis, II.1975, 1 ex., leg. W. Waitzbauer; TU5, W Metlaoui, Seldja gorge, river bank, IV.1976, 1 ex., leg. W. Waitzbauer; TU4, Medenine, shih steppe, V.1982, 1 ex., leg. W. Waitzbauer; TU6, Qued el Fedje near Bougrara, riverbank dunes, V.1982, 1 ex., leg. W. Waitzbauer.

Notes. Due to the lack of a median spine-like frontal process at the broad margin of the epistome in our specimens, the identification key to species by THÉRY (1929: pp. 13–14) leads to the diverse group of *Julodis onopordi* (FABRICIUS, 1783), to which KUBÁŇ (2016) has summarised five subspecies, including the nominate form. According to KUBÁŇ (2016), the specimens listed here belong to the nominate subspecies. Since it cannot be ruled out that later workers will split the *J. onopordi* complex again, it should be briefly noted here



Figs 21–24. (21) *Julodis aequinoctialis deserticola*, Tunisia, Tabarka; (22) *Julodis lucasi*. (23) Taxon from the *Julodis onopordi* group, specimen from Tunisia (see text). (24) *Julodis peregrina*. © G. Strauß.



Figs 25–34. (25) *Acmaeoderella judaeorum*. (26) *Acmaeoderella squamosa*. (27) *Acmaeoderella longissima longissima*. (28) *Sphenoptera cauta cauta*. (29) *Sphenoptera smyrneensis*. In this species, tibiae of both sexes are similarly structured. (30) *Sphenoptera fulgens fulgens*, ♂. (31) *Sphenoptera kermanshahensis*. (32) *Anthaxia eugeniae halperini*, ♂ (see text). (33) *Anthaxia sponsa*, ♂, cyanescent morph. (34) *Meliboeus aureolus* (from NIEHUIS 2021). © G. Strauß.

that three of the specimens are bronze-brown, the other two have a greenish pronotum that is finely punctate. The elytra show five short and densely hairy longitudinal furrows each, the pubescence is not white, but yellowish-white on the whole body (artefact?). The specimens with greenish pronotum are very reminiscent of the Cretan endemic *Julodis pubescens yvenii* MANNERHEIM, 1837 with pure white pubescence.

***Julodis onopordi onopordi* (FABRICIUS, 1787)**

Material examined. Tunisia: TU2, Kasserine, halfa steppe, II.1975, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): North Africa: AG, LB, MO, TU.

***Julodis onopordi splichali* OBENBERGER, 1917**

Material examined. Tunisia: TU3, La Skhira, schih steppe, II.1975, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: IT (Lampedusa). Northern Africa: TU.

***Julodis peregrina* CHEVOLAT, 1838 (Fig. 24)**

Material examined. Jordan: JO8, Dana National Park, Wadi Faynan, IV.1992, 1 ex., leg. W. Waitzbauer; JO9, Dana, rock steppe, 28.III.1996, 1 ♂, leg. W. Waitzbauer; JO36, Wadi Rum, sandy desert, IV.1992, 1 ♀, leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Northern Africa: EG. Western Asia: IS, JO, SI.

Notes on taxonomy. Our specimens correspond to the specimen illustrated as *J. peregrina* on ISRAEL'S NATURE SITE (2023: Buprestidae 89) which is presented there as recorded in large parts of the country.

***Julodis rothii* STURM, 1843**

Material examined. Jordan: JO22, Mount Nebo, batha, IV.1993, 2 ex., leg. W. Waitzbauer; batha, 6.IV.1995, 1 ex., leg. W. Waitzbauer; batha, III.2004, 2 ex., leg. W. Waitzbauer; JO16, Irbid, 17 km S, agricultural land, IV.1993, 1 ex., leg. W. Waitzbauer; JO21, Mafraq, 5 km NW, small shrub steppe, 16.IV.1998, 1 ex., leg. W. Waitzbauer.

Distribution. KATBEH-BADER (1996): Jordan. KUBÁŇ (2016): Western Asia: IS, JO, SA, SY.

***Julodis speculifer dicksonae* THÉRY, 1936**

Material examined. Jordan: 30, Wadi Al Hasa, hamada, IV.2002, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Western Asia: JO, KU, SA.

***Julodis syriaca distincta* GORY, 1840 (Figs 15, 16)**

Syn.: *Julodis palmyrensis* OBENBERGER, 1923.

Material examined. Jordan: JO23, Pella, (Tabakat Fahl), ruined area, 22.IV.1964, 1 ex., leg. J. Klapperich (in Jordan Museum of Natural History, Yarmouk University, subcr. W. Waitzbauer); JO26, Qasr el Kharanah, 19.V.2002, 1 ex., leg. Wagner (det. M. Niehuis 2005).

Distribution. KUBÁŇ (2016): Western Asia: IQ, JO, SY. KATBEH-BADER (1996): Jordan.

***Julodis syriaca syriaca* (OLIVIER, 1790)**

Syn.: *Julodis philistina* OBENBERGER, 1934.

Material examined. Jordan: JO28, Shawbak, 10 km SW, *Artemisia* steppe, III.1990, 1 ex., leg. W. Waitzbauer; JO27, 5 km S Qusayr Amra, hamada, XI.1992, 1 ex., leg. W. Waitzbauer; Wadi Buthm, 5.IV.1995, 1 ex., leg. W. Waitzbauer; Wadi Buthm, 1 ex., leg. W. Waitzbauer riparian shrubs, IV.2002, 1 ex., leg. W. Waitzbauer; JO13, Hammamet Main, Wadi Main, XI.1992, 1 ex., leg. W. Waitzbauer; JO3, Azraq (Shaumari), 18–23.III.1996, 1 ex., leg. W. Waitzbauer; JO21 Mafraq, 5 km NW, small shrub steppe, 16.IV.1998, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Northern Africa: EG. Western Asia: IS, JO, LE, SI, SY.

Notes on biology. Larvae of *Julodis* species live xylophagously in or on roots in the soil, the imagines are found on trees, shrubs, and thistles (SCHAEFER 1949, MÜHLE et al. 2000).

***Acmaeodera (Acmaeodera) flavolineata flavolineata* LAPORTE & GORY, 1835**

Material examined. Jordan: JO23, Pella (Tabaqat Fahl), ruined area, V.2004, 1 ex., leg. M. Lillig & T. Pavlíček (det. M. Niehuis).

Distribution. KUBÁŇ (2016): Europe: AB, AR, GG, GR, TR. Western Asia: IN, IQ, IS, JO, LE, SY, TR.

Notes on biology. According to MÜHLE et al. (2000), the beetles are found on various flowers, e.g., on *Cistus*. According to this source, the larvae feed on oak (*Quercus*) species, according to CURLETTI (1994) also *Cupressus*, referring to BYTINSKI-SALZ (1967) and HALPERIN & ARGAMAN (2000), specifically name *Quercus ithaburensis* for Israel.

***Acmaeodera (Acmaeodera) macchabaea* ABEILLE DE PERRIN, 1891**

Material examined. Jordan: JO23, Pella (Tabaqat Fahl), 1.V.2004, 1 ex., leg. M. Lillig & T. Pavlíček (det. T. Pavlíček).

Distribution. KUBÁŇ (2016): Western Asia: IS, JO, SY.

Notes on biology. The host plant is according to VOLKOVITSH (2004) “*Acacia* sp. (Israel: M. Niehuis)”.

***Acmaeodera (Acmaeodera) saxicola saxicola* SPINOLA, 1838**

Material examined. Jordan: JO13, Hammamat Main, Wadi Main, II.1993, 1 ex., leg. W. Waitzbauer (det. Volkovitsh 2017); JO18, Kufrinja, 2 km N, 13.IV.1998, 2 ex., leg. W. Waitzbauer (det. Volkovitsh 2017); JO16, Irbid, 17 km S, agricultural land, 15.IV.1998, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: AB, GR. Western Asia: IN, IQ, IS, JO, LE, SY, TR.

Note on biology. VOLKOVITSH (2004) summarises these host plants: “*Pistacia atlantica*, *Quercus* spp. (Israel: HALPERIN & ARGAMAN 2000, VOLKOVITSH et al. 2000), *Quercus*, *Pyrus* (Palearctic: KNOPF 1971, NIEHUIS 1989a, G. Magnani)”.

***Acmaeodera (Acmaeotethya) biseriata* REITTER, 1890**

Material examined. Jordan: JO2, Ajloun, 6 km N, oak forest, 28–30.IV.2018, 1 ex., leg. J. Simandl.

Distribution. KUBÁŇ (2016): Western Asia: IN, IS, LE, SY, TR. First record from Jordan.

Note on biology. Imagines are found on yellow flowers of Asteraceae (VOLKOVITSH 2004).

***Acmaeodera (Acmaeotethya) simulans simulans* ABEILLE DE PERRIN, 1891**

Material examined. Jordan: JO2, Ajloun, near castle, *Quercus* forest, 3.IV.2016, 1 ♂, leg. W. Ziegler.

Distribution. KUBÁŇ (2016): Western Asia: IS, JO, LE (according to VOLKOVITSH 2004 also Iraq, Syria, Turkey).

Notes on biology. According to the synopsis of VOLKOVITSH (2004), the imagines are usually found on yellow flowers of Asteraceae and on flowers of *Convolvulus*; a dead specimen was found in a gallery of a stump of *Pistacia atlantica*; in Israel development in *Quercus coccifera* (BYTINSKI-SALZ & STERNLICHT 1967), according to HALPERIN & ARGAMAN (2000) and VOLKOVITSH et al. (2000) also in *Pistacia lentiscus*, *Prunus dulcis*, *Quercus* sp., *Rhamnus punctatus*, and *Tamarix* sp.

***Acmaeodera (Palaeotethya) lugubris lugubris* SPINOLA, 1838**

Syn.: *Acmaeodera (Palaeotethya) rubromaculata rubromaculata* auct., nec LUCAS, 1844.

Material examined. Jordan: JO34, Wadi Araba, 10km S Gharandal, semi-desert, XI.1992, 2 ex., leg. W. Waitzbauer (1 ex. det. M. Volkovitsh 2017); JO21, Mount Nebo, rocky corridor, IV.1993, 1 ex., leg. W. Waitzbauer; JO38, Wadi Rum, 1 ex., leg. W. Waitzbauer (1 ex. det. Volkovitsh 2017); JO42, Wadi Rum, southern area (Wadi El Umran), hamada, II.2020, 1 ♀, leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Northern Africa: AG, EG, LB, MO, TU. Western Asia: IS, JO.

Notes on biology. Host plants: according to VOLKOVITSH (2004) *Thymelaea*, *Withania*, *Launaea*, *Artemisia*.

***Acmaeoderella (Euacmaeoderella) judaeorum* OBENBERGER, 1914 (Fig. 25)**

Material examined. Jordan: JO6, Amman, 13.V.1963, 1 ex.; JO17, Jerash, Dehbeen, 24.V.1963, 1 ex., and Shawbak, 17.V.1968, 1 ex., leg. J. Klapperich, fide H. Mühle.

Distribution. According to KUBÁŇ (2016), this species only inhabits a small area in Western Asia: IS, JO, SY.

Note. The species differs from *Acmaeoderella (E.) villosula* by its slender shape.

***Acmaeoderella (Acmaeoderella) elbursi* (OBENBERGER, 1924)**

Material examined. Jordan: JO4, al Balqa/al Kafren, Wadi Al Gadaba, 700m a.s.l., 1.IV.2016, 1 ex., leg. W. Ziegler, det. Niehuis 2016, det. M. Volkovitsh 2017.

Distribution. KUBÁŇ (2016): Europe: AR, GR (Crete, Southern Sporades), TR. Western Asia: CY, IN, IQ, IS, JO, LE, SY, TR.

Notes on biology. According to VOLKOVITSH (2004), he and fellow researchers have caught imagines in numbers on yellow flowers of Asteraceae.

***Acmaeoderella (Euacmaeoderella) lanuginosa* (GYLLENHAL, 1817)**

Material examined. Jordan: JO40, S Wadi Rum, Charsa Area Wadi Hisman, 24.IV.1998, 3 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: CR, FR, GR, IT, MA, PT, SP. Northern Africa: AG, MO, TU. Western Asia: IQ, IS, JO, SI, SY.

Notes on biology. One of the host plants is *Ferula communis* (Israel: HALPERIN & ARGAMAN 2000); according to SCHAEFER (1949), the larva of the subspecies *reducta* develops in stems of *Ferula nodiflora*; in Spain, according to COBOS (1986), on *Thapsia villosa*; in Morocco on a cactus-like *Euphorbia* (presumably *Euphorbia echinus*); see also VERDUGO (2005), according to whom *Ferula* and *Thapsia* are the breeding plants of the larva.

***Acmaeoderella (Euacmaeoderella) squamosa* (THÉRY, 1914) (Fig. 26)**

Material examined. Jordan: JO28, Shawbak, *Artemisia* steppe, III.2007, 1 ex., leg. W. Waitzbauer; JO38, Wadi Rum, Umm Ishrin, sand dunes and hamada, IV.2014, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Northern Africa: EG, TU. Western Asia: IQ, IS. First record from Jordan.

Notes on biology. According to VOLKOVITSH (2004), in Israel imagines visit flowers of *Asteriscus graveolens*, *Aaransonia factorovskyi*, *Pulicaria incisa*, and other yellow Asteraceae.

***Acmaeoderella (Liogastris) chrysanthemi* (CHEVROLAT, 1854)**

Material examined. Jordan: JO23, Pella (Tabaqat Fahl), I.V.2004, 1 ex., leg. M. Lillig & T. Pavlíček, det. M. Niehuis.

Distribution. KUBÁŇ (2016): Europe: AB, AR, BU, GR, TR. Western Asia: CY, IN, IQ, IS, JO, LE, SA, SY, TR.

Notes on biology. According to MÜHLE et al. (2000) “on various flowers”, also in Israel (VOLKOVITSH 2004).

***Acmaeoderella (Liogastris) maculipennis* (PIC, 1897)**

Material examined. Jordan: JO28, Shawbak, *Artemisia* steppe, IV.1999, 1 ex., leg. W. Waitzbauer, det. M. Volkovitsh; III.2007, 2 ex., leg. W. Waitzbauer, det. M. Volkovitsh; JO41, Wadi Rum, Rska, sandy-rocky desert, IV.2014, 5 ex., leg. W. Waitzbauer, det. Volkovitsh.

Distribution. KUBÁŇ (2016): Northern Africa: AG, EG, MO, TU. Western Asia: IS. First record from Jordan.

Notes on biology. According to VOLKOVITSH (2004), in Israel the imagines visit yellow Asteraceae; the development (according to MATEU 1972) takes place in acacia wood.

***Acmaeoderella (Omphalothorax) adpersula adpersula* (ILLIGER, 1803)**

Material examined. Jordan: JO42, S. Wadi Rum, Wadi El Umran, hamada, II.2020, 1 ♂, leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: AL, BH, BU, CR, FR, GR, IT, MC, ME, PT, SP. Northern Africa: AG, EG, LB, MO, TU. Western Asia: CY, IQ, IS, SY, TR; according to VOLKOVITSH (2004) also JO.

Notes on biology. According to a synopsis by VOLKOVITSH (2004) a distinctly polyphagous species; larvae develop in “*Pistacia atlantica*, *P. vera*, *Retama raetam* (Israel: HALPERIN & ARGAMAN 2000), *Ephedra*, *Quercus*, *Castanea*, *Argania*, *Populus*, *Cistus*, *Ulmus*, *Celtis*, *Ficus*, *Thymelaea*, *Euphorbia*, *Sorbus*, *Prunus*, *Amygdalus*, *Ceratonia*, *Cytisus*, *Spartium*, *Genista*, *Acer*, *Zygophyllum*, *Rhus*, *Pistacia*, *Vitis*, *Launaea* (...)”.

***Acmaeoderella (Omphalothorax) densisquamis* (ABEILLE DE PERRIN, 1904)**

Material examined. Jordan: JO33, Rahma, hamada, 22–23.V.2006, 1 ex., leg. M. Rejzek.

Distribution. KUBÁŇ (2016) (sub *densisquamis*): Western Asia: IN, IS, JO, SY, TR.

Notes on biology. VOLKOVITSH (2004) names *Pistacia atlantica*, *P. vera*, and *Ulmus* sp. as host plants and HALPERIN & ARGAMAN (2000) also for Israel.

***Acmaeoderella (Omphalothorax) longissima longissima* (ABEILLE DE PERRIN, 1904)**
(Fig. 27)

Material examined. Jordan: JO2, Ajloun Reserve, 1010m a.s.l., 10.VI.2011, 1 ex., leg. C. Monnerat.

Distribution. NIEHUIS (1989): Jordan; KUBÁŇ (2016): Europe: GR. Western Asia: AE, IN, IQ, IS, JO, TR.

Notes on biology. According to MÜHLE et al. (2000) the imagines are found on *Eryngium* sp. as host plant.

***Steraspis squamosa squamosa* (KLUG, 1829)** (Figs 17, 18)

Material examined. Jordan: JO 13, Hammamat Main, Wadi Main, riparian zone, II.1993, 2 ♀♀, leg. W. Waitzbauer; semi-desert above Wadi, IV.1999, 1 ♂, leg. W. Waitzbauer.

Distribution. KATBEH-BADER (1996) Jordan; according to KUBÁŇ (2016): Northern Africa: AG, EG, LB, MO. Western Asia: CY, IS, JO, LE, SI, SY. Tropical Africa.

Notes on biology. Development in *Tamarix*, imagines on “*Acacia* sp.” and *Tamarix* (VOLKOVITSH 1984, BYTINSKI-SALZ 1954, and HALPERIN & ARGAMAN 2000 for Israel).

***Capnodis carbonaria* (KLUG, 1829)**

Material examined. Jordan: JO20, Madaba City, from almond tree, IV.1999, 1 ♀, leg. W. Waitzbauer.

Distribution. KATBEH-BADER (1996): Jordan. KUBÁŇ (2016): Europe: AB, AR, BH, BU, GG, GR, MC, ST, UK (Crimea). Northern Africa: EG. Western Asia: CY, IS, JO, LE, SY, TR.

Notes on biology. According to MÜHLE et al. (2000) imagines are found on their host plants: almond (*Prunus amygdalis*), apricot (*P. armeniaca*), sour cherry (*P. cerasus*), peach (*P. persica*), generally *Prunus* species, apple (*Malus*), and ash tree (*Rhus*).

***Lampetis (Spinthoptera) mimosae mimosae* (KLUG, 1829)** (Fig. 19)

Material examined. Jordan: JO 3, Azraq/Shaumari, 18–22.III.1996, 2 ex., leg. W. Waitzbauer; JO 21, ca. 10km NW Mafraq, small shrub steppe, 16.IV.1998, 1 ex., leg. W. Waitzbauer; JO 30, Wadi Al Hasa, rocky slope, 9.IV.1995, 1 ex., leg. W. Waitzbauer; JO 31, Wadi Mujib, rocky corridor, 9.IV.1995, 1 ex., leg. W. Waitzbauer; JO 28, Shawbak, *Artemisia* steppe, III.2007, 1 ex., leg. W. Waitzbauer; JO 38, Wadi Rum, Jebel Umm Ishrin, III.1990, 1 ex., leg. W. Waitzbauer; JO 40, S. Wadi Rum, Charsa area and Wadi Hisman, semi-desert, 24.IV.1998, 1 ex., leg. W. Waitzbauer; JO 36, Wadi Rum, near to Rum village, sandy desert, IV.2014, 1 ex., leg. W. Waitzbauer; JO 42, SW Wadi Rum, Wadi El Umran, hamada, II.2002, 1 ex., leg. W. Waitzbauer; JO 39, S. Wadi Rum, Al Hassasiah, sandy desert, III.2018, 1 ex., leg. W. Waitzbauer.

Distribution. KATBEH-BADER (1996): Jordan (sub *argentata* (MANNERHEIM, 1837)), according to KUBÁŇ (2016): Europe: GR (Rhodes). Northern Africa: AG, EG, LB, MO,

TU. Western Asia: AE, IN, IS, JO, LE, OM, PA, SA, SI, SY, TR, YE. Tropical Africa.

Notes on biology. Host plants according to VOLKOVITSH (2004) are *Zygophyllum*, *?Balanites*, *Calligonum commosum*, *Casuarina cunninghamiana*, *Prosopis farcta*, *Tamarix* sp. (BYTINSKI-SALZ 1954; Israel: HALPERIN & ARGAMAN 2000; Egypt: LOTTE 1943).

***Perotis chlorana* LAPORTE & GORY, 1836** (Fig. 20)

Material examined. Jordan: JO35, Wadi Musa, oak stand, 9.III.2015, 14 ex., leg. J. Buse; JO9, Dana village surroundings, no further biotope details, 23.IV.2018, 1 ex., leg. J. Simandl.

Distribution. KUBÁŇ (2016): Western Asia: IS, JO, LE, SY.

Notes on biology: Host plants according to the synopsis of VOLKOVITSH (2004) are *Cupressus* sp., *Quercus* sp., *Pyrus communis*, *Prunus* spp., *Prunus amygdalis*, *Punica granatum*, *Casuarina* (Israel: BODENHEIMER 1930; HALPERIN & ARGAMAN 2000).

***Perotis unicolor unicolor* (OLIVIER, 1790)**

Material examined. Tunisia: TU8, Zaghuan 7km NE, *Tetraclinis* forest, 12.IV.1997, 2 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: IT (Marettimo), FR, PT, SP. Northern Africa: AG, MO, TU.

Notes on biology. SCHAEFER (1949) caught imagines in North Africa on *Thymelaea hirsuta*, *T. lythroides*, *Pistacia lentiscus*, and *Punica granatum*; according to COBOS (1986) development occurs in *Erica arborea*, *Thymelaea microphylla*, some times in *Prunus amygdalis* and *P. persica*, according to VERDUGO (2005) even in *Daphne gnidium*. The second author (see above) collected the species on *Tetraclinis articulata*.

***Sphenoptera (Chilostetha) cauta cauta* JAKOVLEV, 1904** (Fig. 28)

Material examined. Jordan: JO8, Dana Reserve, 1800 m a.s.l., dry slope with oak bushes, 6.VI.1998, 3 ex., leg. Brechtel, Wurst & Ehrmann.

Distribution. KUBÁŇ (2016): Europe: AR, AU, BH, BU, CR, GR, HU, IT, MC, SK, SP. Western Asia: IN, JO, SY, TR.

Notes on biology. According to BÍLÝ (2002), the larva of this species (sub *S. petriceki*) develops in the roots of *Tunica prolifera* (sprouting coat flower).

Taxonomic notes. The specimens from Jordan are similar to *S. (Chilostetha) damascena* (OBENBERGER, 1952), which is considered a synonym of *Sphenoptera c. cauta* by KUBÁŇ (2016), due to the metallic colouration. Unlike typical *S. c. cauta*, the posterior corners are not blunt, but somewhat projecting due to the shallow lateral margin in front of the posterior corners, making individual specimens reminiscent of the pattern in the enigmatic *S. gonionyx* (ABEILLE DE PERRIN, 1909), in THERY (1929). As there are no significant constant differences in the aedeagus to *S. c. cauta*, it should be examined whether *S. damascena* may deserve subspecies rank.

***Sphenoptera (Deudora) sculpticollis* HEYDEN, 1886**

Material examined. Jordan: JO22, Mount Nebo, 31°46' N, 35°43' E, rocky steppe, 802 m a.s.l., 6.IV.1995, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: AB, AR, GG. Western Asia: CY, IN, IQ, IS, LE, SY, TR. First record from Jordan.

Notes. No information on host plants was found.

***Sphenoptera (Deudora) signata* JAKOVLEV, 1887**

Material examined. Jordan: JO24, Petra, 14.V.1994, 1 ex., leg. K. Denes jun., no further biotope details.

Distribution. KATBEH-BADER (1996): Jordan (sub *S. jureceki* OBENBERGER, 1946 and *S. obsoleta* JAKOVLEV, 1891). KUBÁŇ (2016): Europe: AB, AR, BU, GG, GR, MC. Western Asia: IN, IS, SY, TM, TR.

Notes. No information on host plants was found.

***Sphenoptera (Deudora) smyrneensis* GORY, 1841 (Fig. 29)**

Material examined. Jordan: JO28, Shawbak, 24.V.1968, 1 ♂, leg. J. Klapperich (coll. H. Mühle); JO 1, Abdallah, *Quercus coccifera* forest, 30.III.1996, 2 ♂♂, leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: AB, AR. Western Asia: IN, IS, LE, SY, TR.

Notes on biology. According to VOLKOVITSH (2004) imagines can be found by "sweeping tall herbs; on ground".

***Sphenoptera (Deudora) vittaticollis* LUCAS, 1844**

Material examined. Jordan: JO36, Wadi Rum, near to Rum village, sandy desert, III.1990, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Northern Africa: AG, EG, LB, MO, TU. Western Asia: IS. Tropical Africa. First record from Jordan.

Notes on biology. No information on host plants was found. Considered, e.g. by THÉRY (1930), as a synonym of *S. rauca*, which according to SCHAEFER (1949), develops in thistle species and in wild artichokes in North Africa and flies to *Calicotome spinosa* and *Chamerops humilis* (dwarf palm).

***Sphenoptera (Tropaeopeltis) fulgens fulgens* GORY, 1941 (Fig. 30)**

Material examined. Jordan: JO32, Wadi Araba, 20 km N Al Aqabah, hamada, 22.III.1998, 1 ex., leg. D. Baiocchi; JO33, Wadi Araba, Rahma, hamada with acacias, 22–23.V.2006, 1 ex., leg. M. Rejzek; JO 19, Ma'an, Butn al Ghul, dry wadi, 1 ex., leg. S. Bečvār (coll. G. Magnani, det. M. Niehuis 2003) [date erroneously not noted].

Distribution. KUBÁŇ (2016): Northern Africa: AG, EG, LB. Western Asia: IN, IS, JO, SA, YE. Tropical Africa.

Notes on biology. In Israel, the first author collected this species from fragile acacia branches several times.

***Sphenoptera (Paradeudora) kermanshahensis* OBENBERGER, 1952 (Fig. 31)**

Material examined. Jordan: JO15, Humayama, 45 km S. Petra (N29°56'06.8", E35°25'48.9"), 1047 m a. s. l., semi-desert, shrubs, 10.III.2015, 1 ex., leg. J. Buse, 10.III.2015, 1 ex., leg. W. Ziegler.

Distribution. KUBÁŇ (2016): Western Asia: AE, IN, IQ, KU, SA, SY. First record from Jordan.

Notes. No information on host plants was found.

***Sphenoptera (Sphenoptera) tragacanthae* KLUG, 1829**

Syn.: *Sphenoptera (Sphenoptera) coracina* STEVEN, 1829.

Material examined. Jordan: JO 13, Hammamat Ma'in, hot springs, IV.1992, leg. W. Waitzbauer 1992, 1 ex., leg. W. Waitzbauer; 6.IV.2002, 1 ex., leg. S. Ziani, coll. G. Magnani, det. M. Niehuis 2003; JO 30, Wadi Al Hasa, rocky slope, 29.III.1996, 1 ex., leg. W. Waitzbauer; JO 3, Azraq/Shaumari, 18–23.III.1996, 1 ex.; JO 27, Qusayr Amra, Wadi Buthm, sandy desert, 5.IV.1995, 1 ex., leg. W. Waitzbauer; Wadi Buthm, shrub vegetation, IV.2002, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: AB, AR, BU, GG, GR, MC, ST, UK. Western Asia: IN, IQ, IS, LE, SY, TR. First record from Jordan.

Notes on biology. Host plants: according to VOLKOVITSH (2004) in the “Palaeartic region development in *Astragalus (Tragacantha)* (M. Kalashian)”.

Notes on taxonomy. KUBÁŇ (2016) lists *S. coracina* (14 synonyms) and *S. tragacanthae* (45 synonyms) as two separate species that occur together in large parts of their range (Armenia, Azerbaijan, Georgia, Iran, Iraq, Lebanon, Syria, Turkey, Ukraine) and both develop in *Astragalus*. No evidence is given for Jordan. The morphological differences are probably limited to the sculpture, which is very variable and responsible for the multitude of synonyms. So far, we do not recognise any reliable distinguishing features, but we see the problem that both taxa were described in the same year.

***Sphenoptera (Sphenoptera) magna* LAPORTE & GORY, 1839**

Material examined. Jordan: JO 31, Wadi al Mujib, Nature Reserve, degraded Batha, 7–9. IV.1994, 1 ex., leg. S. Bečvář (coll. G. Magnani, det. Niehuis 2003); JO 5, Al Karak, 16.IV.2002, 1 ex., leg. M. Snižek, no further biotope information.

Distribution. KUBÁŇ (2016): Western Asia: IN, IQ, IS, JO, SA, SY, TR.

Notes. No information on host plants was found.

***Anthaxia (Anthaxia) marmottani* BRISOUT DE BARNEVILLE, 1883**

Material examined. Morocco: MO 1, Middle Atlas, Azrou, *Cedrus atlantica* forest, IV.2006, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Northern Africa: AG, MO.

Notes on biology. According to COBOS (1986) this species develops in *Cedrus*.

***Anthaxia (Anthaxia) sedilloti sedilloti* ABEILLE DE PERRIN, 1893**

Material examined. Morocco: MO 1, Middle Atlas, Azrou, *Cedrus atlantica* forest, IV.2006, 1 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Northern Africa: AG, LB, MO, TU.

Notes on biology. According to VOLKOVITSH (2004), in Israel another subspecies develops in *Retama raetam*.

***Anthaxia (Cratomerus) eugeniae halperini* NIEHUIS, 1993 (Fig. 32)**

Material examined. Jordan: JO 2, Ajloun South, 7.VI.1995, 1 ex., leg. W. Ulrich, no further biotope information.

Distribution. KUBÁŇ (2016): Western Asia: IS, JO, LE, SY.

Notes on biology. Host plants: According to the synopsis by VOLKOVITSH (2004) the imagines prefer yellow flowers of Asteraceae and others, the larvae develop in *Quercus coccifera* and *Ulmus* species (Israel: HALPERIN & ARGAMAN 2000).

Notes on characteristics. The female of the subspecies *halperini* differs slightly from the nominate form by its unicoloured green venter (like in the illustrated male).

***Anthaxia (Cratomerus) sponsa* KIESENWETTER, 1857 (Fig. 33)**

Syn.: *Anthaxia (Cratomerus) violacea* BILÝ, 1977.

Material examined. Jordan: JO2, Ajloun, N Hotel al Rabat, *Quercus coccifera* maquis, 14.IV.1995, 1♂, leg. W. Waitzbauer; JO20, Madaba environment, 20–25.IV.2019, 1♂, leg. M. Basler (ex. coll. H. Hebauer); this specimen belongs to the cyanescent form *violacea*.

Distribution. KUBÁŇ (2016): Europe: AB, AR, BU, GG, GR, MC, RO, TR. Western Asia: IN, IS, JO, LE, SY, TM, TR.

Notes on biology. According to VOLKOVITSH (2004), in Israel it is the most common species on yellow flowers; his synopsis of breeding plants: *Quercus coccifera*, *Q. ithaburensis*, *Pistacia* spp. (Israel: BYTINSKI-SALZ & STERNLICHT 1967, *A. nupta* errat. HALPERIN & ARGAMAN 2000); *Quercus*, *Juglans*, *Prunus* (Palearctic: SOLDATOVA 1970, BILÝ 1980).

Notes on taxonomy. The cyanescent form of *Anthaxia sponsa* shown in the picture, was described by BILÝ (1977) as *Anthaxia violacea*, but KUBÁŇ (2016) retracted it as a synonym. It is worth noting that this violet form is relatively common in Israel, Jordan and neighbouring countries, but absent or rare in other countries.

***Anthaxia (Haplanthaxia) cichorii* (A.G. OLIVIER, 1790)**

Material examined. Jordan: JO6, Amman, 13.V.1963, 1♂, leg. J. Klapperich (ex coll. H. Mühle), no further biotope information.

Distribution. KUBÁŇ (2016): Europe: AB, AL, AR, AU, BE, BH, BU, CR, CT, CZ, FR, GE, GG, GR, HU, IT, MC, MD, ME, PL, RO, SB, SK, SL, SP, ST, SZ, TR, UK. Western Asia: IN, IQ, IS, JO, LE, SY, TM, TR.

Notes on biology. According to the synopsis by VOLKOVITSH (2004) the imagines are found on yellow flowers of Asteraceae, the larvae in *Casuarina cunninghamiana*, *Cercis siliquastrum*, *Pistacia atlantica*, *Prosopis farcta*, *Quercus coccifera*, *Q. ithaburensis*, *Ulmus glabra*, *Vitis vinifera* (Israel: BYTINSKI-SALZ & STERNLICHT 1967, HALPERIN & ARGAMAN 2000); *Acer*, *Ceratonia*, *Cercis*, *Fagus*, *Frangula*, *Malus*, *Paliurus*, *Parrotia*, *Pistacia*, *Prunus*, *Pyrus*, *Quercus*, *Salix*, *Ulmus* (Palearctic: RICHTER 1949, SOLDATOVA 1970, HELLRIEGL 1978a, b, COBOS 1986).

***Anthaxia (Haplanthaxia) congregata* KLUG, 1829**

Material examined. Jordan: JO33, Rahma 35 km N Al Aqabah, hamada with acacias, 22–23.V.2008, 1 ex., leg. M.Ý. (det. Sv. Bilý 2009).

Distribution. KUBÁŇ (2016): Northern Africa: AG, EG, LB, MO, TU. Western Asia: AE, IN, IQ, IS, JO, SA, SI. Tropical Africa.

Notes on biology. By K. and F. Adlbauer in Senegal, by M. and O. Niehuis in Israel, and by M. Niehuis in Morocco from acacias as host plants.

***Anthaxia (Haplanthaxia) croesus* VILLERS, 1789**

Material examined. Tunisia: TU 8, Zaghouan, 7 km SE, on *Tetraclinis articulata*, 12.IV.1997, 1 ♀, leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: CR, FR, GR, IT, PT, SP. Northern Africa: AG, LB, MO, TU.

Notes on biology. According to MÜHLE et al. (2000), the imagines are found on various flowers; the larvae develop in thin twigs of *Acer*, *Arbutus unedo*, *Ceratonia siliqua*, *Cornus mas*, *Pistacia* sp., *Quercus*, *Rhus*, even from conifers (*Juniperus phoenicea*, *Pinus halepensis*) the species is said to have hatched.

Notes on taxonomy. KUBÁŇ (2016): “*Anthaxia (Haplanthaxia) scutellaris* GEN., 1839, reconfirmed syn. of *A. (H.) croesus* (VILLERS, 1789). The type material of *A. (H.) croesus* is missing. Therefore, a taxonomic consensus was adopted by V. Kubáň, D. Baiocchi, Sv. Bílý, T. Kwast, and M. Kafka, based on KIESENWETTER’s (1857) concept of *A. croesus*, the original descriptions and a study of extensive material from the Mediterranean region.”

***Anthaxia (Haplanthaxia) houskai* OBENBERGER, 1946**

Material examined. Jordan: JO 6, Amman, 13.V.1963 and JO 1, Abdallah near Dehbeen Nature Reserve, oak and pine forest, 24.V.1963, 3 ♂♂, 2 ♀♀, both leg. J. Klapperich (ex coll. H. Mühle, det. H. Mühle).

Distribution. KUBÁŇ (2016): Western Asia: IS, JO, LE, SY.

Notes on biology. According to the synopsis by VOLKOVITSH (2004), in Israel the imagines visit flowers of Apiaceae and yellow flowers of Asteraceae.

***Anthaxia (Haplanthaxia) jordanensis* BÍLÝ, 1984**

Material examined. West Bank: WE 1, Nablus, 21.VI.1957, 1 ♀. – Jordan: JO 6, Amman, 13.V.1963, 1 ♂ 3 ♀♀; JO 1 Abdallah, 24.V.1963, 1 ♂, leg. J. Klapperich (ex coll. H. Mühle, det. H. Mühle).

Distribution. KUBÁŇ (2016): Western Asia: IS, JO, SY.

Notes. According to KUBÁŇ (2004) in Israel “on flowers of yellow Asteraceae”.

***Anthaxia (Haplanthaxia) kneuckeri kneuckeri* OBENBERGER, 1920**

Material examined. Jordan: JO 33, Rahma, hamada with acacias, 22–23.V.2006, 20 specimens, leg. M. Rejzek, no further biotope information.

Distribution. KUBÁŇ (2016): Northern Africa: EG. Western Asia: AE, IS, JO, OM, SA, SI. Tropical Africa.

Notes. According to the synopsis of VOLKOVITSH (2004) larvae develop in acacias (*Vachellia* spp.), for example in fragile branches (Israel: HALPERIN & ARGAMAN 2000, Volkovitsh; *V. tortilis*, Saudi Arabia: Buy).

***Anthaxia (Haplanthaxia) nabataea* BAIOCCHI & MAGNANI, 2013**

Material examined. Jordan: JO 12, Wadi Araba, road 60 Feifa-Tafilah km 15, semi-desert, larva ex *Astragalus* sp., 30.IV.–17.V.1998, 1 ♂, leg. D. Baiocchi (paratype).

Distribution. KUBÁŇ (2016): Western Asia: JO.

Notes on biology. According to BAIOCCHI & MAGNANI (2013) this species develops in branches of *Astragalus*.

***Anthaxia (Melanthaxia) corinthia* REICHE & SAULCY, 1856**

Material examined. Jordan: JO23, Pella (Tabaqat Fahl), batha, rocky meadow, II.1994, 5 ex., leg. W. Waitzbauer.

Distribution. KUBÁŇ (2016): Europe: GR, TR. Western Asia: CY, IS, JO, LE, SY, TR.

Notes on biology. According to VOLKOVITSH (2004), the larvae develop in *Pinus halepensis* and *Cedrus* (Israel: HALPERIN & ARGAMAN 2000; Jordan: KATBEH-BADER 1996).

***Anthaxia (Richteraxia) abdita* BILÝ, 1982**

Material examined. Jordan: JO33, Rahma, 35 km N Al Aqabah, hamada with acacias, 22–23.V.2008, 1 ex., leg. M. Rejzek.

Distribution. KUBÁŇ (2016): Western Asia: AE, IS, JO, OM, SA, SI.

Notes on biology. According to the synopsis of VOLKOVITSH (2004), this species was collected on acacias and also on yellow flowering Asteraceae; host plants are acacias (*Vachellia* sp.), *Ficus carica*, and *Prosopis farcta* (information from Israel: HALPERIN & ARGAMAN 2000).

***Agrilus (Rosagrilus) roscidus* KIESENWETTER, 1857**

Material examined. Jordan: JO7, Arda, 20 km N Amman, 5.VI.1964, 1 ex., leg. J. Klapperich (coll. H. Mühle).

Distribution. KATBEH-BADER (1996): Jordan. KUBÁŇ (2016): Europe: AB, AL, AR, AU, BH, BU, CR, CT, CZ, FR, GE, GG, GR, HU, IT, KZ, MA, MC, MD, ME, PT, RO, SB, SK, SL, SP, ST, SZ, TR, UK. Northern Africa: AG, EG, MO, TU. Western Asia: CY, IN, IS, JO, LE, SY, TR.

Notes on biology. According to the synopsis in VOLKOVITSH (2004), this species develops in various host plants: *Amygdalus*, *Ceratonia siliqua*, *Cercis siliquastrum*, *Cotoneaster franchetii*, ?*Pinus halepensis*, ?*Pistacia atlantica*, *Prunus* spp., *Rhamnus alaternus*, *Salix* spp. (Israel: Volkovitsh, HALPERIN & ARGAMAN 2000); *Alnus*, *Ceratonia*, *Crataegus*, *Cydonia*, *Malus*, *Mespilus*, *Prunus amygdalis*, *P. cerasus*, *Prunus* sp., *Pyrus*, *Salix*, *Sorbus*, *Ulmus*, *Viscum* (Palearctic: HELLRIGL 1978a, b, GOBBI 1986, NIEHUIS 1990).

The information for *Pinus halepensis* is very doubtful, as the species otherwise only occurs in deciduous trees, that for *Pistacia* probably refers to *Agrilus marozzinii* and *A. sylviae*, that for *Viscum* to *Agrilus graecus*.

***Meliboeus aureolus* (ABEILLE DE PERRIN, 1893) (Fig. 34)**

Material examined. Jordan: JO12, Feifa, 8 km SE, Jibal Al-Batra Mts., 250 m a. s. l., 21.IV.2018, 1 ex., leg. J. Simandl, det. M. Niehuis (s. a. NIEHUIS 2021).

Distribution. KUBÁŇ (2016): Northern Africa: AG, EG, MO, IS; NIEHUIS (2021): Jordan.

Notes on biology. According to NIEHUIS (2021) the host plants are unknown: “J. SIMANDL (in lit., 2020): I found the species on a small half-shrub with narrow leaves. They were sitting on the branches of only one plant, the others were without beetles [of the same species].”

***Meliboeus heydeni* (ABEILLE DE PERRIN, 1897)**

Material examined. Jordan: JO 17, Jerash/Dehbeen, 19.VI.1956, 1 ex., leg. J. Klapperich; JO 12, Arda Road, 14.VI.1957, 1 ex., leg. J. Klapperich; JO 6, Amman, no further biotope information, 13.V.1965, 1 ex., leg. J. Klapperich (see NIEHUIS 2021).

Distribution. KUBÁŇ (2016): Europe: AR. Western Asia: IN, IS, LE, SY, TM, TR.

Notes on biology. NIEHUIS (2021) writes: “According to VOLKOVITSH et al. (2000), the host plant of *M. heydeni* is unknown. They obtained the specimens by sweeping Lamiaceae/Labiatae. I caught my specimens in Israel on *Vitex agnus-castus*, in Turkey on *Paliurus spina-christi*, which the buprestids may use as mating or resting sites.”

***Meliboeus monnerati* NIEHUIS & STRAUSS, 2016**

Material examined. Jordan: JO 43, Wadi Al Wala S Madaba, no further biotope information, 31.V.1957, 1 ♂, leg. J. Klapperich (see NIEHUIS 2021).

Distribution. NIEHUIS (2021): Western Asia: EG, IS, JO, MO, SI.

Notes on biology. NIEHUIS (2021) writes: “According to the labels of the SMNH (TAU) specimens, they were collected on *Verbascum sinaiticum*. Since Scrophulariaceae do not belong to the range of host plants of this group of *Meliboeus*, I suspect that the species perhaps used these plants as mating sites. It is more likely that *M. monnerati* – like *M. caucasicus* – develops in an *Artemisia* species or another genus of Compositae/Asteraceae.”

***Meliboeus parvulus* (KÜSTER, 1852)**

Material examined. Jordan: JO 17, Jerash (Gerasa), 30km W Richtung Kufrinja, 1.V.2006, 1 ♂, leg. L. Kantner; JO 14, Hisban (Hesbon), ca. 600m a.s.l., 1.IV.2003, 2 ♂♂, 2 ♀♀, leg. I.G. Pljushch (see NIEHUIS 2021), no further biotope information.

Distribution. KUBÁŇ (2016): Europe: AB, AL, AR, BH, BU, CR, GG, GR, HU, IT, KZ, MC, ME, RO, SB, ST, TR, UK. Western and Central Asia: CY, IN, IQ, IS, KI, KZ, SY, TD, TM, TR, UZ; NIEHUIS (2021): Jordan.

Notes on biology. NIEHUIS (2021) writes: “*Meliboeus parvulus* undoubtedly develops in thistles.” According to VOLKOVITSH et al. (2000), its host plant in Israel is unknown; in other states, according to this source, it breeds in *Cirsium* sp., *Onopordum* sp. and *Carduus* sp.; observations on *Echinops*, however, could refer to *M. oliveri* NIEHUIS, 2014. HALPERIN & ARGAMAN (2000) mention “*Cirsium polycephalum*.”

Further species mentioned by KATBEH-BADER (1996) for Jordan

KATBEH-BADER (1996) lists the following additional species for Jordan, all identified by G. Curletti (in alphabetical order):

***Acmaeodera (Acmaeotethya) ottomana ottomana* (FRIVALDSZKY, 1837)**

Distribution. KUBÁŇ (2016): Europe: AB, AL, BU, GR, MC, TR. Western Asia: IN, IS, JO, LE, SY, TR.

Notes on biology. According to VOLKOVITSH et al. (2000) imagines are found “on flowers of yellow Asteraceae, rarely on *Convolvulus* and others.” According to the same source, larval host plants are “*Quercus ithabrensis*, sp. (Israel: BYTINSKY-SALZ and STERN-LICHT, 1967; HALPERIN and ARGAMAN, 2000); *Quercus*, *Ficus*, *Pyrus*, *Prunus*, *Amygdalus* (Palearctic: NIEHUIS, 1989; KATBEH-BADER, 1996; S. Buy, G. Magnani, V. Sakalian).”

***Acmaeoderella (Acmaeoderella) levantina* (OBENBERGER, 1934)**

Distribution. KUBÁŇ (2016): Europe: BU, GR, MC.

Notes. According to present knowledge, this species is not expected to occur in Jordan. Likely, the specimens have been confused with another species.

***Acmaeoderella (Euacmaeoderella) vetusta* (MÉNÉTRIÉS, 1832)**

Distribution. KUBÁŇ (2016): Europe: AB, AR, BU, GR. Western Asia: CY, IN, IQ, IS, JO, LE, SY, TM, TR.

Notes on biology. VOLKOVITSH (2015): “Larval host plant is unknown, but it is not *Astragalus*.”

***Anthaxia (Anthaxia) bicolor bicolor* FALDERMANN, 1835**

Distribution. KUBÁŇ (2016): Europe: AB, AR, BU, CR, GG, GR, MC, RO, ST, TR, UK (Crimea). Western Asia: IN, IQ, IS, JO, LE, SY, TM, TR.

Notes on biology. VOLKOVITSH et al. (2000): Imagines “on flowers of yellow Asteraceae and others.” According to the same source, host plants of the larva are *Olea europaea* (Israel: HALPERIN & ARGAMAN 2000) and *Fraxinus* (Palearctic: SOLDATOVA 1970).

***Anthaxia (Haplanthaxia) millefolii millefolii* (FABRICIUS, 1801)**

Distribution. KUBÁŇ (2016): Europe: AB, AL, AR, AU, BH, BU, BY, CR, CZ, GE, GG, GR, HU, IT, KO, MC, MD, ME, PL, RO, SB, SK, SL, ST, TR, UK. Western Asia: CY, IS, JO, LE, SY, TR.

Notes on biology. VOLKOVITSH et al. (2000): Adults on “flowers of white Umbelliferae”. According to the same source, host plants of the (ssp. *A. m. polychloros*) larvae are “*Quercus* sp. (Israel: HALPERIN and ARGAMAN 2000); *Ulmus*, *Prunus*, *Sorbus*, *Pyrus*, *Acer*, *Ceratonia*, *Pistacia*, *Nerium* (Palearctic: RICHTER 1949, SCHAEFER 1949, SOLDATOVA 1970, GOBBI 1986).”

***Anthaxia (Haplanthaxia) praeclara praeclara* MANNERHEIM, 1837**

Distribution. KUBÁŇ (2016): Europe: AL, BH, BU, CR, GR, IT, MC, ME, TR. Western Asia: CY, IS, JO, LE, SY, TR.

Notes on biology. VOLKOVITSH et al. (2000): Imagines “on flowers of yellow Asteraceae and others”. According to the same source, host plants of the larva are “*Cedrus* sp., *Pinus halepensis* sp. (Israel: HALPERIN, 1963; and ARGAMAN, 2000); *Cedrus*, *Juniperus* (Turkey: KATBEH-BADER, 1996).”

***Capnodis miliaris miliaris* (KLUG, 1829)**

Distribution. KUBÁŇ (2016): Europe: AB, AR, GG, GR, IT, ST. Western Asia: CY, IN, IQ, IS, JO, KI, KZ, LE, SY, TM, TR, UZ.

Notes on biology. According to MÜHLE et al. (2000) “Adults can be found on their host plants. Host plants of the larva are *Morus*, *Salix* and *Populus* sp.”

***Capnodis porosa porosa* (KLUG, 1829)**

Distribution. KUBÁŇ (2016): Europe: AB, AL, AR, BH, BU, CR, GG, GR, MC, ME, ST, TR. Western Asia: CY, IN, IQ, IS, JO, LE, SY, TR.

Notes on biology. According to MÜHLE et al. (2000) “Adults can be found on *Rhus*. The host plants of the larvae are unknown.”

***Capnodis tenebricosa tenebricosa* (A.G. OLIVIER, 1790)**

Distribution. KUBÁŇ (2016): Europe: AB, AL, AR, BH, BU, CR, FR, GG, GR, IT, KZ, MA, MC, MD, ME, PT, RO, SP, ST, TR, UK. Northern Africa: AG, MO, TU. Western Asia: CY, IN, IQ, IS, JO, KZ, LE, SI, SY, TM, TR.

Notes on biology. According to MÜHLE et al. (2000) “Adults can be found on *Rumex* sp. and on various plants next to [it].”

***Capnodis tenebrionis* (LINNAEUS, 1761)**

Distribution. KUBÁŇ (2016): Europe: AB, AL, AR, AU, BH, BU, CR, CT, CZ, FR, GE, GG, GR, HU, IT, KZ, MA, MC, MD, ME, PL, PT, RO, SB, SK, SL, SP, ST, SV, TR, UK. Northern Africa: AG, MO, TU. Western Asia: CY, IN, IQ, IS, JO, LE, SY, TM, TR.

Notes on biology. According to MÜHLE et al. (2000) “Larval host plants are all kind of wooden Rosaceae and adults can be found on their host plants and on various plants next to.”

***Chalcophorella (Chalcophorella) stigmatica* (SCHOENHERR, 1817)**

Distribution. KUBÁŇ (2016): Europe: AL, BH, BU, GR, MC, TR. Northern Africa: EG. Western Asia: CY, IN, IQ, IS, JO, LE, SY, TR.

Notes on biology. According to MÜHLE et al. (2000) “Larval host plants are different species of *Prunus* sp. Adults can be found on *Paliurus* sp. and other flowering bushes.”

***Chrysobothris spuria* MARSEUL, 1866**

Syn.: *Chrysobothris chalcophana spuria*.

Distribution. KUBÁŇ (2016): Europe: GR, IT (Sicily). Northern Africa: EG, LB. Western Asia: IQ, IS, JO, SA, YE.

Notes on biology. According to MÜHLE et al. (2000) “The larvae develop in *Acacia* sp., *Cercis siliquastrum* and *Prunus armeniaca*.”

***Julodis euphratica* LAPORTE & GORY, 1835**

Distribution. KUBÁŇ (2016): Western Asia: AE, IN, IQ, OM, SA.

***Perotis cuprata* (KLUG, 1829)**

(sub *orientalis* LAPORTE & GORY, 1836)

Distribution. KUBÁŇ (2016): Europe: AB, AR. Northern Africa: AE, IN, IQ, OM, SA. Western Asia: IN, IQ, JO, LE, SY, TR.

Notes on biology. In Israel, the first author observed a female that “purposefully” approached the stem of a very large Euphorbiaceae and hurriedly ran down it.

Some additional species mentioned in NIEHUIS (1989) for Jordan
Acmaeodera (Acmaeodera) brevipes KIESENWETTER, 1858
Acmaeodera (Acmaeotethya) quadrizonata ABELLE DE PERRIN, 1891

Acmaeoderella (Acmaeoderella) discoida (FABRICIUS, 1787) (as *A. discoidea*)

Acmaeoderella (Acmaeoderella) serricornis (ABEILLE DE PERRIN, 1900)

Acmaeoderella (Euacmaeoderella) gibbulosa (MÉNÉTRIÉS, 1832)

Acmaeoderella (Euacmaeoderella) judaeorum (OBENBERGER, 1914)

Acknowledgements

We would like to thank Fritz Brechtel, Jörn Buse, Hans Hebauer, Gianluca Magnani, Christian Monnerat, Hans Mühle, Martin Rejzek and Jiří Simandl for additional data. Further data reached us via third parties; we would also like to thank them. We are thankful to Svatopluk Bílý (†) and Mark Volkovitsh for identifying and verifying difficult specimens. Special thanks go to Gerhard Strauß (Biberach an der Riss) for permission to use some of his photos and for preparing some photos especially for this publication. We would also thank Christoph Riegler for permission to use his photograph of the oak forest near Aljoun (Fig. 2). We are very grateful to Melanie Frauendienst for preparation of the GIS map (Fig. 1). The plant names originate from many field trip protocols by Roland Albert (†). We would also like to thank the editorial team, especially Herbert Zettel and Alice Laciny from the Natural History Museum Vienna, for their comprehensive support in preparing the manuscript for printing.

References

- ALBERT R., PETUTSCHNIG B. & WATZKA M., 2004: Zur Vegetation und Flora Jordaniens, pp. 133–220. – In: WAITZBAUER W., ALBERT R., PETUTSCHNIG B. & AUBRECHT G. (eds): Reise durch die Natur Jordaniens. – Denisia 14, Oberösterreichisches Landesmuseum Linz, 508 pp.
- BAIOCCHI D. & MAGNANI G., 2013: Description of a new species of *Anthaxia* ESCHSCHOLTZ, 1829 from Jordan, with notes on the *Anthaxia winkleri* species-group (Coleoptera, Buprestidae). – Zootaxa 3637 (3): 374–384.
- BÍLY S., 1980: Taxonomic notes on *Anthaxia* (subgen. *Cratomerus*) from the Palearctic region (Coleoptera, Buprestidae). – Acta Entomologica Bohemoslovaca 77: 271–279.
- BÍLY S., 2002: Summary of the bionomy of the buprestid beetles of Central Europe (Coleoptera: Buprestidae). – Acta Entomologica Musei Nationalis Pragae, Suppl. 10: 1–104.
- BODENHEIMER F.S., 1930: Die Schädlingfauna Palästinas. – Monographien zur Angewandten Entomologie 10: 1–438.
- BYTINSKI-SALZ H., 1954: Insects associated with desert acacias in Israel. – Bulletin of the Research Council of Israel 4: 284–292.
- BYTINSKI-SALZ H. & STERNLICHT M., 1967: Insects associated with oaks (*Quercus*) in Israel. – Israel Journal of Entomology 2: 10–143.
- COBOS A., 1986: Fauna ibérica de coleópteros Buprestidae. – Consejo Superior de Investigaciones Científicas, Madrid, 426 pp.
- CURLETTI G., 1994: I Buprestidi d'Italia. – Museo Civico di Storia Naturale, Editrice Vannini, Monographie de “Natura Bresciana” 19, Brescia, 318 pp.
- GOBBI G., 1986: Le piante ospiti dei Buprestidi Italiani. Primo quadro d'insieme (Coleoptera, Buprestidae). – Fragmenta Entomologica 19 (1): 169–265.
- HALPERIN J., 1963: Insect pests of pine in Israel. – La-Yaaran 13: 116–119 (in hebrew).
- HALPERIN J. & ARGAMAN Q., 2000: Annotated list of Buprestidae (Coleoptera) and their host plants of Israel. – Zoology in the Middle East 20: 99–116.

- HELLRIGL K.G., 1978a: Ökologie und Brutpflanzen europäischer Prachtkäfer (Col., Buprestidae). Teil 1. – Zeitschrift für angewandte Entomologie 85 (2): 167–191.
- HELLRIGL K.G., 1978b: Ökologie und Brutpflanzen europäischer Prachtkäfer (Col., Buprestidae). Teil 2. – Zeitschrift für angewandte Entomologie 85 (3): 253–275.
- ISRAEL'S NATURE SITE, 2023: Buprestidae. – Available from <http://www.nature-of-oz.com/buprestidae.htm> [accessed 1 September 2023].
- KATBEH-BADER A., 1996: Buprestidae of Jordan (Coleoptera). – Fragmenta entomologica 28: 43–50.
- KNOFF H.E., 1971: Contributions to the knowledge of the insect fauna of trees in Iraq. Part 1: Coleoptera. – Zeitschrift für angewandte Entomologie 69: 82–87.
- KUBÁŇ V. (and contributors), 2006: Buprestidae, pp. 325–421. – In: LÖBL I. & SMETANA A. (eds): Catalogue of Palearctic Coleoptera, Vol. 3. Scarabaeoidea – Scirtoidea – Buprestoidea – Byrrhoidea. – Apollo Books, 690 pp.
- KUBÁŇ V. (and contributors), 2016: Buprestidae, pp. 432–674. – In: LÖBL I. & LÖBL D. (eds): Catalogue of Palearctic Coleoptera, Vol. 3. Scarabaeoidea – Scirtoidea – Buprestoidea – Byrrhoidea. – Revised and updated edition. Brill online.
- LOTTE F., 1943: Révision des Buprestides d’Égypte et du Sinaï. Première partie: Julodini, Acmaederini, Chrysochroini, Chalcophorini [Coleoptera]. – Bulletin de la Société Fouad premier d’Entomologie 27: 125–158.
- MATEU J., 1972: Les insectes xylophages des *Acacia* dans les régions sahariennes. – Publicações do Instituto de Zoologica “Dr. Augusto Nobre”, Faculdade de Ciências do Porto 166, 57 (1–4): 189–332.
- MÜHLE H., BRANDL P. & NIEHUIS M., 2000: Catalogus Faunae Graeciae – Coleoptera: Buprestidae – A systematic catalogue of the Greek buprestids, including biological, zoogeographical and taxonomical remarks. – Self-published, Hans Mühle, Augsburg, 254 pp.
- NIEHUIS M., 1989: Contribution to the knowledge of the jewel beetles (Coleoptera: Buprestidae) of the Near East. – Zoology in the Middle East 3: 73–100.
- NIEHUIS M., 1990: Die Prachtkäfer (Coleoptera: Buprestidae) der Nördlichen Sporaden (Griechenland, Ägäis). – Mainzer Naturwissenschaftliches Archiv 28: 109–135.
- NIEHUIS M., 2021 [2020]: A review of the jewel beetles of the genus *Meliboeus* in Israel (Coleoptera: Buprestidae). – Israel Journal of Entomology 50 (2): 159–176.
- RICHTER A.A., 1949: Buprestidae. Part 2. Fauna SSSR. – Nasekomye zhestkokrylye 13 (2): 1–260. (in Russian)
- SCHAEFER L., 1949: Les Buprestides de France – Tableaux analytiques des Coléoptères de la faune franco-rhénane – France, Rhénanie, Belgique, Hollande, Valais, Corse – Famille LVI. – Editions Scientifiques du Cabinet Entomologique E., Paris, 511 pp., pl. I–XXV.
- SCHAEFER L., 1951: Notes biologiques sur les Buprestides (suite). – Bulletin Mensuel de la Société Linnéenne de Lyon 20 (10): 231–236.
- SOLDATOVA E.A., 1970: Taxonomic value of morphological characters of larvae of the genera *Anthaxia* and *Cratomerus* (Buprestidae). – Zoologicheskii Zhurnal 49 (1): 61–71. (in Russian with English Abstract)
- THÉRY A., 1929: Études sur les Buprestides de l’Afrique du Nord. – Mémoires de la Société des Sciences Naturelles du Maroc 19: 586 pp.
- VOLKOVITSH M., 2004: New records of Buprestidae (Coleoptera) from Israel with description of a new species. – Israel Journal of Entomology 34: 109–152.
- VOLKOVITSH M., 2015: Re: Dears, can anyone define the scientific name of this beetle?. Available from: https://www.researchgate.net/post/Dears_Can_anyone_define_the_scientific_name_of_this_beetle/5663edfb5f7f711f808b458a/citation/download. [accessed 1 September 2023].

- VOLKOVITSH G.M. & NIEHUIS M., 2012: Contribution to the knowledge of buprestid beetles (Coleoptera: Buprestidae) from Israel with description of a new species of *Acmaeodera* ESCHSCHOLTZ, 1829. – *Caucasian Entomological Bulletin* 8 (2): 240–245, 1 pl.
- VOLKOVITSH M.G., PAVLIČEK T., CHIKATUNOV V. & NEVO E., 2000: Species diversity and microsite divergence of insects at “Evolution Canyon”, Lower Nahal Oren, Mt. Carmel, Israel (Coleoptera: Buprestidae). – *Zoology in the Middle East* 20: 125–136.
- WAITZBAUER W., 2019: Ö1, vom Leben der Natur: Fauna und Flora Jordaniens. – Available from <https://oe1.orf.at/programm/20190604/555832/Fauna-und-Flora-Jordaniens> [accessed 1 September 2023].
- WAITZBAUER W., ALBERT R., PETUTSCHNIG B. & AUBRECHT G. (eds), 2004: Reise durch die Natur Jordaniens. – *Denisia* 14, Kataloge der OÖ. Landesmuseen, N. S., 20, Linz, 508 pp. (in German and English)
- WAITZBAUER W. & KATBEH-BADER A., 2002: First contribution to the fauna of hoverflies (Syrphidae: Diptera) of Jordan. – *Studia dipterologica* 9: 613–620.
- ZOHARY M., 1973: The geobotanical foundations of the Middle East. – Urban & Fischer in Elsevier, *Geobotanica selecta* 3, 2 volumes, 739 pp.
- ZOHARY M., 1982: Vegetation of Israel and adjacent areas. – Beihefte Tübinger Atlas Vorderer Orient, Reihe A (Naturwissenschaften) 7: 1–171.
- Authors' addresses: Manfred NIEHUIS,
 Im Vorderen Großthal 5
 D-76857 Albersweiler, Germany
 E-mail: niehuis@t-online.de
- Wolfgang WAITZBAUER,
 Department of Evolutionary Biology,
 Unit for Theoretical Biology, University of Vienna,
 Djerassiplatz 1, A-1030 Vienna, Austria
 E-mail: wolfgang.waitzbauer@univie.ac.at

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Zeitschrift der Arbeitsgemeinschaft Österreichischer Entomologen](#)

Jahr/Year: 2023

Band/Volume: [75](#)

Autor(en)/Author(s): Niehuis Manfred, Waitzbauer Wolfgang

Artikel/Article: [Records of jewel beetles \(Coleoptera: Buprestidae\) from Jordan, with stray finds from North Africa 31-65](#)