

Review of the leaf-rolling weevils of Israel (Coleoptera: Curculionoidea: Rhynchitidae and Attelabidae)

ANDREI A. LEGALOV¹ AND ARIEL LEIB LEONID FRIEDMAN²

¹*Siberian Zoological Museum, Institute of Animal Systematics and Ecology, SB RAS, Frunze street-11, Novosibirsk, 630091, Russia. E-mail: legalov@ngs.ru*

²*Department of Zoology, The George S. Wise Faculty for Life Sciences, Tel Aviv University, Tel Aviv 69978, Israel. E-mail: laibale@post.tau.ac.il*

ABSTRACT

Fourteen species of Rhynchitidae and one species of Attelabidae are reported from Israel. *Neocoenorhinidius cribrum* (Desbrochers), *Rhodocyrtus cribripennis* (Desbrochers), *Mechoris ungaricus* (Herbst), *Epirhynchites trojanus* (Gyllenhal), *E. smyrnensis* (Desbrochers), *Rhynchites bacchus* (Linnaeus), *R. lenaeus* Faust and *Byctiscus betulae* Linnaeus are reported for the first time; and *Lasiorrhynchites freidbergi* Legalov & Friedman and *Epirhynchites friedmani* Legalov are described as new. The Attelabidae, represented only by *Attelabus nitens* (Scopoli), are reported from Israel for the first time. A key to the Israeli species and figures of the habitus of all species, as well as of the male genitalia of most of the species are provided.

KEY WORDS: Rhynchitidae, Attelabidae, leaf-rolling weevils, zoogeography, taxonomy, new species, Israel.

INTRODUCTION

Leaf-rolling weevils (Rhynchitidae and Attelabidae) are widely distributed in most zoogeographic regions, with the majority of species found in tropical and subtropical regions. Although the fauna of the western Palaearctic has been relatively thoroughly studied, the fauna of the Middle East is still poorly known. There are no specific publications on leaf-rolling weevils of Syria, Lebanon, Jordan, Egypt or Iraq. Only five species of leaf-rolling weevils have been reported from Israel so far: *Nelasiorrhynchites praeustus* (Boheman), *Tatianaerhynchites aequatus* (Linnaeus), *Rhynchites schilskyi* Voss (misidentification of *Rhynchites lenaeus* Faust) (Bodenheimer, 1937), *Eomesauletes politus* (Boheman) (as *Auletobius politus*) (Bytinski-Salz and Sternlicht, 1967), and *Nelasiorrhynchites syriacus* Desbrochers (Halperin and Fremuth, 2003).

Leaf-rolling weevils are obligate phytophages. Adults and immatures feed on

vegetative and reproductive organs of plants. Both families are characterized by a special mode of parental care: the females of Attelabidae and some Rhynchitidae roll or fold leaves after the oviposition to produce tubes, packages or funnels, within which the larvae develop. Other Rhynchitidae oviposit into fruits, buds and leaves, while a few species develop as inquilines in leaf tubes made by other species. The biology of the majority of leaf-rolling weevils in Israel is largely unknown, except some plant association, based on collection data.

Many rhynchitid species are agricultural pests. For example, *Byctiscus betulae* (Linnaeus), *Rhynchites bacchus* (Linnaeus), *R. lenaeus* and *Tatianaerhynchites aequatus* are serious pests of Rosaceae fruit trees and grapes (*Vitis* spp.) in Eastern Europe, the Caucasus and Central Asia (Ter-Minassian, 1950). *B. betulae* and *R. bacchus* are extremely rare in Israel, and *T. aequatus* has never been reported as pest in Israel, despite its abundance in the northern part of the country. *R. lenaeus* Faust (erroneously reported from Israel as *R. schilskyi* Voss (Avidov, 1961)) was determined as a relatively unimportant pest of pears (*Pyrus* spp.) in the Judean Hills. It has been detected sporadically over the years, and was not mentioned as a pest by Avidov and Harpaz (1969). These species, therefore, appear to be of no economic importance in Israel.

MATERIALS AND METHODS

The material upon which this study is based is deposited primarily in the National Collection of Insects, Zoological Museum, Tel Aviv University, Israel (TAUI), and also in the Siberian Zoological Museum, Institute for Systematics and Ecology of Animals, Novosibirsk, Russia (SZMN), the Collection of Plant Protection and Inspection Services, Ministry of Agriculture and Rural Development, Bet Dagan, Israel (PPIS) and in the private collection of Mr. Eylon Orbach, Qiryat Tiv'on, Israel (EO).

Drawings and measurements given in this article were made using a calibrated eyepiece reticule and the stereomicroscopes Leica MZ12 and MBC-10. The total length of the beetles was measured as the straight line extending from the anterior margin of the eye to the tip of the elytra, with the specimen viewed in dorsal view. The drawings of the genitalia and habitus were made by A. Legalov and L. Friedman, respectively. Male genitalia of some specimens were dissected, relaxed and glued next to the specimens. Terminology follows Morris (1990), Riedel (2001), and Hamilton (2002). Taxonomy follows Legalov (2003). Transliterated names of localities are according to the "Israel Touring Map" (1:250,000) and "List of Settlements", published by the Survey of Israel, Ministry of Labour. Where names of localities have changed since the labels were prepared the most recent Hebrew names are cited with the old names (Arabic or Latin) given in parentheses, as in the following example: 'En Hemed [Aquabella]. Localities are ordered from North to South and West to East. The number of specimens from each locality is given in parentheses.

TAXONOMY

Key to the genera and species of Rhynchitidae and Attelabidae of Israel

1. Tarsal claws fused at base; mandible not dentate on lateral margin; medial margin of fore tibia dentate.....(**Attelabidae**) *Attelabus nitens* (**Scopoli**)
- Tarsal claws separate to base; mandible dentate on lateral margin; medial margin of fore tibia not dentate.....(**Rhynchitidae**) **2**
2. Body and appendages entirely black with bluish or greenish luster..... **3**
- Body and appendages entirely red, brownish red, testaceous, violet, bluish green or combination of at least two different colors **5**
3. Rostrum cylindrical (Figs. 9–10), more than 0.3 times as wide as head; body black with slight bluish luster; body length more than 5 mm
..... *Lasiorhynchites freidbergi* **Legalov & Friedman, sp. n.**
- Rostrum flattened at apex (Figs. 2–3), about 0.3 times as wide as head; body black with strong bluish or violet luster; body length less than 3 mm **4**
4. Head transverse, subquadrate, eye prominent (Fig. 24); pronotum and elytra with minute punctures, smaller than interpunctural space; elytral striae shallow and indistinct; pubescence appressed..... *Eomesauletes politus* (**Boheman**)
- Head elongate, subconical, eye barely prominent (Figs. 25–26); pronotum and elytra with coarse punctures, larger than interpunctural space; elytral striae coarse and distinct; pubescence erect *Neocoenorhinidius cribrum* (**Desbrochers**)
5. Rostrum at most as long as pronotum (Figs. 5–8, 27–30); surface of body and elytra smooth; elytral apex exceeds pygidium (pygidium covered); coloration usually pale testaceous or yellowish brown, occasionally elytra or ventrites entirely or partly black without or with weak metallic shine **6**
- Rostrum at least 1.1 times as long as pronotum (Figs. 11–22, 33–44); surface of body and elytra usually crumpled and rough; elytral apex usually does not exceed pygidium (pygidium exposed at least partly); coloration red or reddish testaceous or bicolor: red and black, without metallic shine, or red, violet, green, blue with metallic shine **7**
6. Antennal club segments darker than funicular segments 1–4; rostrum 0.8–1.0 times as long as pronotum; posterior margin of pronotum usually wider than anterior margin of pronotum; body and legs red to dark testaceous, elytra usually testaceous, sometimes dark blue or black, usually not translucent, with strong metallic shine; head not constricted posteriorly; (Figs. 5–6, 27–28)..... *Nelasiiorhynchites syriacus* (**Desbrochers**)
- Antennal club segments samely colored as funicular segments 1–4; rostrum 0.6–0.7 times as long as pronotum; posterior margin of pronotum as wide as anterior margin; body and legs testaceous or pale brown, sometimes red, elytra pale brown to testaceous, often translucent, usually without or with slight shine; male head strongly constricted posteriorly, female head not or slightly constricted posteriorly (Figs. 7–8, 29–30) *N. praeustus* (**Boheman**)
7. Scutellum pubescent **8**
- Scutellum not pubescent **9**
8. Scutellar pubescence sparse, hyaline, body and elytral pubescence erect, long, setae as long as two interpunctural spaces in stria; head and pronotum testaceous, red or bronze, with or without slight greenish luster (especially in fresh specimens), elytra and appendages testaceous; antennal club segments 1 and 2 wider than long; frons at least twice as wide as diameter of eye (Figs. 35–36); pronotal disk flat (Figs. 13–14)..... *Tatianaerhynchites aequatus* (**Linnaeus**)

- Scutellar pubescence dense, white; body and elytral pubescence appressed, short, setae as long as one interpunctural space in stria; body and appendages red; antennal club segments 1 and 2 longer than wide; frons as wide as diameter of eye (Fig. 34); pronotal disk convex (Fig. 12)..... *Rhodocyrtus cribripennis* (Desbrochers)
- 9. Body length 9.0–11.5 mm; rostrum less than 1.5 times as long as pronotum; body dark bronze with slight violet shine (Figs. 15–16, 37–38)..... **10**
- Body length less than 8 mm; rostrum more than 1.5 times as long as pronotum; body red, testaceous, violet, bluish-green, with or without shine (Figs. 17–22, 39–44)..... **11**
- 10. Pronotum arched laterally at basal two thirds; body dark green or bronzy with strong metallic luster; body length 10.5 mm (Figs. 16, 38)..... *Epirhynchites trojanus* (Gyllenhal)
- Pronotum straight laterally; body dark bronze with slight metallic violet luster; body length 11.5–12.5 mm (Figs. 15, 37)..... *Epirhynchites friedmani* Legalov, sp. n.
- 11. Elytral punctures arranged in distinct striae, interstitial spaces flat, not arranged in transverse ridges; body semi-opaque, with slight luster, elytra dark red, prescutellar area and sutural margin of elytra black, pronotum dark red, head, legs and antenna black.....
..... *Mechoris ungaricus* (Herbst)
- Elytral punctures not arranged in distinct striae; interstitial spaces convex, arranged in transverse ridges; body with very strong metallic luster, unicolorous red or violet, with various hues, or bluish-green..... **12**
- 12. Body bluish-green, elytra smooth, nearly hairless; rostrum as wide as frons, slightly longer than pronotum (Figs. 11, 33)..... *Byctiscus betulae* (Linnaeus)
- Body red or violet, elytra crumpled, more or less pubescent; rostrum narrower than frons, at least 1.5 times as long as pronotum (Figs. 18–22, 40–44)..... **13**
- 13. Rostrum curved (Figs. 19–22); claw denticle 0.50–0.75 times as long as claw; elytral surface moderately crumpled and more or less coarsely punctured..... **14**
- Rostrum straight (Fig. 18); claw denticle as long as claw; elytral surface extremely crumpled and very coarsely punctured..... *Epirhynchites smyrnensis* (Desbrochers)
- 14. Pronotal disk without longitudinal keel; body violet; body length 5–6 mm; pronotal spines of male conical, pointed..... *Rhynchites bacchus* (Linnaeus)
- Pronotal disk with longitudinal keel; body red; body length 6–9 mm; pronotal spines of male flattened, rounded..... *Rhynchites lenaeus* Faust

SYSTEMATIC LIST OF SPECIES

Family Rhynchitidae Gistel

Tribe Auletini Desbrochers, 1908

Eomesauletes politus (Boheman, 1829)

(Figs. 2, 24, 46–47, 62, 76)

Material examined

ISRAEL: Har Hermon, 1900 m, 22.v.1973 D. Furth (1; TAUI), 1100 m, 7.iv.1978, D. Furth (2; TAUI); Mezudat Nimrod, 23.iv.1998, V. Chikatunov (8; TAUI; 1; SZMN); Manara, 20.v.1992, J. Halperin, on *Anagyris foetida* (1; TAUI); Upper Galilee, Har Kefir, 850 m, 24.iv.1998, E. Orbach (1; EO), 800 m, 27.iv.2001, E. Orbach (3; EO); Har Meron, 1100 m, 29.iv.1974, D. Furth (1; TAUI),

5.vi.1974, D. Furth (1; TAUI), 23.iv.1998, V. Chikatunov (1; TAUI); Har Tavor, 31.iii.1973, D. Furth (1; TAUI), 24.iv.1974, D. Furth (1; TAUI), 26.v.1999, L. Friedman (1; SZMN); Qiryat Tiv'on, 13.iv.2001, E. Orbach (4; EO); Basmat Tab'un, 14.iv.1999, L. Friedman (1; TAUI); Naḥal 'Ezyona, 29.iii.1973, D. Furth (1; TAUI); Karmel, Naḥal Oren, near Har Arkan [probably =Har Barqan], 350 m, 6.iv.1995, E. Colonnelli, *Quercus calliprinos* (5; SZMN).

Distribution

Spain, France, Italy, Croatia, Bulgaria, Greece, Poland, Ukraine (Crimea), Armenia, Turkey, Lebanon, Syria, Israel, Jordan.

Comments

Usually collected on oaks (*Quercus* spp.) and various annuals.

Tribe Rhynchitini Gistel *Nelasiorhynchites syriacus* (Desbrochers, 1869) (Figs. 5–6, 27–28, 51, 66, 78)

Material examined

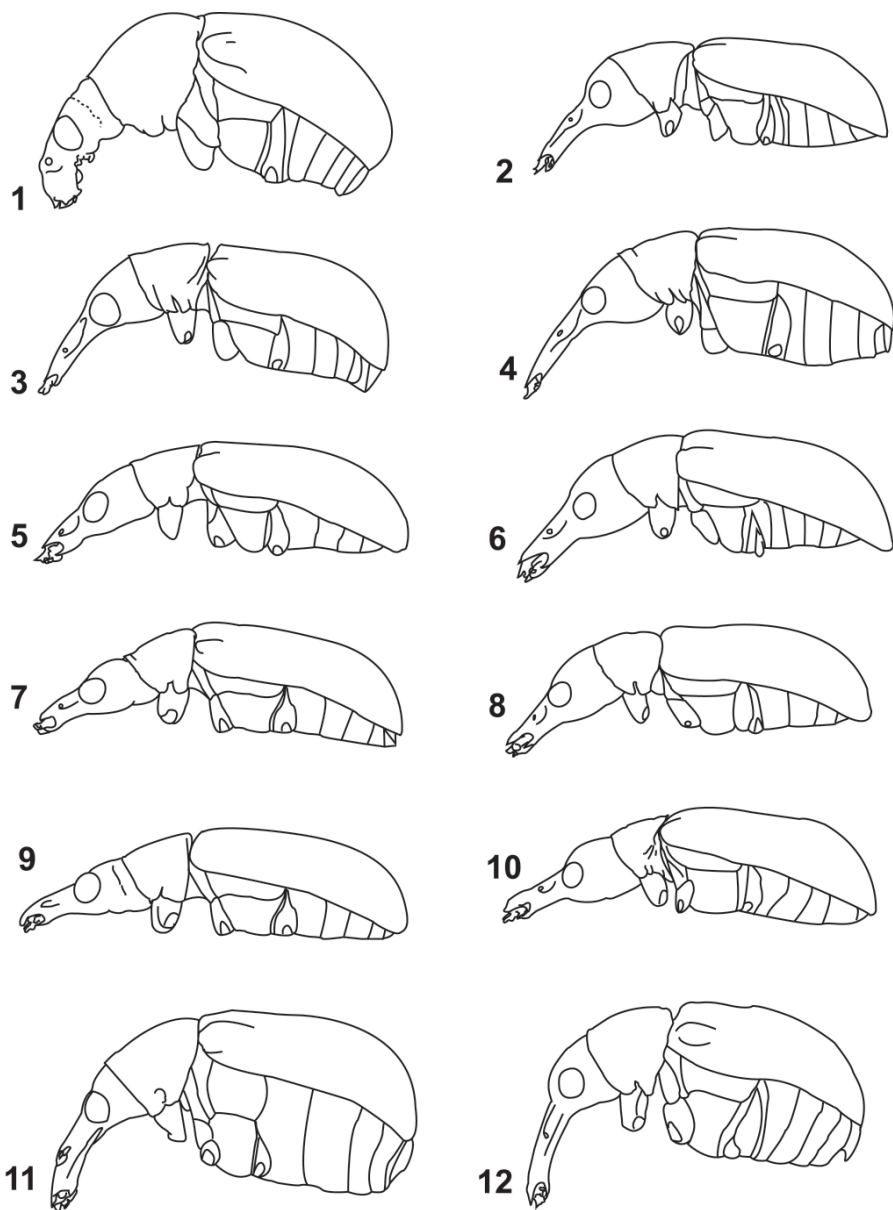
ISRAEL: Sheikh [probably "Jebel a-Sheykh"=Har Hermon], 2.iii.1972, M. Tintpulver (1; TAUI), Har Hermon, 1700 m, 26.vi.1997, L. Friedman, on *Pyrus syriacus* (1; SZMN), 1600 m, 14.v.1996, V. Chikatunov (1; SZMN); Har Dov, Mizpe Ramta, 16.vi.1999, L. Friedman (1; TAUI); Har Dov, karst, 16.vi.1999, L. Friedman (1; TAUI); Mezudat Nimrod [Kalat Nimrod], 8.vi.1975, A. Freidberg (1; TAUI), [Qalaat Nimrod], 10.vii.1975, A. Freidberg (1; TAUI), [Qala'at Nemrod], 9.vi.1976, A. Freidberg (1; TAUI); Naḥal Keziv, 17.vi.2000, M. Finkel (1; TAUI), 4.v.2001, M. Finkel (1; TAUI), 20.v.1999, V. Chikatunov (1; SZMN), 1.vi.2001, M. Finkel (1; TAUI); Har Kefir, Naḥal haAri, 800 m, 7.vi.1996, E. Orbach (1; EO); Har Kefir, 800 m, 28.v.1991, E. Orbach (1; EO); 'En Zetim, 21.v.1997, V. Chikatunov (1; TAUI); Har Meron, 15.vi.1971, J. Kugler (1; TAUI), 5.vi.1974, D. Furth (1; TAUI), 1.vi.1978, D. Furth (1; TAUI), 7.v.1979, D. Furth (2; TAUI), 20.v.1998, L. Front (1; TAUI); Parod, 21.v.1997, L. Friedman (1; TAUI), Har Tavor, 9.v.1978, D. Furth (2; TAUI); Naḥal Oren, 13.v.1997, V. Chikatunov & T. Pavliček (1; TAUI), 2.v.1996, V. Chikatunov & T. Pavliček (1; TAUI), 6.vi.1996, V. Chikatunov & T. Pavliček (5; TAUI), 16.v.1999, V. Chikatunov & T. Pavliček, (1; TAUI); Ma'agan Mikha'el, 20.iv.1978, D. Furth (1; TAUI); Zomet ha'Amaqim (Jalame), 18–22.v.1993, A. Freidberg (1; TAUI), 26–30.v.1993, A. Freidberg (1; TAUI); Matta', Judea, 31.v.1974, D. Furth (1; TAUI); Shores, 20.v.1978, D. Furth (2; TAUI).

Distribution

Syria, Israel.

Comments

Usually collected on *Quercus calliprinos* and *Q. ithaburensis*.



Figs. 1–12. Body, lateral view. 1. *Attelabus nitens*, male. 2. *Eomesauletes politus*, female. 3. *Neocoenorhinius cribrum*, male. 4. *Neocoenorhinius cribrum*, female. 5. *Nelasiorrhynchites syriacus*, male. 6. *Nelasiorrhynchites syriacus*, female. 7. *Nelasiorrhynchites praeustus*, male. 8. *Nelasiorrhynchites praeustus*, female. 9. *Lasiorrhynchites freidbergi*, male. 10. *Lasiorrhynchites freidbergi*, female. 11. *Byctiscus betulae*, female. 12. *Rhodocyrtus cribripennis*, male.

***Nelasiorhynchites praeustus* (Boheman, 1845)**

(Figs. 7–8, 29–30, 52, 67, 79)

Material examined

ISRAEL: Har Hermon, 800 m, 14.vi.1978, D. Furth (2; TAUI); Sheikh [probably “Jebel a-Sheikh”=Har Hermon], 26.v.1972, M. Tintpulver (1; TAUI); Newe Ativ, 800 m, 4.vi.1974, D. Furth (1; TAUI), Har Dov, road, 16.vi.1999, A. Freidberg (1; TAUI); Har Dov, Mizpe Ramta, 16.vi.1999, L. Friedman (3; TAUI); Mezudat Nimrod, 23.v.1994, F. Kaplan & A. Freidberg (1; TAUI), 27.v.1999, L. Friedman (2; TAUI; 2; SZMN), A. Freidberg (1; TAUI); 4 km S Mas’ade, 27.v.1977, M. Tintpulver (1; TAUI); Nahal Keziv, 8.v.1979, D. Furth (1; TAUI), 28.v.1999, M. Finkel (3; TAUI); Har Kefir, 900 m, 24.v.1997, E. Orbach (1; EO), 800 m, 27.iv.2001, E. Orbach (1; EO); Har Meron, 1100 m, 5.vi.1974, D. Furth, on *Quercus* sp. (1; TAUI), 17.v.1976, A. Freidberg (1; TAUI), 19.vii.1977, D. Furth (1; TAUI), 1.vi.1978, D. Furth (3; TAUI), 7.v.1979, D. Furth (1; TAUI), 22.v.1994, A. Freidberg & F. Kaplan (1; TAUI), 26.v.1999, L. Friedman (1; TAUI; 1; SZMN), 22.v.1998, A. Freidberg (5; TAUI); Ma’alot, 5.v.1994, E. Orbach (1; EO); HaSolelim, 8.v.1979, D. Furth (1; TAUI); Har Tavor, 14.v.1979, D. Furth (2; TAUI); Hefa, III.1965, H. Bytinski-Salz (1; TAUI); Nahal Oren, 4.v.1978, D. Furth (1; TAUI), 9.v.1979, D. Furth (3; TAUI), 27.v.1996, V. Chikatunov & T. Pavliček (3; TAUI), 18.v.1998, V. Chikatunov & T. Pavliček (3; TAUI), 21.v.1998, V. Chikatunov & T. Pavliček, light (1; TAUI), 1.vi.1998, A. Freidberg (6; TAUI), 2.vi.1998, V. Chikatunov & T. Pavliček (1; TAUI), 6.v.1999, A. Freidberg (1; TAUI), 27.v.1999, V. Chikatunov & T. Pavliček, light (1; TAUI).

Distribution

France, Italy, Austria, Czech Republic, Slovakia, Croatia, Poland, Ukraine, Bulgaria, Greece, Hungary, Turkey, Syria, Jordan, Israel.

Comments

Usually collected on *Quercus calliprinos* and *Q. ithaburensis*.

***Lasiiorhynchites freidbergi* Legalov & Friedman, sp. n.**

(Figs. 9–10, 31–32, 53, 68, 80)

Diagnosis

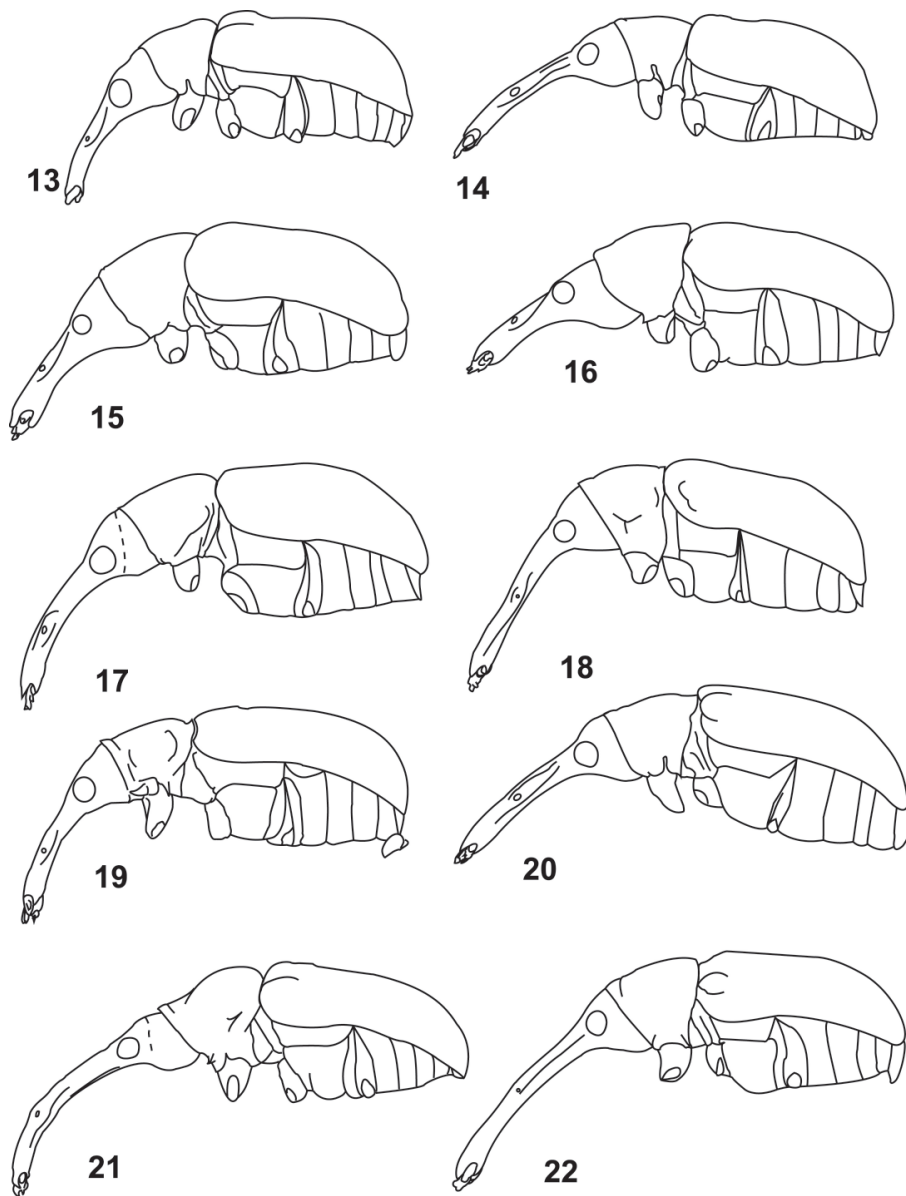
Lasiiorhynchites freidbergi closely resembles *Lasiiorhynchites cavifrons* (Gyllenhal) (Fig. 54), but differs from it by the more strongly sclerotized sac of endophallus, strongly protruding tip of aedeagus (Fig. 53), shorter rostrum, sparser punctation of frons and pronotum, and the maximum width of elytra being at middle in a male of *L. freidbergi* and distally to middle in a male of *L. cavifrons*.

Description

Body black, with metallic blue luster; covered by long, dark, erect hairs.

Male. Body length 6 mm.

Head. Rostrum 2.5 times as long as wide, straight, slightly dilated at apex, shiny, sparsely and finely punctured, 1.2 times as long as pronotum. Antenna inserted at



Figs. 13–22. Body, lateral view. 13. *Tatianaerhynchites aequatus*, male. 14. *Tatianaerhynchites aequatus*, female. 15. *Epirhynchites friedmani*, female. 16. *Epirhynchites trojanus*, female. 17. *Mechoris ungaricus*, female. 18. *Epirhynchites smyrnensis*, female. 19. *Rhynchites bacchus*, male. 20. *Rhynchites bacchus*, female. 21. *Rhynchites lenaeus*, male. 22. *Rhynchites lenaeus*, female.

middle of rostrum. Eye large, protuberant, more than half as wide as frons in dorsal view, convex. Frons wide, slightly convex, scarcely punctured, interpunctural spaces 1.5–3 times as wide as puncture diameter, medially with strong, narrow depression. Vertex convex, more densely punctured than frons. Antenna long, surpassing anterior margin of pronotum. Scapus and first funicular segment oval, second and third segments elongate-oval, slightly longer than scapus, fourth to seventh segments nearly conical. Club segments loose, first and second segments almost subconical, second segment shorter than both first and third, third segment oblong-ovoid, acute apically.

Pronotum. Slightly transverse, 1.13 times as long as wide, laterally rounded, tapered anteriorly and posteriorly, constricted at anterior margin. Pronotal disc slightly convex, finely punctured, interpunctural spaces 2–4 times as long as puncture diameter; with maximum width at middle. Scutellum trapezoidal.

Elytra. Oval, 1.39 times as long as wide, humeral callus slightly prominent, maximum width at middle; interstrial spaces 2–3 times as wide as strial puncture diameter, nearly flat, sparsely punctured, with punctures about half as wide as strial punctures. Scutellar furrow present. Striae regular, although indistinct at base and at apex, punctures dense; last stria joins previous stria at apex. Hind wings well-developed.

Ventrites. Metepisternum narrow, coarsely and densely punctured. Abdomen convex, finely punctured and wrinkled. Second ventrite as wide as first, third and fourth ventrites 1.5 times as wide as first, fifth ventrite half as wide as first, flattened at middle. Pygidium convex, punctured.

Legs. femora moderately incrassate, fore tibia elongate, narrow, straight, middle and hind tibia shorter and wider, curved; tarsus 0.7 times as long as tibia; first tarsomere oblong, second tarsomere triangular, 0.7 times as long as first tarsomere, third tarsomere bilobed, fifth tarsomere oblong-clavate, 1.3 times as long as first; claws dentate, denticle wide, rounded.

Female. Body length 5–6 mm.

Head. Rostrum 1.08 times as long as pronotum. Antenna shorter and antennal club narrower than in male. Eyes smaller than in male; frons convex, finely punctured.

Pronotum. 1.11 times as wide as long, maximum width anterior to middle.

Elytra. 1.15 times as long as wide, maximum width at apical third.

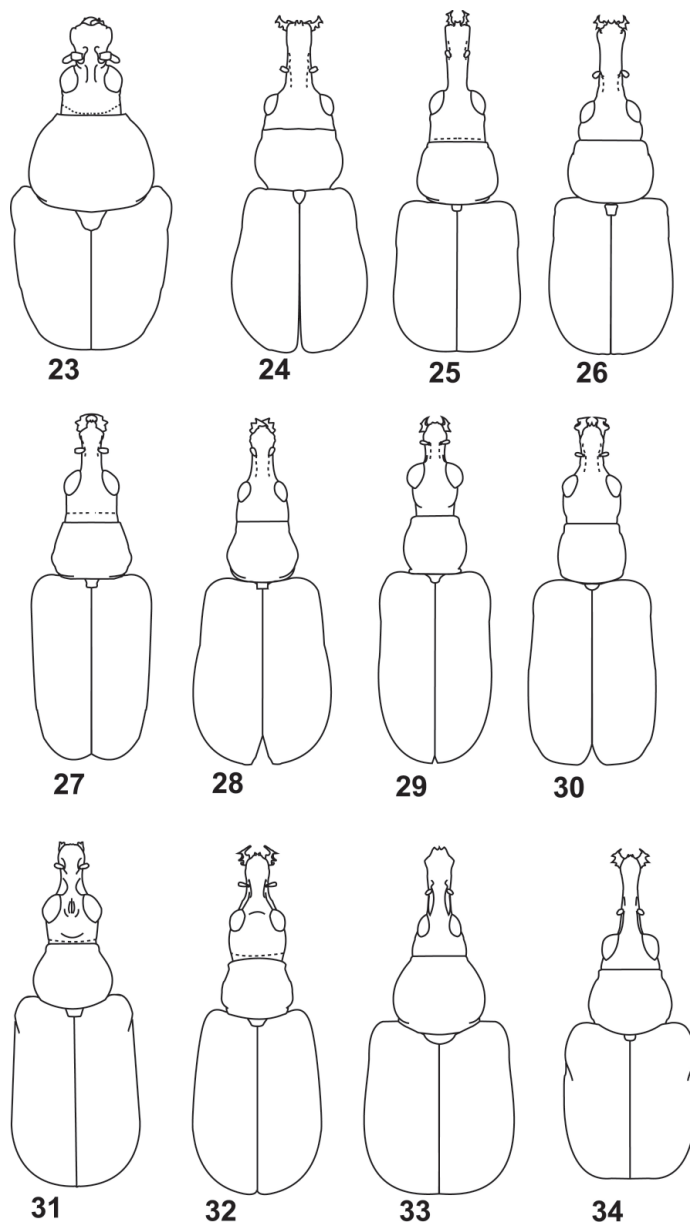
Legs. shorter than in male.

Material examined

Holotype ♂, ISRAEL: Har Hermon, 1400–1600 m, 6.vi.2002, L. Friedman (TAUI), glued onto a white card, with dissected abdomen glued onto the same card, genitalia dissected, in a plastic vial with glycerin on the same pin, in good condition. Paratypes: 1 ♀, same collection data as holotype (TAUI); 1 ♀, Har Hermon, 1600 m, 12.vi.2003, A. Freidberg (SZMN).

Etymology

This species is named after Dr. Amnon Freidberg, curator of the National Collection of Insects, for his interest in, and contribution to, the present project.



Figs. 23–34. Body dorsal view. 23. *Attelabus nitens*, male. 24. *Eomesauletes politus*, female. 25. *Neocoenorhinius cribrum*, male. 26. *Neocoenorhinius cribrum*, female. 27. *Nelasiorrhynchites syriacus*, male. 28. *Nelasiorrhynchites syriacus*, female. 29. *Nelasiorrhynchites praeustus*, male. 30. *Nelasiorrhynchites praeustus*, female. 31. *Lasiorrhynchites freidbergi*, male. 32. *Lasiorrhynchites freidbergi*, female. 33. *Byctiscus betulae*, female. 34. *Rhodocyrthus cribripennis*, male.

Distribution

Israel: Har Hermon.

Comments

The three specimens were collected by sweeping *Quercus boissieri* Reuter.

***Neocoenorhinidius cribrum* (Desbrochers, 1875)**

(Figs. 3–4, 25–26, 48, 63, 77)

Material examined

ISRAEL: Har Hermon, 1500 m, 20.v.1992, J. Halperin, on *Sorbus umbellata* (1; TAU), 1100 m, 7.iv.1978, D. Furth (3; TAU); Har Meron, 1100 m, 29.iv.1974, D. Furth, *Quercus sp.* (9; TAU; 2; SZMN), 5.vi.1974, D. Furth (1; TAU), Naḥal Oren, 8.v.1996, T. Pavliček & V. Chikatunov (1; TAU), 1.iv.1997, V. Chikatunov & T. Pavliček (1; TAU), 1.vi.1998, A. Freidberg (1; TAU), 29.iv.1999, A. Freidberg (1; TAU); Karmel, Naḥal Oren, near Har Arkan [probably =Har Barqan], 350 m, 6.iv.1995, E. Colonnelli, *Quercus calliprinos* (2; SZMN).

Distribution

Syria, Israel.

Comments

Usually collected on oaks (*Quercus sp.*) and various annuals. We studied the specimens that were reported by Halperin and Fremuth (2003) and by Bytinski-Salz and Sternlicht (1967) as *Neocoenorhinus pauxillus* (Germar, 1824), and found them to be *N. cribrum*.

***Rhodocyrtus cribripennis* (Desbrochers, 1869)**

(Figs. 12, 34, 50, 65, 81)

Material examined

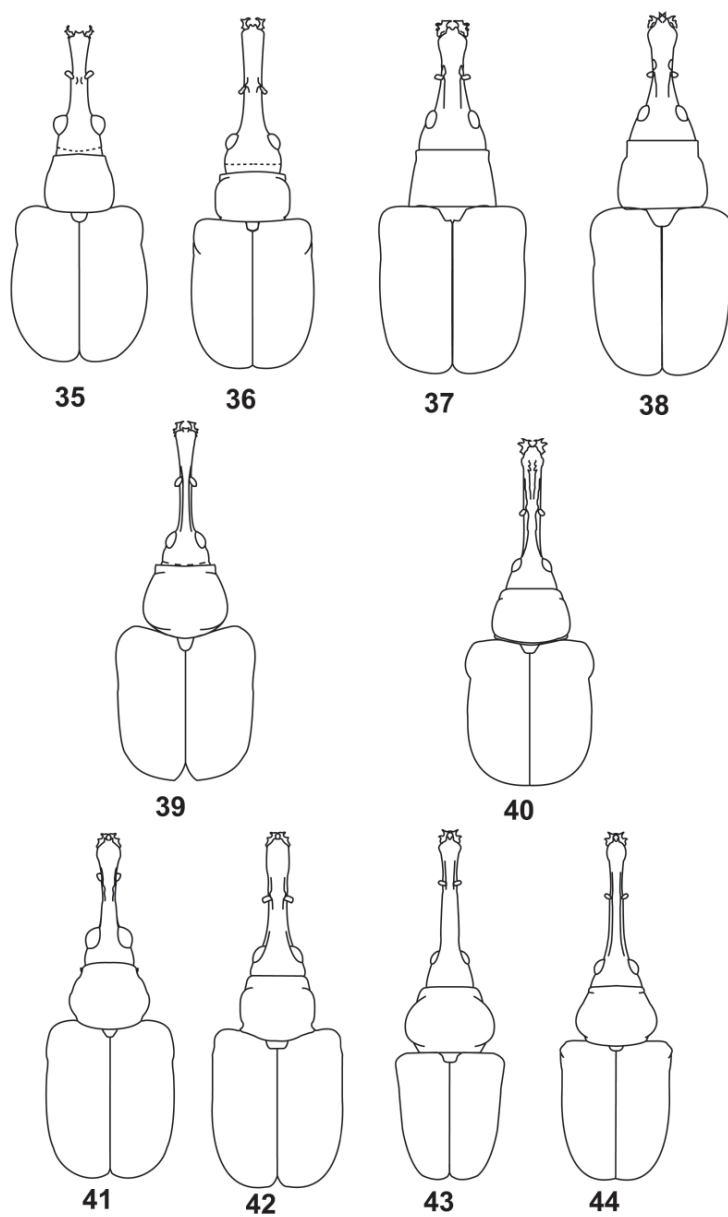
ISRAEL: Naḥal Oren, 18.v.1998, V. Chikatunov & T. Pavliček (2), 2.vi.1998, V. Chikatunov & T. Pavliček (1; TAU), 15.iv.2002, L. Friedman (1; TAU), A. Freidberg (1; TAU).

Distribution

France, Italy, Bulgaria, Greece, Turkey, Cyprus, Syria, Lebanon, Israel.

Comments

Collected on *Quercus calliprinos*, although the known host plant is the olive tree, *Olea europaea*.



Figs. 35–44. Body, dorsal view. 35. *Tatianaerhynchites aequatus*, male. 36. *Tatianaerhynchites aequatus*, female. 37. *Epirhynchites friedmani*, female. 38. *Epirhynchites trojanus*, female. 39. *Mechoris ungaricus*, female. 40. *Epirhynchites smyrnensis*, female. 41. *Rhynchites bacchus*, male. 42. *Rhynchites bacchus*, female. 43. *Rhynchites lenaeus*, male. 44. *Rhynchites lenaeus*, female.

***Tatianaerhynchites aequatus* (Linnaeus, 1767)**

(Figs. 13–14, 35–36, 49, 64, 82)

Material examined

ISRAEL: Har Hermon, 1600 m, 20.v.1986, G. Eldar (1; TAUI), 14.v.1996, V. Chikatinov (2; TAUI), 20.v.1997, V. Chikatinov (11; TAUI), A. Freidberg (6; TAUI), 23.v.1998, A. Freidberg (2; TAUI), 25.v.1998, V. Chikatinov (4; TAUI), 17.vi.1999, L. Friedman (1; TAUI), 4.v.1999, L. Friedman (36; TAUI; 3; SZMN), 17.vi.1999, H. Ackerman (1; TAUI); Har Hermon, Biq'at Man, 1450 m, 1.v.1998, E. Orbach (1; EO); 1 km W 4 km N Newé Ativ, 1.v.1998, E. Orbach (1; EO); Har Dov, karst, 16.vi.1999, A. Freidberg (1; TAUI); Majdal Shams, 1200 m, 23.v.1997, E&B Orbach (7; EO); Aloné haBashan, 20.iv.2000, E. Orbach (4; EO); Montfort, 4.iii.1993, A. Freidberg (1; TAUI); Har Kefir, Nahal haAri, 800–900 m, 26.v.1995 (2; EO), 14.v.1995 (1; EO), 2.vi.1995 (5; EO), 850 m, 24.iv.1998 (3; EO), 29.iv.1998 (9; EO), 800 m, 22.v.1999 (1; EO), all E. Orbach; Road Sasa-Jish, 700 m, 28.iv.1996, E. Orbach (1; EO); 1 km N Jish, 6.iv.2001, E. Orbach (2; EO); Har Meron, 1100 m, 5.v.1975, A. Freidberg (3; TAUI), 22.v.1998, A. Freidberg (4; TAUI), 26.v.1999, A. Freidberg (1; TAUI); Yavne'el, 16.iii.2001, E. Orbach (1; EO); Tiv'on, 7.iii.1981, A. Freidberg (1; TAUI); Hefa, 20.III, H. Bytinski-Salz (3; TAUI); Zikhron Ya'aqov, 1.iv.1998, A. Freidberg (1; TAUI); Benyamina, 16.III, H. Bytinski-Salz (1; TAUI); 'En Hemed [Aquabella], 3.iv.1943, Bytinski-Salz, on apricot (4; TAUI); Yerushalayim [Jerusalem], 16.iv.1943, H. Bytinski-Salz, on *Crataegus* sp. (1; TAUI), 20.iv.1957, on *Crataegus* sp. (1); Yerushalayim, Qiryat 'Anavim [Kirjat Anavim], 5.v.1941, H. Bytinski-Salz, (1; TAUI).

Distribution

UK, Sweden, The Netherlands, Belgium, France, Germany, Switzerland, Austria, Italy, Czech Republic, Hungary, Bosnia, Macedonia, Romania, Moldavia, Bulgaria, Greece, Latvia, Poland, Russia, Ukraine, Georgia, Armenia, Azerbaijan, Turkey, Cyprus, Syria, Israel, Jordan, Kazakhstan, Turkmenistan, Iran.

Comments

The host plants are species of *Crataegus*.

***Mechoris ungaricus* (Herbst, 1783)**

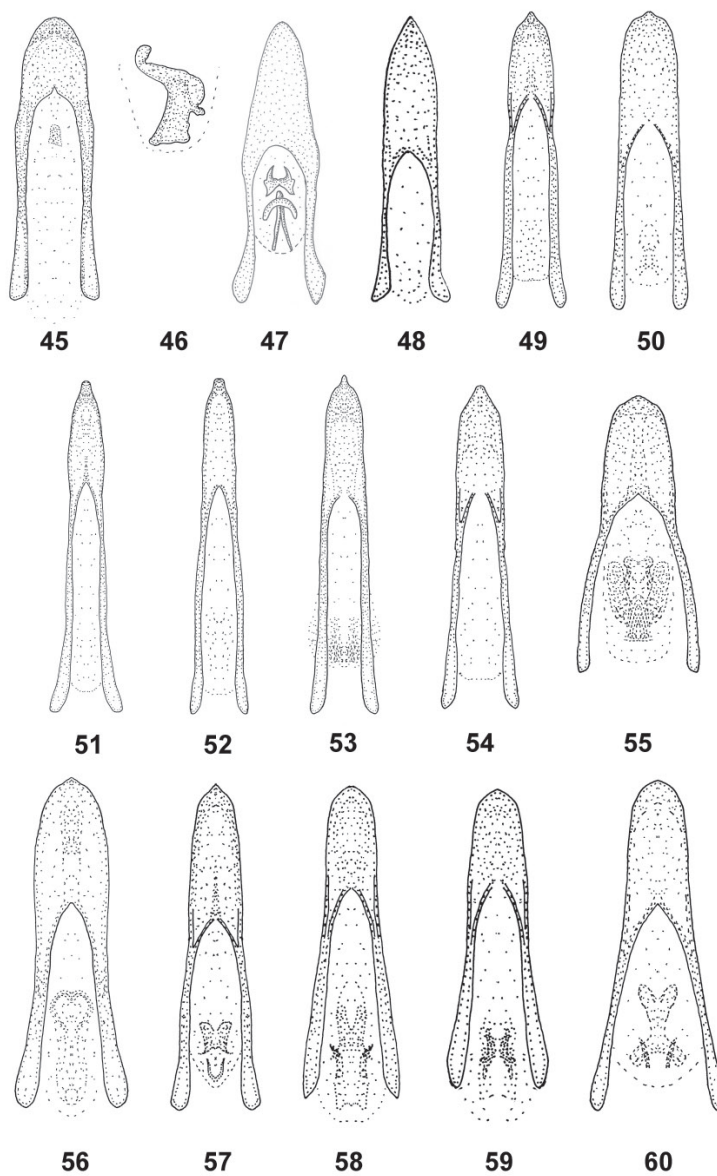
(Figs. 17, 39, 57, 71, 85)

Material examined

ISRAEL: Har Hermon [Mt. Hermon], 1650 m, 23.vi.1973, H. Bytinski-Salz (1; TAUI); She'ar Yashuv, 20.v.1998, E. Filler (1; TAUI); Nahal Senir, Rt. 99, 33°13'N 35°37'E, 7.v.2007, W. Kuslitsky (1; TAUI).

Distribution

Austria, Hungary, Czech Republic, Belarus, Poland, Ukraine, Moldavia, Croatia, Slovakia, Bosnia, Macedonia, Bulgaria, Greece, Georgia, Azerbaijan, Morocco, Turkey, Syria, Israel, Iraq, Kazakhstan, Iran.



Figs. 45–60. Aedeagus, dorsal view. 45. *Attelabus nitens*. 46. *Attelabus nitens* (basal sclerite of endophallus). 47. *Eomesauletes politus*. 48. *Neocoenorhinidius cribrum*. 49. *Tattianaerhynchites aequatus*. 50. *Rhodocyrtus cribripennis*. 51. *Nelasiorrhynchites syriacus*. 52. *Nelasiorrhynchites praeustus*. 53. *Lasiorrhynchites freidbergi*. 54. *Lasiorrhynchites cavifrons* (from Moldavia). 55. *Byctiscus betulae*. 56. *Epirhynchites trojanus*. 57. *Mechoris ungaricus*. 58. *Epirhynchites smyrnensis*. 59. *Rhynchites bacchus*. 60. *Rhynchites lenaeus*.

***Rhynchites bacchus* (Linnaeus, 1758)**

(Figs. 19–20, 41–42, 59, 73, 87)

Material examined

ISRAEL: Har Hermon [Mt. Hermon], 1800 m, 11.vi.2003, A. Freidberg (5), 12.vi.2003, A. Freidberg (6), L. Friedman (16), 1600 m, 23.v.1998, A. Freidberg (1) 12.vi.2003, A. Freidberg (2) (all in TAUI).

Distribution

UK, The Netherlands, Norway, Sweden, Belgium, France, Spain, Germany, Switzerland, Austria, Italy, Greece, Hungary, Czech Republic, Bosnia, Macedonia, Romania, Moldavia, Poland, Russia, Ukraine, Georgia, Armenia, Azerbaijan, Algeria, Turkey, Israel, Kazakhstan, Uzbekistan, Turkmenistan, Iran.

Comments

This widely distributed West Palaearctic species is only found on Mount Hermon, between 1600 – 1800 m, at the extreme north of Israel, which might be the southernmost border of its distribution. Most of the specimens were found in a small valley on the southfacing slope, at an altitude of 1800 m, on bear plum, *Prunus ursina*, feeding on the fruit.

***Rhynchites lenaeus* Faust, 1891**

(Figs. 21–22, 43–44, 60, 74, 88)

Material examined

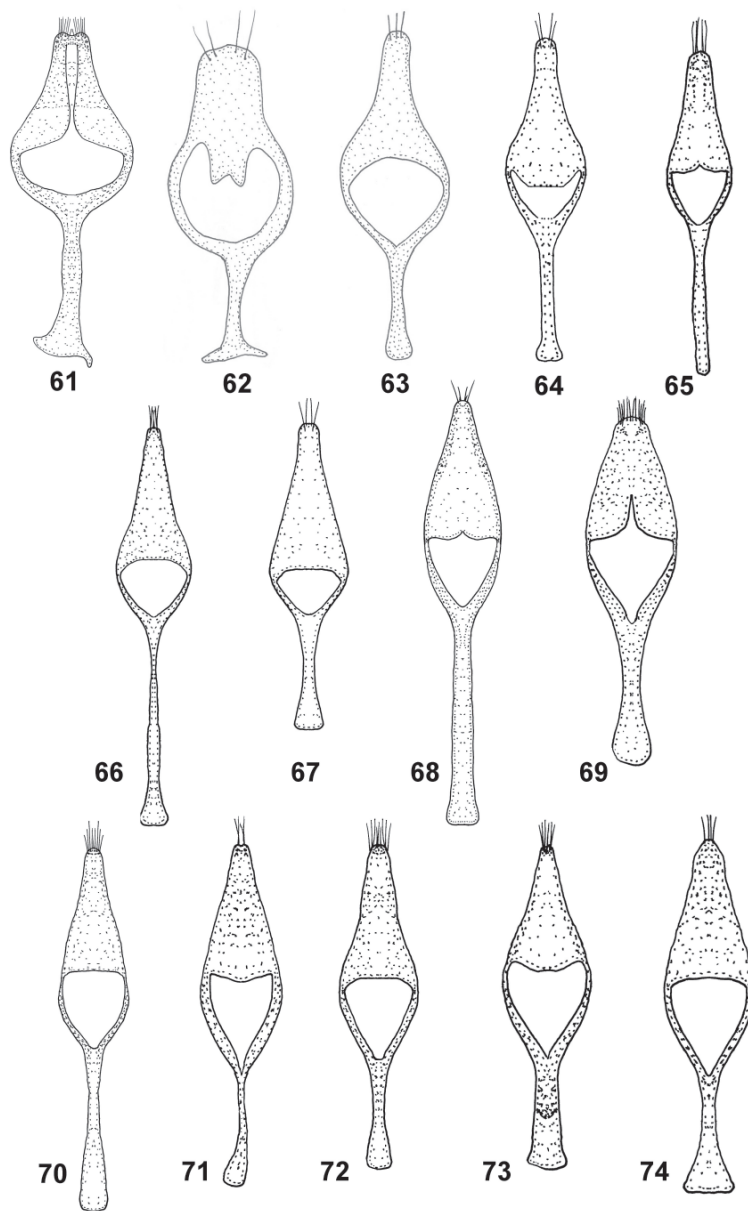
ISRAEL: Upper Galilee, Har Kefir, 900 m, 24.v.1997, E. Orbach (1; EO); Sharon (Central Coastal Plain), 6.v.1934 (2; PPIS); 'En Hemed [Aquabella], 15.iii.1969, H. Bytinski-Salz (1; TAUI; 1; SZMN); Yerushalayim [Jerusalem], 15.iii.1939, H. Bytinski-Salz (1; TAUI); Qiryat 'Anavim [Kirjath Anavim, Jerusalem], 19.v.1933 (1; TAUI), [Kirjath Anavim], 20.iv.1936, A. Shulov (3; TAUI), 16.v.1938 (1; PPIS), 13.v.1946, H. Bytinski-Salz (1; TAUI).

Distribution

Macedonia, Slovakia, Bulgaria, Georgia, Armenia, Azerbaijan, Turkey, Syria, Israel.

Comments

This species was listed in the Prodrromus Faunae Palaestinae (Bodenheimer, 1937) and by Avidov (1961) erroneously as *Rhynchites schilskyi* Voss. Our re-examination of the same specimens from the PPIS, studied by Bodenheimer and Avidov, has proved that actually they are *R. lenaeus*.



Figs. 61–74. Tegmen, dorsal view. 61. *Atelabus nitens*. 62. *Eomesauletes politus*. 63. *Neocoenorhinidius cribrum*. 64. *Tatianaerhynchites aequatus*. 65. *Rhodocyrtus cribripennis*. 66. *Nelasiorrhynchites syriacus*. 67. *Nelasiorrhynchites praeustus*. 68. *Lasiorrhynchites freidbergi*. 69. *Byctiscus betulae*. 70. *Epirhynchites trojanus*. 71. *Mechoris ungaricus*. 72. *Epirhynchites smyrnensis*. 73. *Rhynchites bacchus*. 74. *Rhynchites lenaeus*.

Epirhynchites (Tshernyshevinius) trojanus (Gyllenhal, 1839)

(Figs. 16, 38, 56, 70, 84)

Material examined

ISRAEL: Hefa [Syrien, Kaifa], Reitter (1; TAUJ); 'Emeq Yizre'el, 2.v.1930, "eating young fruits on apricot trees" (1; PPIS).

Distribution

Turkey, Syria, Israel, Jordan.

Epirhynchites (Tshernyshevinius) friedmani Legalov, n. sp.

(Figs. 15, 37)

Diagnosis

This species belongs to the *auratus* species group, and is most closely related to *E. trojanus*, from which it differs by the form of the pronotum: in *E. friedmani* the pronotum is subcylindrical, nearly straight laterally, only slightly constricted at the apical third, and the surface sculpture is fine, whereas in *E. trojanus* the pronotum is rounded laterally, strongly constricted at the apical third, and the surface sculpture is coarse; *E. friedmani* also differs by the larger size (11.5–12.5 mm), narrower frons, longer rostrum, stronger lateral keels at base of rostrum, wider elytra, the dark bronze body, and the wider and paler body pubescence. *E. friedmani* is well distinguished from the species of the *zaitzevi* group of *Epirhynchites* by the sparser pronotal pubescence.

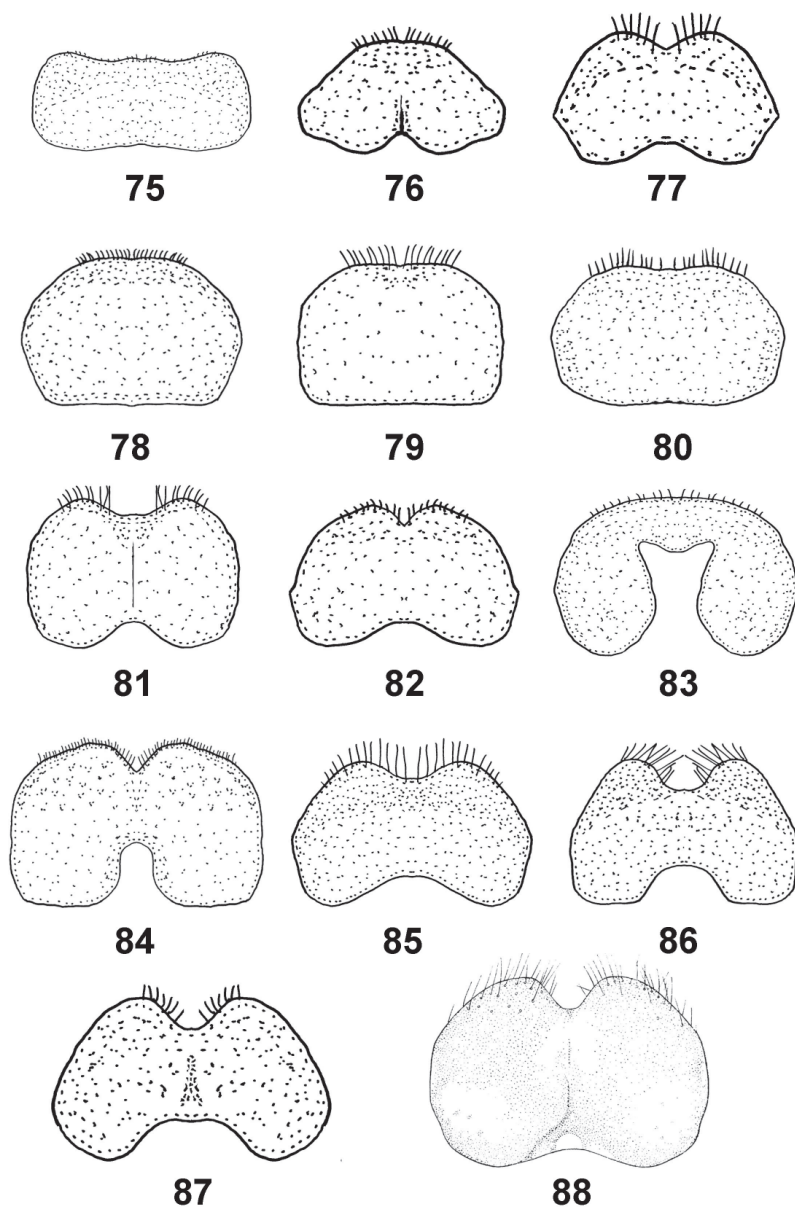
Description

Female. Body. Dark-bronze, with violet luster. Dorsum covered by sparse, thin, short, bright hairs. Venter and legs covered by dense, long, white, appressed and semi-appressed hairs. Body length 11.5–12.5 mm.

Head. Rostrum short and thick, 1.1 times as long as pronotum, 4.46 times as long as wide, slightly curved, slightly dilated at apex; dorsal part of rostrum coarsely punctured, shagreened at apical third and shiny in basal third; at basal third interpunctural spaces convex and oblong, at apical third interpunctural spaces flat, wrinkled, minutely and densely punctured at base; epistome transverse, obtuse. Antenna inserted distal to middle of rostrum. Eyes small, slightly prominent; vertex convex, punctured; head not constricted posteriorly. Antenna narrow, not exceeding middle of pronotum. Scapus oval, longer than first funicular segment, first funicular segment oval, shorter than second funicular segment; segments 2–4 oblong-oval, narrow, segments 5–7 shorter than 2–4; club small, loose, first segment wider than second, third segment slightly oblong, obtuse.

Pronotum. Oblong, 1.06 times as long as wide, nearly cylindrical, slightly tapering anteriorly. Pronotal disc convex, with central longitudinal furrow, sparsely and minutely punctured. Scutellum transverse, quadrilateral.

Elytra. Widely oval, 1.14 times as long as wide, maximum width at middle; humeral



Figs. 75–88. Male, tergite 8: 75. *Attelabus nitens*. 76. *Eomesauletes politus*. 77. *Neocoenorhynchidius cribrum*. 78. *Nelasiorhynchites syriacus*. 79. *Nelasiorhynchites praeustus*. 80. *Lasiorhynchites freidbergi*. 81. *Rhodocyrtus cribripennis*. 82. *Tatianaerhynchites aequatus*. 83. *Byctiscus betulae*. 84. *Epirhynchites trojanus*. 85. *Mechoris ungaricus*. 86. *Epirhynchites smyrnensis*. 87. *Rhynchites bacchus*. 88. *Rhynchites lenaeus*.

callus developed; scutellar furrow absent; striae very indistinct, strial punctures minute and shallow; interstrial spaces nearly flat, minutely and sparsely punctured. Hind wings well-developed. Prosternum lacking spines.

Ventriles. Metepisterna very wide, slightly punctured, shiny. Abdomen convex, shiny, minutely punctured. First and second ventrites longer than wide, third and fifth ventrites short. Pygidium convex, minutely punctured.

Legs. Femora incrassate in distal part; fore tibia longer than rostrum, straight, narrow, slightly dilated apically; middle and hind tibia shorter, curved, more widely dilated; tarsi elongated, first protarsomere triangular, elongated, first meso- and metatarsomere shorter; second tarsomere triangular, third tarsomere bilobed, fifth tarsomere elongated. Claws with long teeth.

Material examined

Holotype ♀, ISRAEL: Ramot Naftali, 25.v.2000, leg. D. Simon (TAUI), in good condition. Paratypes 1 ♀, ISRAEL: Ramot Naftali, 33°05'N 35°29'E, S. Horenfeld (TAUI), 1 ♀, same, L. Ditzl (TAUI), 1 ♀, same, L. Yunger (TAUI); 1 ♀, ISRAEL: 'Emeq 'Afula, Samaria, 5.iv.2001, PPIS, [on] Nectarine 11998 (SZMN).

Etymology

The species is named after the junior author of this paper.

Distribution

Israel: Upper Galilee, Samaria.

Comments

The holotype and three paratypes were collected on an almond tree (*Amygdalus* sp.). One paratype was collected on a nectarine tree (*Prunus persica* variety *nectarina*) in an orchard.

Epirhynchites (Colonnellinius) smyrnensis (Desbrochers, 1869)

(Figs. 18, 40, 58, 72, 86)

Material examined

ISRAEL: Har Hermon [Mt. Hermon], 1800 m, 25.v.1998, V. Chikatunov (1; TAUI).

Distribution

Turkey, Syria, Israel, Jordan, Turkmenistan, Iran.

Comments

E. smyrnensis was observed by A. L. L. Friedman ovipositing into the fruit of *Amygdalus* sp. in Cappadocia, Turkey, and a larva hatched from the deposited egg.

Tribe Byctiscini Voss, 1923
Subtribe Byctiscini Voss, 1923

Byctiscus (Byctiscus) betulae (Linnaeus, 1758)
(Figs. 11, 33, 55, 69, 83)

Material examined

ISRAEL: [Palästina], Bodenheimer (1; PPIS).

Distribution

UK, Sweden, Finland, Latvia, The Netherlands, Belgium, France, Germany, Switzerland, Austria, Italy, Hungary, Czech Republic, Serbia, Macedonia, Poland, Russia, Belarus, Ukraine, Romania, Moldavia, Georgia, Armenia, Azerbaijan, Bulgaria, Greece, Turkey, Syria, Israel, Kazakhstan, Turkmenistan.

Comments

We studied the only specimen of *B. betulae*, collected by Dr. F. S. Bodenheimer, bearing the label "Palästina", which does not indicate either the exact site or the date of collection. We assume that it was collected somewhere within the current borders of Israel, but not on Mount Hermon or the Golan Heights, which belonged to French controlled Syria during the period of Dr. Bodenheimer's activity; being a resident of British Palestine he would have been unable to collect there. It was collected after 1937, as it is not mentioned in the Prodrum Faunae Palaestinae (Bodenheimer, 1937).

Family Attelabidae Billberg

Subfamily Attelabinae Billberg

Tribe Attelabini Billberg

Attelabus (Attelabus) nitens (Scopoli, 1763)
(Figs. 1, 3a, 45, 46, 61, 75)

Material examined

ISRAEL: Sheih [probably "Jebel a-Sheykh"=Har Hermon], 2.vi.1972, M. Tintpulver (1); Har Hermon, 1600 m, 17.vi.1999, L. Friedman (1); Har Dov, road, 16.vi.1999, A. Freidberg, on *Quercus boissieri* (1), L. Friedman (2; TAUI); Mezudat Nimrod, 27.v.1999, L. Friedman (1); 4 km S Mas'ade, 26.v.1972, M. Tintpulver (1); Bab el Hawa, 20.vi.1972 (1); Upper Galilee, Har Kefir, 900 m, 30.v.1995, E. Orbach (2); Har Meron, 1100 m, 17.vi.1977, A. Freidberg, *Quercus* sp. (1), 22.v.1999, A. Freidberg (1) (all in TAUI).

Distribution

UK, Sweden, Finland, Latvia, The Netherlands, Belgium, France, Germany, Switzerland, Austria, Italy, Czech Republic, Hungary, Bosnia, Herzegovina, Macedonia, Bulgaria, Greece, Serbia, Romania, Moldavia, Poland, Russia, Belarus, Ukraine, Georgia, Armenia, Azerbaijan, Turkey, Syria, Israel, Turkmenistan.

Comments

Usually collected on oaks (*Quercus* spp.).

ZOOGEOGRAPHY

The Israeli fauna of leaf-rolling weevils is evidently of West-Palaeartic origin, with predominance of Mediterranean elements (more than 50%) with 3 circum-Mediterranean and 5 East-Mediterranean (Levantine) species, and with major representation of widely distributed West-Palaeartic species (5 species, 33.3%). Two local endemics are found and both belong to widely distributed Palaeartic genera. Although the Israeli fauna is usually characterized by the occurrence of Irano-Turanian and Afrotropical elements in many groups of animals and plants (Bytinski-Salz 1961; Furth, 1975), no representatives of these zoogeographical regions have been found among the Israeli leaf-rolling weevils.

The distribution of leaf-rolling weevils in Israel is restricted to the northern part of the country and the Judean Hills, areas characterized by Mediterranean climate and vegetation. *Rhynchites bacchus*, *Epirhynchites smyrnensis* and *Lasiorrhynchites freidbergi* were collected only on Mount Hermon, above 1400 m. *Mechoris ungaricus* was collected on Mount Hermon and in the adjacent area of Upper Galilee. *Attelabus nitens* was collected on Mount Hermon, Mount Dov, the Golan Heights and on Mount Meron, predominantly at altitudes above 1000 m. *Epirhynchites trojanus* and *E. friedmani* are both rarely collected, from the Upper Galilee to the 'Emeq Yizre'el (Jesreel Valley). *R. lenaeus*, *E. politus*, *Nelasiorrhynchites praeustus*, *N. syriacus*, *T. aequatus* and *Neocoenorhinidius cribrum* are widely distributed over the Mediterranean zone of Israel, including the Upper and Lower Galilee, Northern Coastal plain, Carmel Ridge and Judean Hills. *R. cribripennis* was collected only on the Carmel Ridge. No species have been found in semi desert or desert areas.

The Israeli fauna of leaf-rolling weevils closely resembles that of Turkey. All species, except for the newly described, are found in Turkey. Therefore, if intensive collection continues, we expect that eventually one or more of the following species, known from Turkey, will be found in the northern part of Israel: *Perrhynchites aereipennis* (Desbrochers), *Deporaus podager* (Desbrochers) and *Attelabus sulcifrons* (Argod-Vallon).

ACKNOWLEDGEMENTS

We are grateful to Dr. Amnon Freidberg, curator of the National Collection of Insects, Prof. Vladimir I. Chikatunov, curator of the beetle section, National Collection of Insects, Dr. Netta Dorchin, Museum Koenig, Bonn, Germany, and Ms. Naomi Paz, Department of Zoology, Tel Aviv University, for reviewing an earlier draft of the manuscript; Dr. Wolf Kuslitzky, Ms. Alexandra Gofman and the late Dr. Qabir (Carol) Argaman, for lending material from the Collection of the Plant Protection and Inspection Services, Ministry of Agriculture and Rural Development, Bet Dagan, Israel; Mr. Eylon Orbach, Qiryat Tiv'on, Israel, for lending material from his private collection; and to Dr. Dany Simon, Department of Zoology, Tel Aviv University, and Mr. Shay Henry Hornfeld, Ms. Lital Ditchi and Ms. Liron Younger, students of the George S. Wise Faculty for Life Sciences, Tel Aviv University, for their incredible help in collecting and donating specimens of *Epirhynchites friedmani*.

REFERENCES

- Alfieri, A. 1972. *The Coleoptera of Egypt*. Mémoires de la Société Entomologique d'Égypte. Vol. 5. Atlas Press Cairo. 362 pp.
- Avidov, Z. 1961. *Plant pests of Israel*. Israel Universities Press, Jerusalem. 546 pp. [in Hebrew]
- Avidov, Z. & I. Harpaz 1969. *Plant pests of Israel*. Israel Universities Press, Jerusalem. 549 pp.
- Bodenheimer, F. S. 1937. *Prodromus Faunae Palaestinae*. Mémoires de l'Institut d'Égypte, 33.
- Boheman, C.H. 1829. Novae Coleopterorum Species a Carolo Henrico Bohemann Descriptae. *Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou* 1: 121–133.
- Boheman, C.H. 1845. In: Schoenherr C. J., 1845. *Genera et species curculionidum, cum synonymia hujus familiae. Species novae aut hactenus minus cognitae, descriptionibus a Dom. Leonardo Gyllenhal, C.H. Boheman, et entomologiis aliis illustratae*. 8 (2). Paris. 504 pp.
- Bytinski-Salz, H. 1961. The Ethiopian element in the insect fauna of Israel. *Proceedings of the XI International Congress of Entomology, Vienna 1960*, 1: 457–463.
- Bytinski-Salz, H. & M. Sternlicht 1967. Insects associated with oaks in Israel. *Israel Journal of Entomology* 2: 107–143.
- Desbrochers, J. 1869. Monographie des Rhinomacérides d'Europe et des pays limitrophes, comprenant les genres *Rhynchites*, *Auletes*, *Auletobius* (N. G.), *Diodyrhynchus*, *Rhinomacer* and *Nemonyx*. *L'Abeille* 5: 317–428.
- Desbrochers, J., 1875. Envoie les diagnoses de quatre espèces nouvelles de Coléoptères, dont les description in extenso paraîtront dans un supplément à ses monographies. *Bulletin de la Société entomologique de France* 6: 186–189.
- Desbrochers, J. 1908. Faunule des Coléoptères de la France at de la Corse. Curculionides de la tribu des Attélabides et Rhinomacérides. *Le Frelon* 16: 1–80.
- Faust, J. 1891. Beiträge zur Kenntnis der Käfer des europäischen und asiatischen Russlands. *Horae Societatis Entomologicae Rossicae* 25: 386–416.
- Furth, D. G. 1975. Israel, a great biogeographic crossroads. *Discovery* 11(1): 2–13.
- Germar, E. F. 1824. *Insectorum species novae aut minus cognitae, descriptionibus illustratae. 1. Coleoptera*. Halae: J.C. Hendelii et filii. 24 + 624 pp.
- Gyllenhal, L. 1839. In: Schoenherr C. J. *Genera et species curculionidum, cum synonymia hujus familiae, species novae aut hactenus minus cognitae, descriptionibus a Dom. Leonardo Gyllenhal, C.H. Boheman, et entomologiis aliis illustratae*. 5 (1). Paris. 456 pp.

- Halperin, J. & J. Fremuth 2003. Contribution to the knowledge of Curculionoidea (Coleoptera) and their host plants in Israel. *Zoology in the Middle East* 29: 93–100.
- Hamilton, R. W. 2002. Atteblabidae Bilberg 1820, pp. 703–710. In: Arnett, R. H., Thomas, M. C., Skelley, P. E., (eds.). *American beetles*. Volume 2. CRC Press, Boca Raton, Florida. 860 pp.
- Herbst, J. F. W. 1783. Kritisches Verzeichniss meiner Insecten-Sammlung. *Archiv der Insectengeschichte* 4: 1–72.
- Legalov, A. A. 2003. *Taxonomy, classification and phylogeny of the leaf-rolling weevils (Coleoptera: Rhynchitidae, Atteblabidae) of the world fauna*. Novosibirsk. 733 pp. (CD-R. 641 MB.). [in Russian]
- Linnaeus, C. 1758. *Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Editio decima, reformata. 1. Salvius, Holmiae. 823 pp.
- Linnaeus, C. 1767. *Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Editio decima tertia, ad Editionem duodecimam reformatam Holmiensem. 12. 1, 2. Vindobonae, pp. 533–1327.
- Morris, M. G. 1990. *Orthocerous weevils*. Coleoptera Curculionoidea (Nemonychidae, Anthribidae, Urodontidae, Atteblabidae and Apionidae). Handbooks for the identification of British insects. Vol. 5, part 16. Dorset Press, Dorchester, Dorset. 108 pp.
- Riedel, A. 2001. Revision of the simulans-group of *Euops* Schoenherr (Coleoptera, Curculionoidea, Atteblabidae) from the Papuan region. *Deutsche Entomologische Zeitschrift* 48 (2): 139–221.
- Scopoli, J.A. 1763. *Entomologia Carniolica exhibens insecta Carnioliae indigena et distributa in ordines, genera, species, varietes*. Methodo Linnaeana. Vindobonae. 34 + 420 pp.
- Ter-Minassian, M. E. 1950. *Dolgonosiki-trubkoverty (Atteblabidae)*. Fauna SSSR. Nasekomye zhestkokrylye 27 (2). Moskva-Leningrad: Isdatel'stvo An SSSR. 231 pp. [in Russian]
- Voss, E. 1923. Indo-Malayische Rhynchitinen (Curculionidae). II. (10. Beitrag zur Kenntnis der Curculioniden). *Philippine Journal of Science* 22 (5): 489–614.

