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The Apionidae of Israel and the Sinai Peninsula (Coleoptera: Curculionoidea)

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ABSTRACT

Seventy-five species in thirty genera of Apionidae are recorded from Israel and the Sinai Peninsula, together with data on their general and local distribution, host plants, habitat, phenology and parasitoids. Keys are provided to the Curculionoidea families of Israel and to genera and species of the Apionidae of Israel. Twenty-six species are newly recorded from Israel, including five newly-described species: *Catapion halperini* n. sp., *Ceratapion* (*Angustapion*) *ramoni* n. sp., *Perapion eretzisrael* n. sp., *Squamapion terrasanctae* n. sp., and *Stenopterapion argamani* n. sp. A new genus, *Necatapion*, is proposed for *Catapion bruleriei* (Desbrochers), which is transferred from the Oxystomatini to *incertae sedis*. All new and most other species are illustrated.

KEY WORDS: Apionidae, weevils, Israel, Sinai, Palaearctic, taxonomy, zoogeography, new species, new genus.

INTRODUCTION

The Apionidae are a group of weevils distributed world-wide (except for Antarctica), and comprising approximately 1800 (Kuschel, 1995) to 2100 (Gønget, 1997) described species, and at least 2000 undescribed species (Wanat, 2001). The Palaearctic fauna of the Apionidae comprises approximately 500−550 species (Gønget, 1997; Wanat, 2001), although this number keeps rising. The Apionidae fauna of the Eastern Palaearctic is much less studied than that of the Western Palaearctic. The within-family phylogenetic relationships were studied mostly among the Western Palaearctic Apionidae (Alonso-Zarazaga, 1990b).

The Apionidae fauna of Israel has been poorly studied to date. The earliest publications on the Israeli Apionidae are the descriptions of *Protapion truquii* (Reiche and Saulcy, 1858), *Synapion splendidulum* (Desbrochers, 1874−1875), and *Ceratapion onopordi parviclava* (Desbrochers, 1897). The first list of species was given by Baudi (1894) and included six species from Lebanon and Israel. In Winkler's Catalog (1932) several species

were marked "Pal" (= Palaestina), while many species, indicated as "Syr" (= Syria), were actually collected in the territory of present-day Israel. Bodenheimer (1937) presented the first synopsis of Apionidae of Israel (then Palestine), which included a list of 33 species. Bodenheimer's list was mostly based on material collected by him and determined by Marshall and Györffy, and on data taken from Winkler's Catalog (1932), and it contained many junior synonyms and misidentifications. Several pest species of economic importance were reported by Rivnay (1960) and Avidov and Harpaz (1961, 1969), and their hosts were listed and life cycles briefly described. Voss (1964) published a list of 31 Apionidae collected in the 1950s by J. Klapperich in Jordan; 14 species of which were collected in present-day Israel. Melamed-Madjar (1969b) published a list of 27 species collected in legume fields in Israel. Two species, *Onychapion* sp., collected on *Tamarix*, and *Catapion bruleriei* Desbrochers, collected on or reared from *Convolvulus arvensis*, were recorded in a survey of natural enemies of these weeds (Gerling and Kugler, 1973). Halperin and Fremuth (2003) published a list of 27 species of Apionidae, based on the private collection of Dr J. Halperin, and recorded the host plants for most of them. That publication contained several misidentifications and synonymies, which are discussed herein under the relevant species. The Halperin collection was subsequently donated to Tel Aviv University, and was included in this study.

The Apionidae fauna of the Near East is only partly known. Thirty-two species were listed for Jordan: Voss (1964) listed 30 species (two of which were actually collected in present-day Israel); Katbeh-Bader (2002) added one undetermined species; and Wanat (1995) described one new species; 26 of these species occur in Israel. Alfieri (1976) recorded 18 species from Egypt, six of which were from the Sinai Peninsula. Borumand (1998) recorded 26 species from Iran. Balfour-Browne (1944) reported 32 species of Apionidae from Cyprus, of which at least 23 occur in Israel. The fauna of the Arabian Peninsula was studied by Wanat (1990), and most of the reported species were Afrotropical elements. No overale survey of the Apionidae of Turkey exists; the reported fauna of north-east Turkey (Hayat *et al*., 2002) comprises 42 species (of which 17 species (40%) occur in Israel) belonging to 17 genera (of which 15 are represented in Israel). A short collecting trip by the authors of this paper to southern and central Turkey, resulting in about 300 specimens belonging to 35 species, also indicates that the Turkish fauna of Apionidae strongly resembles the Israeli fauna. We are not aware of any publications on the Apionidae fauna of Lebanon, Syria or Iraq.

This study is primarily based on an extensive collection deposited at TAUI (comprising over 10,000 specimens) and accumulated by the authors from Israel and Sinai since 1996 (Friedman, 1999; Friedman and Freidberg, 2000), but also supplemented by much additional material since about 1900, including material studied by F. S. Bodenheimer and listed in his Prodromus Faunae Palestinae (Bodenheimer, 1937); most of the material collected by V. Melamed-Madjar in her survey (Melamed-Madjar, 1969a,b, and previously deposited in the collection of the Volcani Center, Bet Dagan (now in TAUI); the private collection of the late Q. Argaman (now in TAUI); and the private collection of J. Halperin, which was the source for Halperin and Fremuth's publication (2003).

We follow Alonso-Zarazaga and Lyal (1999) and Wanat (2001) in treating the

Apionidae as a family separate from the Brentidae and Nanophyidae.

This publication is a faunistic summary and taxonomic update of the Apionidae of Israel. For each species we provide sections on material examined; distribution, primarily based on the literature; host plants (if known, with references for records that are not ours); phenology; parasitoids; and remarks. Phenology, biology and parasitoid sections are given only for those species for which we have substantial information. We summarize the data on host plants of the Apionidae of Israel in Appendix 1; and the data on the parasitoids of the Apionidae of Israel in Appendix 2. A checklist of all the species is given in Appendix 3. The arrangement of supertribes, tribes, genera and species is alphabetical. Species new to the fauna of the studied area are marked by an asterisk (*).

MATERIALS AND METHODS

Most of the studied material is deposited in the National Collection of Insects, Zoological Museum, Tel Aviv University, Israel (TAUI). Additional material was borrowed from the collection of the Plant Protection and Inspection Services, Bet Dagan, Israel (PPIS), the private collection of Mr Eylon Orbach, Qiryat Tiv'on, Israel (ORB) and the collection of the Hungarian Natural History Museum, Budapest Hungary (HNHM). In the Material Examined sections only specimens from PPIS, ORB and HNHM are cited by these abbreviations, whereas specimens recorded without a depository are all deposited in TAUI. The abbreviation TAUI is specifically used only when referring to the depository of types. All holotypes and most of the paratypes of the species described in this publication are deposited at TAUI. Part of the type material of *Stenopterapion argamani* n. sp. is deposited in the private collections of S. Benedikt, Star Plzenec and Ing. K. Schön, Litvinov, both Czech Republic. Paratypes of some species will be donated to the following institutions and collections: the Natural History Museum, London, UK (formerly British Museum) (BMNH), the National Museum of Natural History (Smithsonian Institution), Washington, D. C., USA (NMNH), the Siberian Zoological Museum, Institute for Systematics and Ecology of Animals, Novosibirsk, Russia (SZMN), the Museum of Natural History, Wrocław University, Poland (MW), the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia (ZIN), and the private collection of Ing. K. Schön, Litvinov, Czech Republic (SCHO).

Drawings and measurements were made using a calibrated eyepiece and a stereomicroscope Leica MZ12. The total body length was measured along a straight line extending from the base of the rostrum to the tip of the elytra, in dorsal view. The length of the rostrum was measured from the apex to the base at the fore margin of the eye. Genitalia preparations were made using common techniques (Wanat, 2001), and genitalia were glued onto cards or placed inside a glycerine vial attached to the specimen's pin. Terminology follows Alonso-Zarazaga (1989, 1990b) and Wanat (2001) as detailed in Figs. 1–5.

Transliterated names of localities are according to the "Israel Touring Map" (1:250,000) and "List of Settlements", published by the Israel Survey, Ministry of

Labour. Where names of localities have changed, the most recent transliterated Hebrew or Arabic names are given together with the old replaced names cited in brackets, for example: 'En Hemed [Aquabella]. Erroneous spellings are also cited in brackets following the correct spelling.

Zoogeographic terminology follows Kugler (1988), Por (1975) and Tchernov and Yom-Tov (1988). We consider the meridian 90° to be the approximate border between the West Palaearctic and East Palaearctic. The East Mediterranean is considered by us to range from the Balkan Peninsula in the west to Iran in the east, and from Armenia in the north to Egypt in the south; Middle Asia includes the former Soviet Middle Asia and Afghanistan; and Central Asia includes southern Siberia, Mongolia and northern China. The Levant is considered here to include Syria, Lebanon, Israel, Jordan and the Sinai Peninsula (Por, 1975) and northern (coastal) Egypt.

Dr Marek Wanat, Wrocław University, Poland, examined representatives of all the species, determined most of them and verified some of our determinations. Ing. Karel Schön, Litvinov, Czech Republic, identified or verified our identifications of *Onychapion* spp.

TAXONOMY

Of the 19 known weevil families (Alonso-Zarazaga and Lyal, 1999) ten occur in Israel. Although several of the families have been mentioned for the local fauna or previously treated (Bodenheimer, 1937; Halperin and Fremuth, 2003), this is the first time that all the weevil families of Israel are recorded together and keyed.

Many weevils are easily distinguished from other beetles by the fairly to very long rostrum, which is usually at least as long as the head or the pronotum, although in most of the Anthribidae and part of the Curculionidae (for example Entiminae, Cossoninae and Scolytinae), the rostrum is shorter than the head or the pronotum, or even indistinct. The labrum of Curculionoidea is usually absent; if present (in the Anthribidae), it is fused with the anterior margin of the rostrum. The antennae are geniculate in the Curculionidae, Dryophthoridae, Erirhinidae, Nanophyidae and Platypodidae, and straight in the remaining families, and the scapus is usually distinctly longer than the remaining part of the antenna (the funicle and club combined). Many weevils are at least partly covered with scales, but some are bare or with reduced scaling. Weevils have five tarsal segments in all legs, but the 4th segment is strongly reduced and usually undetectable.

Key to the weevil families (Curculionoidea) in Israel

1. Labrum distinct, separated from apex of rostrum by clypeo-labral suture; rostrum as wide as frons, or wider; antenna straight ..... **Anthribidae**
-. Labrum indistinct, fused with apex of rostrum; width of rostrum variable; antenna straight or geniculate **2**
2. Trochanter oblong, at least twice as long as wide, base of femur not touching coxa **3**
-. Trochanter short, at most as long as wide, base of femur touching coxa **5**

3. Antennal club indistinct; body oblong, at least 5 times as long as wide, length more than 10 mm ..... **Brentidae**
-. Antennal club distinct, comprised of 3 more or less fused segments; body pyriform or ovoid, at most 3 times as long as wide, length less than 4 mm **4**
4. Antenna straight, scapus much shorter than funicle, funicle 6- or 7-segmented; bases of pronotum and elytra not crenulate; pronotum at base usually narrower than elytra; abdominal sutures 2–4 laterally not bent posteriorly ..... **Apionidae**
-. Antenna geniculate, scapus longer than or as long as funicle, funicle 4- or 5-segmented; bases of pronotum and elytra crenulate; pronotum at base as wide as elytra; abdominal sutures 2–4 laterally bent posteriorly ..... **Nanophyidae**
5. Antenna straight **6**
-. Antenna geniculate **8**
6. Antennal club consolidated, composed of fused, indistinctly separated segments; antenna as long as rostrum; 3rd tarsomere not bilobate; elytra fused, metathoracic wings absent; pronotum and elytra coarsely sculptured; large black ground weevils, resembling Tenebrionidae..... ..... **Brachyceridae (Brachycerinae)**
-. Antennal club loose, comprised of clearly separated segments; antenna much longer than rostrum; 3rd tarsomere bilobate; elytra not fused, metathoracic wings present; pronotum and elytra with or without coarse (occasionally obsolete) punctation but never coarsely ridged or tuberculate; mostly arboreal weevils variable in size and color. **7**
7. Tarsal claws connate at base; mandibles with smooth lateral margin; anterior margin of protibia dentate ..... **Attelabidae**
-. Tarsal claws separate up to base; mandibles with dentate lateral margin; anterior margin of protibia not dentate ..... **Rhynchitidae**
8. Pronotum 0.3–0.5 times as long as elytra; rostrum more or less swollen at antennal insertion, antenna inserted at base of rostrum; antennal club with consolidated, indistinctly separated segments, and glabrous, shiny basal part, apex truncate, covered with short, light, dense pubescence; 3rd tarsomere wide triangular and scarcely bilobate ..... **Dryophthoridae**
-. Pronotum less than 0.3 times as long as elytra; rostrum variable, antennal insertion at mesorostrum, or near apex; antennal club variable; if antenna inserted at base of rostrum, rostrum bent strongly at base, femur incrassate; 3rd tarsomere variable **9**
9. Rostrum indistinct; protibia usually with posterior margin dentate or bearing transverse keels; body cylindrical; pronotum laterally with distinct margin between dorsal and ventral parts; elytra usually with dentate and obliquely truncate, often concave, apical declivity **10**
-. Rostrum distinct; protibia with posterior margin usually not dentate and not bearing transverse keels; body variable in shape; pronotum laterally without distinct margin between dorsal and ventral parts; elytra with apical declivity more or less convex, not dentate or truncate **11**
10. Head narrower than pronotum in dorsal view; protibia with posterior margin usually dentate; tarsi shorter, 1st tarsomere shorter than 2nd–4th tarsomeres combined..... ..... **Curculionidae (Scolytinae)**
-. Head as wide as pronotum in dorsal view; protibia with transverse keels on posterior margin; tarsi slender, 1st tarsomere longer than 2nd–4th tarsomeres combined ..... **Platypodidae**
11. Elytra fused, spherical, glabrous, black; scutellum invisible externally, rostrum longer than head and pronotum combined; 3rd tarsomere bilobate..... **Brachyceridae (Ocladiinae)**
-. Characters different **12**
12. Antennal insertion at or near apex of rostrum; rostrum longer than head and pronotum combimed, usually widened laterally, flattened dorsoventrally, and bearing a few long bristles ventrally at apex; pygidium not exposed; antennal funicle 7-segmented..... **Erirhinidae**

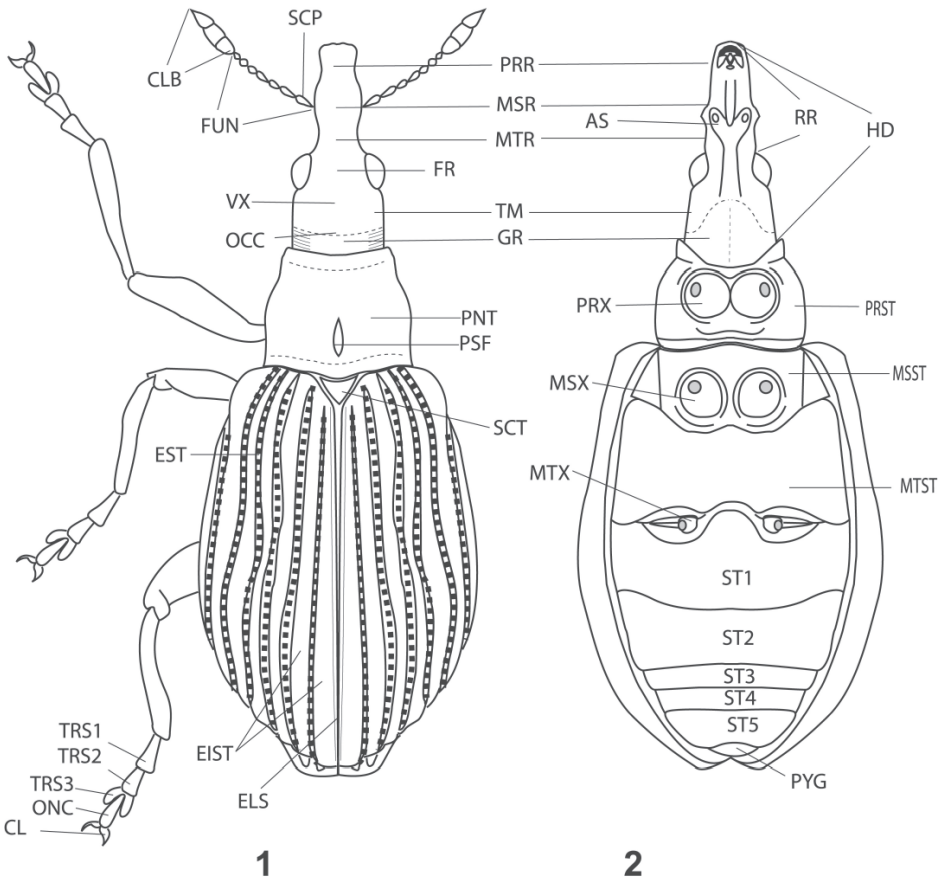
-. Antennal insertion between middle and apex of rostrum; if antenna inserted at apex of rostrum, rostrum shorter than pronotum, or pygidium exposed; rostrum variable in length and form, usually without bristles ventrally at apex; pygidium exposed or concealed; antennal funicle with varying number of segments .....**Curculionidae (most subfamilies)**

Characterization and classification of the family Apionidae

The Apionidae are small weevils with non-geniculate (= orthocerous) antenna. The scapus of the antenna is shorter than the funicle. The trochanters are oblong, at least twice as long as wide, entirely separating the coxa from the femur. The range of body length is 1–4 mm, usually 2–3 mm. The body and elytra are glabrous or covered with various punctures, wrinkles or sulci. The coloration of the body and appendages is often dark, usually black with metallic luster, but sometimes matte, dark brown, red, testaceous or yellow. The coloration of the legs and antennae is sometimes partly or entirely different from that of the rest of the body. In many species the body is covered with a fairly thick pubescence, comprised of scales of different types, from piliform to round, although some taxa are devoid of scales, or the pubescence is obsolete. The shape of the rostrum is extremely variable among Apionidae. The antenna is inserted at the basal half of the rostrum, never close to the apex. The eyes are convex to flat, usually larger and more protruberant in males. Males sometimes have a distinctive subocular patch of scales. The head is often subdivided by transverse subocular lobes or keel ventral to the eyes. The elytra are often globose, convex dorsally or laterally, and in some taxa, such as *Catapion*, some species of *Ceratapion* and *Stenopterapion*, only weakly convex or not at all. Each elytron possesses nine longitudinal striae, numbered from 1 to 9, beginning from subsutural stria, merging in various ways at the subapical part of the elytron. The scutellum is present in all Israeli species. The tarsal claws are free up to their base, with or without a basal denticle.

Males of many Apionidae species possess secondary sexual characters: enlarged and more brightly colored antennal segments, enlarged leg parts (often longer fore tibia and first one or two tarsal segments, incrassated femora), mucronated, bent or apically flattened tibia, spines on coxa and tarsal segments, enlarged transverse subocular ridge and subocular patches of scales, dentiform projections on first abdominal sternite and seldom projections on elytra. All these are represented in the local fauna. The rostrum in males is usually shorter and thicker than that in females, incrassate at antennal insertion, covered more coarsely by punctation and pubescence. The male fifth sternite is apically rounded and similar to the female's fifth sternite in Aspidapiitae; apically truncated or emarginated and distinctly different from the apically rounded female fifth sternite in most of Apionitae (excluding the subgenus *Chlorapion*).

The Palaearctic Apionidae present two types of male pygidium: a) aspidapionine type (characterizing the supertribe Aspidapiitae): pygidium entirely concealed under elytral apices, or at most marginal rim visible outside; dorsally not or only weakly sclerotized, not divided by a transverse sulcus; b) apionine type (characterizing the



Figs. 1−2. Morphology of Apionidae, habitus (schematic): 1. Dorsal view. 2. Ventral view (male). AS-antennal scrobe, CL-claw, CLB-club, EIST-elytral interstria, ELS-elytral suture, EST-elytral stria, FR-frons, FUN-funicle, GR-gular region, HD-head, MSR-mesorostrum, MSST-mesosternum, MSX-mesocoxa, MTR-metarostrum, MTST-metasternum, MTX-metacoxa, OCC-occiput, ONC-onychium, PNT-pronotum, PRST-prosternum, PRR-prorostrum, PRX-procoxa, PSF-prescutellar fovea, RR-rostrum, SCP-scapus, SCT-scutellum, ST-abdominal sternite, TM-temple, TRS-tarsomere, VX-vertex.

supertribe Apionitae): pygidium partly exposed, dorsally divided by entire sharply-edged transverse sulcus into proximal, unsclerotized, concealed part and distal sclerotized exposed part (Alonso-Zarazaga, 1990b; Wanat, 2001). The apionine type of pygidium has several deviations among the Palaearctic Apionitae: the transverse sulcus is present, but not entire, and not reaching lateral margins of the pygidium in Malvapiini (in Israel represented by *Malvapion* and *Rhopalapion*), and is nearly absent in some Ixapiini (not

found in Israel). A third type of pygidium (exposed aspidapionine type) is represented only in some South African and Australian genera (Wanat, 2001).

The detailed characterization of the male genitalia of the Apionidae is beyond the scope of the present work. The most important recent comprehensive studies of the male genitalia of Apionidae were published by Alonso-Zarazaga (1990b) and Wanat (1995, 2001), and a short synopsis by Gønget (1997).

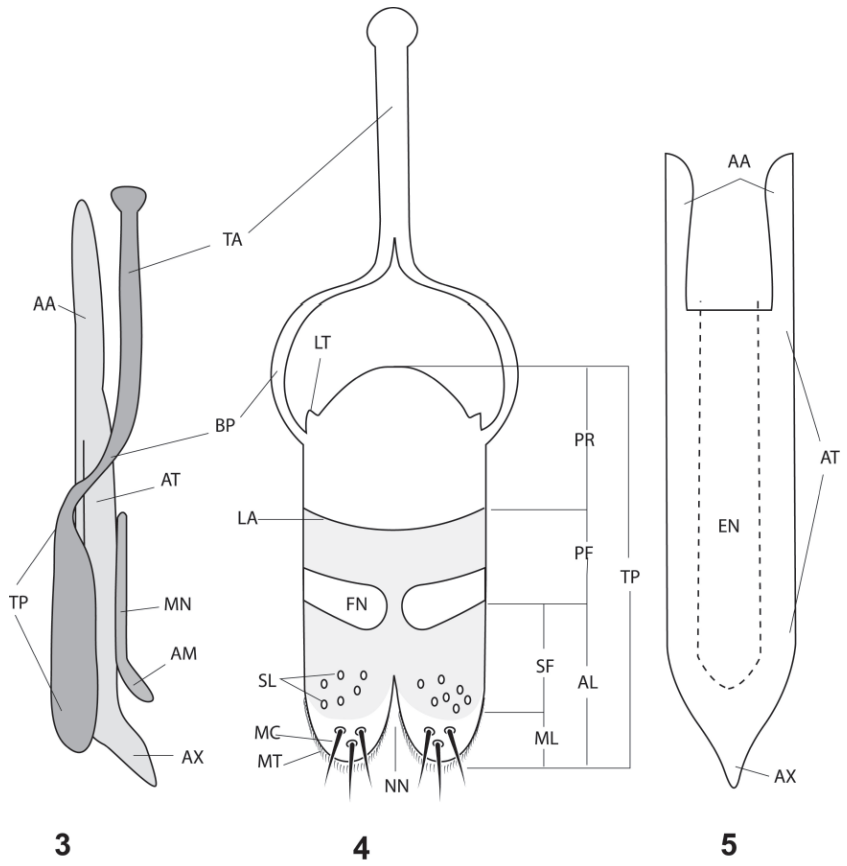
The Apionidae are associated with a wide range of host plants, and are usually highly species-specific to their host plants. More than 55% of the Palaearctic species are associated with Papilionaceae; significant numbers of species are associated with Asteraceae, Polygonaceae, Lamiaceae and Malvaceae; and the remaining species are associated with a large variety of plant families (Alonso-Zarazaga, 1990b, Gønget, 1997). Some Apionidae species are known to migrate to plants other than their host plants and to aggregate on them (Kirby, 1808; Wagner, 1941; Gønget, 1997). A discussion of the migration habits of Apionidae is included in the general discussion, at the end of this paper.

Some Apionidae species are of negative economic importance as pests of cultivated crops in Israel (Rivnay, 1960; Melamed-Madjar, 1969a,b), Europe (Shtchogolev, 1941; Hoffmann, 1963; Ionissiani, 1972; Dieckmann, 1977; Sampò, 1978; Gønget, 1997), North America (Warner, 1964; Kissinger, 1967; Hoebecke, 2000) and in the tropics (Bennet, 1990, 1992, 1993), by inflicting direct damage and as vectors of viral plant diseases (Cockbain *et al*, 1982). Others are beneficial serving as biocontrol agents of weeds (Davies, 1928; Hill *et al*., 1991; Hoodle, 1991; Hoffmann and Moran, 1999; Scott *et al*., 2000; Maddox *et al*., 2007).

Based on the Palaearctic fauna alone, the Apionidae have recently been split into two supertribes: Aspidapiitae, with concealed aspidapionine type of male pygidium and without radial cell on the mesothoracic wing; and Apionitae, with exposed apionine type of male pygidium and with radial cell on the mesothoracic wing (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999; Wanat, 1995, 2001). This division has been adopted in the present work.

Key to the Apionidae genera in Israel

1. Legs at least partly red, yellow or testaceous **2**
-. Legs black, sometimes with metallic blue, green or violet sheen, or dark brown, matte..... **12**
2. Rostrum smooth, shiny, covered with round or lanceolate scales at most at basal 0.33; antennal scrobe round, ventral; body covered densely by round or lanceolate scales **3**
-. Rostrum matte at least at basal part, covered with piliform scales at least at basal 0.66; antennal scrobe oblong, lateral or lateroventral; body covered with piliform or setiform scales of different density or devoid of scales..... **4**
3. Legs yellow or testaceous; body and elytra covered with round scales (Fig. 6), legs covered with round recumbent scales and semi-erect oblong arched scales (Fig. 8)..... ..... ***Lepidapion*** **Schilsky**
(One species in the study area: *alfierii* Pic)
-. All femora and protibia partly red, other parts of legs black; body and elytra covered with

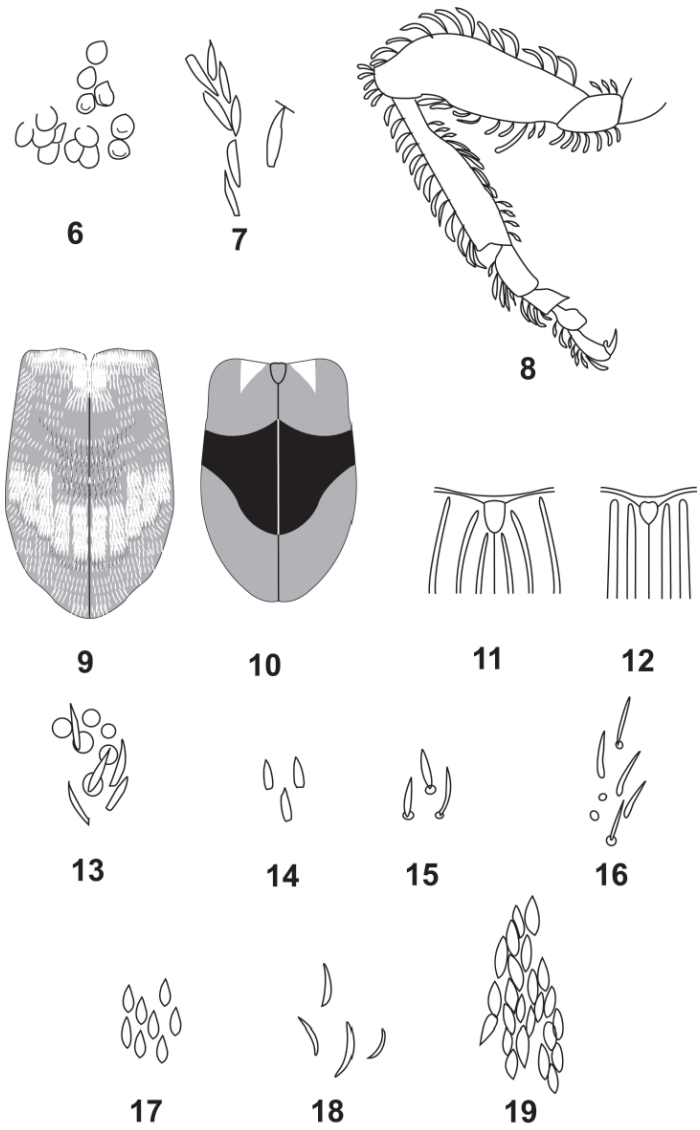


Figs. 3–5. Morphology of Apionidae, male genitalia (schematic): 3. Male genitalia, lateral view. 4. Tegmen, dorsal view. 5. Aedeagus, dorsal view. AA-aedeagal apodeme, AL-apical lobes, AM-arm of spiculum gastrale, AT-tube of aedeagus, AX-apex of aedeagus, BP-basal piece, EN-endophallus, FN-fenestrae, LA-linea arquata, LT-laterointernal tooth, MC-macrochaetae, ML-membranous lobes, MN-manubrium of spiculum gastrale, MT-microtrichia, NN-median notch, PF-postfenestral sector, PR-prostegium, SF-suprafenestral sclerite, SBP-sclerotized basal part, SL-sensilla, TA-tegminal apodeme, TP-tegminal plate.

recumbent lanceolate scales (Fig. 7), legs covered with recumbent scales ..... ***Exapion*** **Bedel**
(One species in the study area: *cannescens* Desbrochers)

4. Elytra partly or entirely red, yellow or brown **5**
-. Elytra black or gray **8**
5. Elytra unicolorous red; rostrum shorter than pronotum; body length 3.5–4 mm ..... ***Apion*** **Herbst**
(One species in the study area: *frumentarium* Linnaeus)
-. Elytra bicolorous; rostrum longer than pronotum; body length less than 3 mm **6**

6. Elytra yellow or ochre, with pattern of transverse white and dark brown bands of scales (Fig. 9); head, pronotum and legs yellow or ochre ..... ***Taeniapion*** **Schilsky**
(One species in the study area: *rufescens* Gyllenhal)
-. Elytra reddish-brown to dark brown, base of elytra darker, without band-like scale pattern; head and pronotum black, legs testaceous or brown **7**
7. Elytral pubescence dense, distinctly condensed at base of elytra; scales wide, flat, recumbent, truncated at apex; 1st elytral stria extending to apex of scutellum; legs uniformly testaceous; male rostrum testaceous at apical half; apical half of female rostrum not narrower than basal half; metarostrum not delated ..... ***Malvapion*** **Hoffmann**
(One species in the study area: *malvae* Fabricius)
-. Elytral pubescence sparse, not condensed at any part of elytra; scales narrow, piliform, slightly arched, tapered at apex; 1st elytral stria not extending to apex of scutellum; legs brown, tips of femora, tibiae and tarsi black; male rostrum not testaceous at apical half; apical half of female rostrum distinctly narrower than basal half (Fig. 154); metarostrum delated, obtusely dentiform ..... ***Necatapion*** **Friedman and Freidberg, gen. n.**
One species in the study area: *bruleriei* Desbrochers)
8. First stria at base not extending to apex of scutellum (Fig. 11)..... **9**
-. First stria at base extending beyond apex of scutellum (Fig. 12) **10**
9. Elytra very convex, nearly globose, glabrous; vestiture lacking or microscopic; metarostrum laterally with two preocular sulci (Fig. 152) ..... ***Protapion*** **Schilsky**
-. Elytra slightly convex, elongate, matte; vestiture moderately dense; metarostrum laterally without two preocular sulci (Fig. 39) ..... ***Rhopalapion*** **Schilsky**
(One species in the study area: *longirostre* Olivier)
10. Tibiae black ..... ***Oryxolaemus*** **Alonso-Zarazaga**
-. Tibiae red or testaceous **11**
11. Elytral vestiture comprised of two types of scales: piliform scales covering most of elytra, and thicker and shorter scales forming spot at base and transverse band at apex; bare transverse strip present at median part of elytra (Fig. 10)… ..... ***Kalcapion*** **Schilsky**
(One species in the study area: *semivittatum* Gyllenhal)
-. Elytral vestiture comprised of uniform piliform scales; distributed uniformly or arranged in longitudinal strips ..... ***Squamapion*** **Bokor** (part)
12. Mesocoxae contiguous, meso- and metasternal apophyses separated at surface level; rostrum usually straight or slightly arched, thick, cylindrical..... **13**
-. Mesocoxae separated at surface level by meso- and metasternal apophyses; rostrum variable, usually at least slightly arched, usually slender, cylindrical or tapering **18**
13. Rostrum arched, more then twice as long as pronotum..... ***Hemitrichapion*** (***Tinocyba***)
-. Rostrum straight, if slightly arched, then not more than 1.5 times as long as pronotum **14**
14. Tarsus at least 1.7 times as long as tibia, onychium 0.3–0.5 times as long as tibia; procoxa contiguous with anterior margin of prosternum ..... ***Onychapion*** **Schilsky**
-. Tarsus at most 0.7 times as long as tibia, onychium shorter; procoxa more or less equidistant from anterior and posterior margin of prosternum **15**
15. Rostrum at least 0.2 times as long as pronotum (usually much longer), straight in both sexes; elytra subparallel or slightly convex laterally; claws dentate..... **16**
-. Rostrum less than 0.2 times as long as pronotum, straight; if rostrum longer in female, it is slightly bent; claws not dentate **17**
16. Vestiture comprised of erect scales, recumbent only in elytral striae; body and elytra shiny; claw with denticle as long as claw..... ***Phrissotrichum*** **Schilsky**
(One species in the study area: *tubiferum* Gyllenhal)



Figs. 6−19. Apionidae, various characters: 6. *Lepidapion alfierii,* round scales. 7. *Exapion cannescens*, lanceolate scales. 8. *Lepidapion alfierii*, leg. 9. *Taeniapion rufescens,* elytral pattern, dorsal view. 10. *Kalcapion semivittatum*, elytral pattern, dorsal view. 11. First stria shortened at base before apex of scutellum. 12. First stria at base surpassing apex of scutellum. 13. *Squamapion terrasanctae* n. sp., pronotal vestiture and punctation. 14. *Squamapion phocopus*, elytral vestiture. 15. *Squamapion phocopus*, pronotal vestiture and punctation. 16. *Squamapion delagrangei*, pronotal vestiture and punctation. 17. *Onychapion dumonti*, vestiture. 18. *Onychapion poupillieri*, vestiture. 19. *Metapion normandi*, vestiture.

-. Vestiture comprised of recumbent scales; body and elytra matte; claw with minute denticle ..... ***Helianthemapion*** **Wagner**
(One species in the study area: *velatum* Germar)

17. Male rostrum shorter than pronotum, slightly dilated at antennal insertion, twice as long as wide; female rostrum slightly longer than pronotum, strongly dentiform, dilated at antennal insertion; pronotum transverse; femora strongly incrassate, at most 3 times as long as wide; (Figs. 68, 69)..... ***Pseudoperapion*** **Wagner**
(One species in the study area: *brevirostre* Herbst)

-. Male rostrum at least slightly longer than pronotum, not dilated at antennal insertion, more than 3 times as long as wide; female rostrum significantly longer than pronotum, not or scarcely dilated, not forming denticle; pronotum longer than wide; femora usually not incrassate, if slightly incrassate, then more than 3 times as long as wide and elytra with metallic luster (Figs. 62–67, 72–75)..... ***Perapion*** **Wagner**

18. Vestiture comprised of flat, recumbent, lanceolate white scales (Fig. 19); metarostrum strongly dilated, forming acute denticle (Figs. 70, 71); body black; male middle and hind tibiae mucronate ..... ***Metapion*** **Schilsky**

-. Vestiture comprised of different types of scales or obsolete; other characters variable..... **19**

19. Antennal club with indistinct sutures; scapus thick, cylindrical or conical; funicular segments truncate at apex; body usually coarsely sculptured **20**

-. Antennal club with distinct sutures; scapus usually thin, clavate; funicular segments rounded at apex..... **22**

20. Frons with two deep sulci usually fused posteriorly to form V or U; body covered with lanceolate scales (Figs. 24, 25)..... ***Diplapion*** **Reitter**
(One species in the study area: *squamans* Desbrochers)

-. Frons with various sulci, striolae or punctures, not forming V or U; body covered with thin piliform scales..... **21**

21. Pronotum strongly rounded laterally and strongly convex dorsally, globose, finely punctate (Figs. 26, 27)..... ***Omphalapion*** **Schilsky**

-. Pronotum subcylindrical to conical, occasionally slightly convex (Figs. 20–23, 28–38)..... ***Ceratapion*** **Schilsky**

22. Maximal convexity of elytra at middle in lateral view..... **23**

-. Maximal convexity of elytra at apical half in lateral view..... **31**

23. Rostrum arched, with deep longitudinal ventral fovea, bearing dense yellowish setae; pronotum campanulate..... ***Alocentron*** **Schilsky**
(One species in the study area: *curvirostre* (Gyllenhal))

-. Rostrum arched or straight, without longitudinal furrow; other characters variable..... **24**

24. Scutellum at least twice as long as wide, triangular, with more or less protruding apex; if frons striolated, then scutellum with two protruding tubercles at base; male tibiae mucronate..... ***Aspidapion*** **Schilsky**

-. Scutellum less than twice as long as wide, rounded at apex, subquadrate or triangular, without protruding apex and tubercles at base; male tibia not mucronate **25**

25. Body length at most 1.7 mm; body and appendages black, matte, covered with dense piliform and narrow-lanceolate scales (Fig. 13)..... ***Squamapion*** **Bokor** (part)

-. Body length at least 2.0 mm; body and elytra usually with blue, green or violet metallic tinge **26**

26. Vestiture short and sparse to obsolete..... **27**

-. Vestiture long and dense..... **28**

27. Rostrum uniformly cylindrical; antennal insertion at middle (male) or posterior to middle (female) (Fig. 114); metasternum of male without denticle; elytra dark blue, body and appendages black ..... ***Holotrichapion* Györffy** (part)
-. Rostrum tapered in apical 0.33, incrassated at antennal insertion, especially in male; antennal insertion anterior to middle (male) or at middle (female) of rostrum; metasternum of male with median denticle close to posterior margin; elytra, body and appendages metallic greenish-blue (Figs. 112, 113, 116, 117) ..... ***Mesotrichapion* Györffy**
(One species in the study area: *subglabrum* (Desbrochers))
28. Rostrum subulate (Figs. 104, 105); tarsi yellow, ochre or brown ..... ***Oxystoma* Duméril**
(One species in the study area: *ochropus* Germar)
-. Rostrum cylindrical or tapered; tarsi black or dark brown **29**
29. Rostrum covered with semirecumbent curved scales up to apex in both sexes; male lacks any external sexual modifications (Figs. 109, 110) ..... ***Holotrichapion* Györffy** (part)
-. Rostrum covered with recumbent straight or slightly curved scales, in male on basal 0.8, in female on basal 0.33; male often with sexual modifications of legs or abdomen **30**
30. Scutellum pubescent ..... ***Eutrichapion* Reitter (subgenus *Cnemapion* Alonso-Zarazaga)**
-. Scutellum bare ..... ***Hemitrichapion* Voss**
31. First stria at base extending beyond apex of scutellum (Fig. 12) **32**
-. First stria at base not extending to apex of scutellum (Fig. 11) **33**
32. Elytra widest at middle or slightly posterior to middle; vestiture dense, piliform scales overlapping longitudinally at least at apices ..... ***Catapion* Schilsky**
-. Elytra widest anterior to middle; vestiture sparse, piliform scales not overlapping longitudinally, or body glabrous ..... ***Stenopterapion* Bokor**
33. Scutellum triangular ..... ***Eutrichapion* Reitter (subgenus *Psilocalymma* Alonso-Zarazaga)**
-. Scutellum quadrate **34**
34. Pronotum straight laterally ..... ***Synapion* Schilsky**
(One species in the study area: *splendidulus* Desbrochers)
-. Pronotum rounded laterally ..... ***Ischnopterapion* Bokor**

Supertribe Aspidapiitae Alonso-Zarazaga, 1990
Tribe Aspidapiini Alonso-Zarazaga, 1990

Alocentron Schilsky, 1901

This genus contains eleven species in the Holarctic region: one species in Europe, North Africa and the Middle East, two species in East Asia and eight species in North America.

Host plants: Malvaceae (*Alcea*, *Althaea*, *Hibiscus* and *Sphaeralcea*) and Tiliaceae (*Tilia*) (Alonso-Zarazaga, 1990b). One species occurs in the study area.

Alocentron curvirostre (Gyllenhal, 1833)

Material examined

ISRAEL: **Hermon:** 2000 m, 22.v.1973, D. Furth (1♀), 1600 m, 26.vi.1997 (1♂), 1400 m, 26.vi.1997, on *Alcea* sp. and on *Alcea dissecta* (11♂, 12♀), ex stem of *Alcea dissecta* (1♂, 1♀), all L. Friedman; Har Dov, 16.vi.1999, L. Friedman (2♂); **Golan Heights:** Panyas, 4.vi.1993,

V. Chikatunov (1♀); **Upper Galilee:** Tel Sha'ar, 20.xii.1982, A. Freidberg (3♀); Nahal 'Iyyon Reserve [HaTanur] , 29.iv.1978, D. Furth (1♀); Nahal 'Ammud, 24.vi.1981, M. Kaplan (1♂); Har Meron, 1100 m, 5.vi.1974, D. Furth (1♂), 30.ix.1976 (1♀), 21.x.1996, (1♀), all A. Freidberg); **Carmel Ridge:** Nahal Yagur, 11.xi.1996, on *Quercus calliprinos* (1♀), on *Viburnum tinus* (1♀), all L. Friedman; Nahal Oren, 30.v.1995, A. Freidberg (1♀), 8.v.1996 (1♀), 13.v.1997 (3♂, 5♀), 24.ii.1998 (1♂, 1♀), 10.iii.1998 (1♀) all V. Chikatunov and T. Pavliček, 30.v.1998, A. Freidberg (1♂, 2♀), v.1999, L. Friedman, ex *Alcea setosa* (5♂, 7♀); Zomet ha'Amaqim (Jalame), 18–22.v.1993, A. Freidberg, on *Alcea setosa* (3♂, 4♀); Nahal Tut, 18.iii.1993, A. Bear (1♀). Observed, but not collected in Samaria and Judean Hills. Recorded from Samaria ('Askar, near Shekhem) by Voss (1964).

Distribution

Spain, Italy (Sicily), Czech Republic, Austria, southeastern part of Central, Southern and Southeastern Europe, Turkey, Georgia, Armenia, Jordan (Wagner, 1932; Voss, 1964; Dieckmann, 1977; Ehret, 1990), Israel. The occurrence of *A. curvirostre* in Jordan is possible, although the record is based on a single specimen, which actually was collected by J. Klapperich (Voss, 1964) in Samaria ('Askar, near Shekhem).

Host plants

We reared this species from stems of *Alcea dissecta* (Baker) and *Alcea setosa* (Boissier), and it was also collected on *Malva* sp. In Europe it was reared from *Alcea rosea* Linnaeus, *Lavatera* spp. and *Malva* spp. (Urbann, 1923; Scherf, 1964; Ter-Minassian, 1972a; Dieckmann, 1977, Ehret, 1990).

Phenology

Hibernation: November-February; copulation and oviposition period: end of February; emergence of adults from host plants: April-May; aestivation: July-September. Single specimens were collected on trees during September-November.

Parasitoids

Unidentified Pteromalidae.

Aspidapion Schilsky, 1901

This genus contains 5–7 species in the Palaearctic Region; the assignment to *Aspidapion* of two species from India and approximately 26 Palaeotropical species is questionable (Alonso-Zarazaga, 1990b; Pajni *et al*., 1991). Host plants: Malvaceae. Two species occur in the study area.

Key to species of *Aspidapion* in Israel

1. Frons with single lanceolate, deep, longitudinal furrow; head strongly constricted between eyes and occiput, produced into rounded transverse lobe ventrally to eye; basal tubercles of

scutellum usually obsolete; elytra dark blue, often with slight greenish tinge; elytral interstriae flat ..... ***A. aeneum***

-. Frons often with few fine longitudinal striolae, often partly fused with punctation; head not or slightly constricted between eyes and occiput, not produced ventrally; basal tubercles of scutellum distinct; elytra black, sometimes with slight bluish tinge; elytral interstriae convex..... ***A. radiolus***

Aspidapion (*Aspidapion*) *radiolus* (Marsham, 1802)

Material examined

ISRAEL: **Hermon:** 2200 m, 26.vi.1997, L. Friedman (1♂), 2000 m, 22.v.1973, D. Furth (1♀), 27.v.1999, L. Friedman (1♂), 1900 m, 3.v.1979, D. Furth (1♂), 1800 m, 25.v.1998, V. Chikatunov (1♂, 4♀), 27.v.1999, L. Friedman (3♂), 1600 m, 27.ix.1972, D. Furth (1♂), 20.v.1997, L. Friedman (4♂), 26.vi.1997, L. Friedman (9♂, 10♀), A. Freidberg (6♂, 12♀), V. Chikatunov (1♂, 3♀), 23.v.1998, A. Freidberg (1♂), 4.v.1999, L. Friedman (1♂, 1♀), 1300 m, 23.v.1998, A. Freidberg (1♂); **Golan Heights:** Panyas, 27.v.1999, A. Freidberg (1♀); Mezudat Nimrod, 23.iv.1998, V. Chikatunov (1♀); Qazrin, 12.v.1998, V. Chikatunov (1♂); **Upper Galilee:** Ma'ayan Barukh, 2.xii.1972, D. Furth (1♂); Senir river, 12.v.1998, V. Chikatunov (1♀); Hawat Mattityahu, 4.v.1998, D. Oppenheim, on apple and pear [trees] (2♀); Har Addir, 23.ix.1997, A. Freidberg (4♂, 4♀), L. Friedman (1♂, 1♀); Nahal 'Ammud, nr. Huqoq, 2.iv.1998, A. Freidberg (1♂); Har Meron, 1100 m, 24.vii.1968, D. Gerling, 8.viii.1972 (1♂), 14.v.1973 (1♀), 5.vi.1974 (1♂), all D. Furth, 15.vii.1977, A. Freidberg (1♀), 21.x.96, A. Freidberg (10♂, 17♀), L. Friedman, on *Arbutus andrachne* (10♂, 7♀), L. Friedman, on *Quercus calliprinos* (16♂, 10♀), L. Friedman, on *Quercus boissieri* (1♂, 1♀), L. Friedman, on *Pistacia palaestina* (1♂, 11♀), N. Dorchin, on *Quercus* sp. (15♂, 14♀), V. Chikatunov, on *Quercus calliprinos* (24♂, 13♀), 23.ix.1997, L. Friedman (4♂, 8♀), A. Freidberg (1♂, 2♀), 19.v.1998, L. Friedman (3♂, 3♀), 22.v.1998, A. Freidberg (4♂, 7♀), 5.v.1999, L. Friedman (1♂); **Lower Galilee:** 'Afula, 13.v.1998, V. Chikatunov (1♀); Doverat, 13.v.1998, A. Freidberg (1♂); Ma'ale Gilboa', 3.ii.1999, L. Friedman (1♀); **Carmel Ridge:** Karmel, Hefa, 2.x.1997, A. Freidberg (1♀); Horeshat haArba'im, 27.iv.1998, L. Friedman (1♀); Nahal Yagur, 11.xi.1996, L. Friedman, on *Styrax officinalis* (1♂); Nahal Oren, 4.ii.1981, D. Furth (1♂); 15.viii.1995 (1♂, 2♀), 8.i.1996 (1♂, 2♀), 28.i.1996 (1♀), 5.iii.1996 (1♀), 11.iii.1996 (1♀), 18.iii.1996 (2♀), 16.iv.1996 (2♀), 26.xi.1996 (3♂, 3♀), 27.xi.1996 (2♂♀), 17.xii.1996 (1♂, 4♀), 31.xii.1996 (7♂, 4♀), 13.i.1997 (2♀), 18.i.1997 (1♂), 28.i.1997 (5♂, 1♀), 11.ii.1997 (1♂, 1♀), 13.v.1997 (1♀), 17.xi.1997 (3♂, 7♀), 1.xii.1997 (2♂, 9♀), 15.xii.1997 (12♂, 8♀), 2.ii.1998 (1♂, 3♀), 24.ii.1998 (1♂, 1♀), 18.v.1998 (2♂), 6.vii.1998 (1♀), 27.vii.1998 (5♀), 14.xii.1998 (1♂), all T. Pavliček and V. Chikatunov, 26.xi.96, L. Friedman, on grass (4♂), 16.xii.1996, L. Friedman (4♀), 23.ii.1998, L. Friedman (3♂, 1♀), 30.v.1998, A. Freidberg (1♂, 1♀), 6.v.1999, A. Freidberg (1♂); Zikhron Ya'aqov, 1.v.1998, A. Freidberg (1♂); **Northern Coastal Plain:** 'Akko, 25.iii.1957, on *Medicago* (1♀), 20.v.1957, on *Trifolium* sp. (1♂), 27.xi.1997, L. Friedman (1♂); Nahal Namir, 2.xi.1998, S. Alfi (1♀); Sedot Yam, 4.v.1998, M. Fine (1♀); **Yizre'el Valley:** Newé Ya'ar, 15.v.1957, on clover (1♀); Bet haShita, 25.xi.1939, A. Shulov (1♀); **Samaria:** Nahal Tirza, 11.iii.1973, D. Furth (1♂); Nahal Gilgal, 29.xi.1972, D. Furth (1♂); Qedumim, 6.ii.2001, L. Friedman (1♀); **Jordan Valley:** Park haYarden, 8.v.1997, V. Chikatunov (1♂, 1♀); 'En Gev, 8.i.1978, D. Furth (1♂, 1♀); Hammat Gader, 9.i.1978, D. Furth (1♀); Hawat 'Éden, 23.i.1982, Q. Argaman (1♂, 1♀); Doshen, 15.xii.1972, D. Furth (2♂, 1♀); **Central Coastal Plain:** Binyamina, 12.iv.1947, H. Bytinski-Salz (1♂), Herzliyya, 11.v.1997, A. Freidberg, on pine and oak (3♂, 2♀); Tel Aviv University Zoo, 9.iii.1998, L. Friedman (1♂); Tel Aviv, 21.vi.1999, N. Meltzer

(2♀); Tel Aviv, Abu Kabir, 16.ix.1970, M. Kaplan (1♂); Tel Afeq, 11.ii.1984, Q. Argaman (1♂, 1♀), 16.xii.1996, L. Friedman (1♂); **Southern Coastal Plain:** Yavne, 26.xi.1973, D. Furth (1♀); Nizzanim, 3.vi.1997, on *Artemisia monosperma* (1♀), 13.v.2003, L. Friedman (1♂, 1♀); **Foothills of Judea:** Shimshon, 7.ii.1973, D. Furth (1♀); **Dead Sea Area:** Yeriho, 11.iii.1973, D. Furth (1♂); Deir Hajla, roadside, 31°49'N 35°30'E, 16.iii.2004, L. Friedman (1♀); Qalya, 2.xii.1982, I. Yarom (1♀); **Northern Negev:** Gilat, 6.v.1958, on alfalfa (1♀); **Central Negev:** Oron, Rt. 206, 21.iv.2005, L. Friedman (1♂, 1♀). Recorded from Samaria ('Askar, near Shekhem) and Judean Desert (Yeriho, -250 m) by Voss (1964).

Distribution

Widespread throughout the West Palaearctic region (Wagner, 1932; Dieckmann, 1977; Ter-Minassian, 1972a; Gønget, 1997; Ehret, 1990), as east as Kazakhstan and Tadzhikistan (Nasreddinov, 1975a, 1975b) and Siberia (Legalov and Opanasenko, 2000).

Host plants

Reared by the authors from *Malva parviflora* Linnaeus stems. Recorded from Israel from *Malva* spp. *Althaea* spp. and *Lavatera* spp. (Halperin and Fremuth, 2003), and in Europe from *Alcea* spp., *Althaea* spp., *Lavatera* spp., *Malva* spp. (Urbann, 1923; Scherf, 1964; Alonso-Zarazaga, 1990b). The record from *Althaea* spp. (Halperin and Fremuth, 2003) probably refers to *Alcea* spp.

Phenology

Adults collected on trees throughout the year, with two peaks in May and October.

Remarks

One of the most abundant species of Apionidae in the study area, found in vast numbers, often comprising more than 30% of the specimens in general net samples in the Mediterranean zone of Israel.

Aspidapion (*Koestlinia*) *aeneum* (Fabricius, 1775)

Material examined

ISRAEL: **Hermon:** 1900 m, 27.v.1973 (1♀), 24.x.1977 (1♀), all D. Furth, 1800 m, 25.v.1998, V. Chikatunov (3♂, 1♀), 1600 m, 20.v.1986, G. Eldar (1♀), 14.v.1996, V. Chikatunov (4♂, 3♀), 20.v.1997, V. Chikatunov (1♀), on *Pyrus syriaca* (1♂, 1♀), on *Amygdalus* sp. (1♂), all L. Friedman), 26.vi.1997, V. Chikatunov (1♂), 26.vi.1997, A. Freidberg (1♂, 1♀), 26.vi.1997, L. Friedman (14♂, 9♀), 23.v.1998, A. Freidberg (1♂, 1♀); **Upper Galilee:** 'En Te`o, 21.ii.1973, D. Furth (1♀), Yavne`él, 21.ii.1973, D. Furth (2♂), Har Meron, 1100 m, 30.ix.1973, A. Freidberg (1♂), 21.x.1996, N. Dorchin, on *Quercus* sp. (1♀), 21.x.1996, V.Chikatunov, on *Quercus calliprinos* (1♂, 1♀), 21.x.1996, A. Freidberg, (1♂, 2♀), 19.v.1998, L. Friedman (4♂, 3♀), 22.v.1998, A. Freidberg (1♂, 2♀), 26.v.1999, L. Friedman (6♂, 6♀), 26.v.1999, V. Chikatunov (4♂); **Lower Galilee:** Ma'ale Gilboa', 3.ii.1999, L. Friedman (1♀); **Carmel Ridge:** Nahal Oren, 9.v.1979.,

D. Furth (1♀), 17.xii.96 (2♂), 17.xi.1997 (1♀), 1.xii.1997, V. Chikatunov and T. Pavliček (2♂), 15.xii.1997, L. Friedman (3♂, 2♀), 30.v.1998, A. Freidberg (2♂, 1♀); **Northern Coastal Plain:** ‘Akko, 9.v.1957, *Medicago* (3♀); **Yizre’el Valley:** Sha’ar ha’Amaqim, 25.iii.1981, Q. Argaman (1♀); **Samaria:** Bet Lid, 25.iii.1981, Q. Argaman (1♂), Nahal Tirza, 11.iii.1973, D. Furth (1♀), ‘Ez Efrayim, 18.xi.1996, L. Friedman, on *Rhus tripartita* (1♀); **Jordan Valley:** Ginosar, 29.v.1978, D. Furth (1♀), Rehov, 6 km S. Bet She`an, 29.xi.1972, D. Furth (1♀), Doshen, 15.xii.1972, D. Furth (2♀); **Central Coastal Plain:** Herut, 9.xii.1972, D. Furth (1♂), Tel Aviv, 19.iv.1999, H Ackerman (1♂); **Judean Hills:** Biddu, 31.v.1974, D. Furth (1♂), Abu Ghōsh, 1.iv.1948, A. Moscona (1♀). Recorded from Samaria (‘Askar, near Shekhem) and Judean Hills (Turmus-Aya, Ramalla) by Voss (1964).

Distribution

Widespread throughout the West Palaearctic region (Wagner, 1932, Gønget, 1997), as east as Kazakhstan and Tadzhikistan (Nasreddinov, 1975a, 1975b) and Afghanistan (Voss, 1959b).

Host plants

Recorded by Halperin and Fremuth (2003) from *Althaea* spp. and *Malva* spp. In Europe reared from *Alcea* spp, *Althaea officinalis* L., *Lavathera* spp. and *Malva* spp (Urbann, 1923; Dieckmann, 1977; Ehret, 1990).

Phenology

Hibernation: mid-December - late February; beginning of reproductive season: end of February; assumed emergence: April-May; peak of migration to trees: May; aestivation: July-September; autumn mass migration to trees: mid-October to mid-November.

Tribe **Ceratapiini Alonso-Zarazaga, 1990**

Ceratapion Schilsky, 1901

This genus contains 55 species in the Palaearctic Region; two species occur in the Afrotropical region in Sudan, Ethiopia and in the southern part of the Arabian Peninsula (Wanat, 1995). Host plants: Asteraceae, predominantly of the tribe Cardueae (thistles). Ten species occur in the study area.

Key to species of *Ceratapion* in Israel

1. Pronotum with minute to obsolete punctures, straight laterally; frons slightly concave..... ..... ***C. beckeri***
-. Pronotum with distinct punctures, laterally variable; if pronotal punctation indistinct, then frons flat or slightly convex **2**
2. Elytra laterally subparallel in dorsal view, flattened in lateral view; frons impunctate or very finely punctate and striolate; transverse sulcus between vertex and occiput more or less distinct **3**
-. Elytra laterally rounded in dorsal view, moderately convex in lateral view; frons distinctly, sometimes coarsely, punctate or striolate; no transverse sulcus between vertex and occiput

present..... **6**

3. Rostrum distinctly dilated at basal third, forming sharp denticle; vestiture comprised of long, curved, white, overlapping scales in 1−2 rows along interstria; body reddish-brown to dark brown, legs testaceous; body length 1.8−2.5 mm (Figs. 28, 29, 33, 34) **4**
-. Rostrum slightly dilated between basal and median thirds, forming obtuse, rounded denticle; vestiture comprised of short, straight, whitish scales, not or only slightly overlapping, arranged in two rows along interstria; body dark brown to black, legs brown or black; body length more than 3 mm (Figs. 35−38)..... **5**
4. Pronotum laterally slightly rounded at middle, base slightly bisinuate; disc finely punctate, punctures shallow, interpunctural spaces slightly convex, 0.25 times as large as puncture diameter; elytra with no more than one row of scales along interstria; frons usually finely striolate and punctate, occasionally more coarsely so (Figs. 33, 34) ..... ***C. decolor***
-. Pronotum straight laterally and at base, disc coarsely punctate, punctures deep, interpunctural spaces flat, 0.5 times as large as puncture diameter; elytra with one or two rows of scales along interstria; frons distinctly striolate, vertex to occiput punctate (Figs. 28, 29).... ***C. klapperichi***
5. Pronotum not constricted at base and apex, with straight sides; vestiture comprised of thin, short whitish piliform scales, not overlapping, observed only in high magnification; specimens appear bare and matte blackish (Figs. 35, 36) ..... ***C. sejugum***
-. Pronotum with well-pronounced apical and less conspicuous basal constrictions, pronotum laterally rounded; vestiture comprised of thick, lanceolate, slightly overlapping white scales, specimens appear hairy and grayish (Figs. 37, 38)..... ***C. ramoni* n. sp.**
6. Frons more or less deeply excavated; elytra widest at middle (Figs. 20−23)..... **7**
-. Frons flat or slightly concave apically; elytra widest anterior to middle (Figs. 28−32)..... **8**
7. Frons slightly depressed; eye rounded, slightly protruding beyond frons; vertex impunctate; pronotum finely punctate, pronotal sides straight; male protibia spatulate apically; body length 2.1−2.5 mm (Figs. 21, 23) ..... ***C. basicorne***
-. Frons deeply excavated; eye oblong, strongly protruding over frons; vertex usually punctate; pronotum coarsely punctate, pronotal sides rounded; male protibia mucronate; body length 2.4−2.8 mm (Figs. 20, 22) ..... ***C. scalptum caviceps***
8. Head punctate, occasionally with few short striolae at base of rostrum (Fig. 30); frons concave; male protibia not mucronate ..... ***C. onopordi parviclava***
-. Head striolate (Figs. 28, 31, 32); frons flat or slightly concave; male protibia mucronate or not **9**
9. Frontal striolae not extending to eye; pronotum laterally straight, pronotum not constricted, distance between punctures half as long as their diameter; legs testaceous or brown, male protibia not mucronate (Figs. 28, 29) ..... *C. klapperichi*
-. Frontal striolae extending posteriorly to vertex; pronotum laterally rounded at middle, pronotum slightly constricted anteriorly and posteriorly, distance between punctures 0.1−0.2 times as long as their diameter; legs black; male protibia mucronate **10**
10. Mesorostral denticle rounded apically in dorsal view; male 3rd protarsomere with spine; frons slightly convex (Fig. 32)..... ***C. damryi***
-. Mesorostral denticle acutely pointed apically in dorsal view; male 3rd protarsomere without spine; frons flat, slightly concave at rostrum base (Fig. 31)..... ***C. gibbirostre***

Ceratapion (*Acanephodus*) *onopordi parviclava* (Desbrochers, 1897)

(Fig. 30)

Material examined

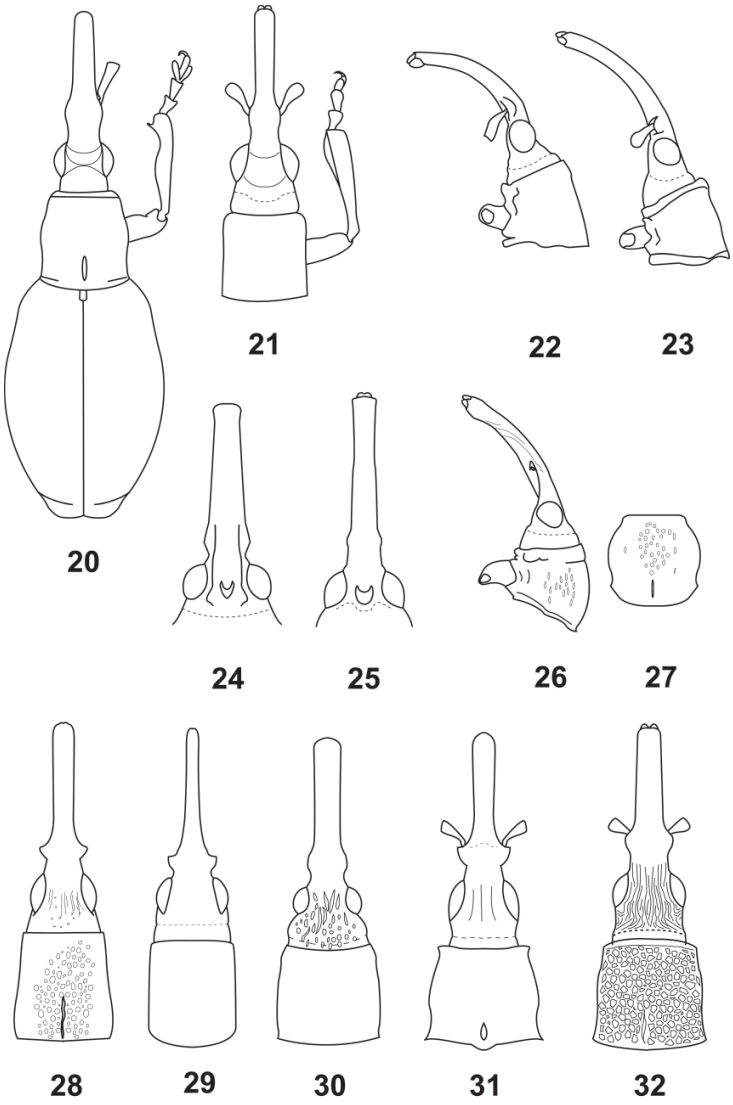
ISRAEL: **Hermon:** 1600 m, 22.v.1973, D. Furth (1♂), 26.vi.1997, L. Friedman (1♀); **Golan Heights:** Panyas, 25.ix.1999, A. Freidberg (1♀); Qazrin, 12.v.1998, L. Friedman (1♂); **Upper Galilee:** Tel Dan, 24.ix.1997, L. Friedman (1♂, 2♀), Bet Hillel, 2.xii.1972, D. Furth (1♀), Har Meron, 1100 m, 23.ix.1997, L. Friedman (1♀), 6.v.1999, V. Chikatunov (1♂, 3♀); **Lower Galilee:** Road to Meghar, 8.5 km NW Teveriya [Tiberias], 21.ii.1971, D. Gerling (1♀), Kefar haHoresh, 6.ix.1997, N. Dorchin (1♂, 2♀), Nein, Rt. 65, 13.v.1998 coll. L. Friedman (1♂, 1♀); **Carmel Ridge:** Nahal Oren, 8.i.1996 (1♂), 28.i.1996 (2♂, 4♀), 18.iii.1996 (1♀), 28.v.1996 (4♀), 27.vi.1996 (2♂, 1♀), 9.vii.1996 (1♀), 17.xii.1996 (1♂, 2♀), 28.xii.1996 (1♀), 31.xii.1996, (3♂, 8♀), 18.i.1996 (2♀), 28.i.1997 (4♂, 4♀), 1.iv.1997 (1♀), 9.vi.1997 (1♀), 3.vii.1997 (2♀), 30.ix.1997 (1♂), 17.xi.1997, (2♂, 1♀), 1.xii.1997 (4♂, 7♀), 2.ii.1998 (1♂, 3♀), 24.ii.1998 (1♂, 2♀), 6.iv.1998 (1♂), 18.v.1998 (4♂, 6♀), 2.vi.1998 (1♂, 8♀), 15.vi.1998 (1♂, 1♀), 6.vii.1998 (1♀), 27.vii.1998 (1♂, 1♀), all T. Pavliček and V. Chikatunov, 8.x.1996 (2♀), 28.x.1996 (3♀),12. xi.1996 (1♂, 1♀), on *Quercus calliprinos,* 26.xi.1996, on grass (2♀), 16.xii.1996 (2♂, 4♀), 4.v.1998 (1♀), 14.xii.1998 (1♀),15.xii.1997 (14♂, 24♀), 23.ii.1998 (1♂, 1♀), all L. Friedman, 11.ii.1997, V. Chikatunov (2♂, 7♀), 30.v.1998, A. Freidberg (1♂, 2♀); **Northern Coastal Plain:** Sedot Yam, 4.v.1998, M. Fine (1♂, 1♀), Hadera, 20.v.1998, A. Freidberg, ex *Carduus argentatus* (1♂, 2♀), Berekhat Ya'ar, 6.vi.2003, A. Freidberg (1♂; 1♀), 24.x.2004, A. Freidberg (1♀); **Yizre'el Valley:** Tiv'on, 22.x.1958, M. Sternlicht (1♂, 1♀), 11.viii.1973, D. Furth (1♂); Newé Ya'ar, 15.i.1957, on *Trifolium* sp. (1); **Samaria:** Kaddonie bei Tulkarm, 200 m, 8.vii.1958, J. Klapperich, von *Pistacia* (1♀; HNHM); Qedumim, 11.vi.2000, L. Friedman (1♀); 'Ez Efrayim, 18.xi.1996, L. Friedman, on *Rhus tripartita* (1♀); Peza`él, 12.v.1984, Q. Argaman (1♂); **Jordan Valley:** Doshen, 15.xii.1972, D. Furth (1♀); **Central Coastal Plain:** Herzliyya, 11.vi.1998, A. Freidberg, on pine (1♀); Zomet Gelilot, 21.i.2004, L. Friedman (1♀); Tel Aviv, 14.i.1926, F. S. Bodenheimer (1♂), 21.ix.1975, A. Freidberg (1♀); **Southern Coastal Plain:** Bet Dagan, 9.vii.1958 (1♀; PPIS); Rehovot, 10.viii.1958 on *Hibiscus* sp. (1♂; PPIS); Rehovot, 20.iii.1998, W. Kuslitzkiy, on *Carduus* sp. (4♂); Kaplan (hospital), 23.vii.1958, on "malvabiscus" (1♀); Nizzanim, 9.vi.1998, L. Friedman (1♀), 4.vi.2002, L. Friedman (1♀); 8 km W Qiryat Gat, 25.xi.1972, D. Furth (1♀); 'Azza, 21.xi.1981, Q. Argaman (1♀); **Foothills of Judea:** Park Canada, 4.xi.1996, L. Friedman, on *Quercus ithaburensis* (3♀); **Judean Hills:** 'Ein 'Arik (near Ramallah), 30.ix.1932, Ph. Jolles, from bagged pomegranate (2♀); Kesalon, 21.vii.2002, L. Friedman (1♀); Yerushalayim, Malha, 4.xii.1957, on *Trifolium* sp. (1♀); **Dead Sea Area:** Nahal 'Arugot, 25.v.1981, Q. Argaman (1♂).

Distribution

Greece (Rhodos, Lesvos), Armenia, Turkey (Southern Anatolia), Cyprus, Syria, Lebanon, Israel, Jordan, Egypt (Voss, 1964; Wanat, 1995).

Host plants

Carduus spp., *Centaurea* spp., *Cnicus benedictus* Linnaeus, *Onopordum* spp. (Halperin and Fremuth, 2003). Reared by the authors from *Carduus argentatus* Linnaeus and *Silybum marianum* Gaertn. (Asteraceae). Larval development and pupation observed in the stem of *C. argentatus*.



Figs. 20–32. Tribe Ceratapiini, habitus: 20. *Ceratapion scalptum caviceps*, male, dorsal view. 21. *Ceratapion basicorne*, male, head and pronotum, dorsal view. 22. *Ceratapion scalptum caviceps*, female, head and pronotum, lateral view. 23. *Ceratapion basicorne*, male, head and pronotum, lateral view. 24. *Diplapion squamans*, male, head, dorsal view. 25. *Diplapion squamans*, female, head, dorsal view. 26. *Omphalapion concinnum*, female, head, lateral view. 27. *Omphalapion concinnum*, female, pronotum, dorsal view. 28. *Ceratapion klapperichi*, male, head and pronotum, dorsal view. 29. *Ceratapion klapperichi*, female, head and pronotum, dorsal view. 30. *Ceratapion onopordi*, female, head, dorsal view. 31. *Ceratapion gibbirostre*, male, head, dorsal view. 32. *Ceratapion damryi*, male, head, dorsal view.

Phenology

Adults collected on trees throughout the year; emergence: end of May.

Remarks

This subspecies was described from Israel (Yeriho). The species was previously misidentified as *Apion carduorum* Kirby (Bodenheimer, 1937, Melamed-Madjar, 1969b) and *A. chenocephalum* Desbrochers (Melamed-Madjar, 1969b). Halperin and Fremuth (2003) recorded it as *C. onopordi onopordi* (Kirby), although the distributional pattern (the Middle East, as far to the west as Rhodes) and morphological features (the depressed frons and the coarse pronotal punctation) (Wanat, 1995), match the concept of the subspecies *parviclava*, not *onopordi*.

**Ceratapion* (*Angustapion*) *beckeri* (Desbrochers, 1874–1875)

Material examined

ISRAEL: **Hermon:** 1500−1600 m, 33°18'N 35°46'E, 6.vi.2002, L. Friedman (1♀).

Distribution

Italy, Hungary, Romania, Macedonia, Bulgaria, Turkey, Lebanon, Iran, Afghanistan, Georgia, Armenia, Azerbaijan, Uzbekistan, Turkmenistan, Tajikistan (Karateghin Mts.), Russia (lower Volga River, Daghestan) (Wanat, 1995).

Host plants

Unknown. The single specimen was collected on *Prunus ursina* Kotschy.

Ceratapion (*Angustapion*) *decolor* (Desbrochers, 1874−1875)

(Figs. 33, 34)

Material examined

ISRAEL: **Hermon:** 1800 m, 13.viii.1973, D. Furth (1♂), 25.v.1998, V. Chikatunov (1♀), 1700 m, 5.viii.2004, L. Friedman, on *Prunus* (1♂; 1♀), 17.viii.2005, L. Friedman (1♂, 2♀), 1650 m, 25.ix.1999, A. Freidberg, on *Quercus boissieri* (1♀); **Samaria:** Yarhiv, 4.iv.1981, D. Furth (1♂); 'Ez Efrayim, v.1999, L. Friedman, ex *Centaurea cyanoides* (1 ♂); **Jordan Valley:** Mehola, 3 km S, 2.v.2005, L. Friedman (1♂; 1♀); **Central Coastal Plain:** Berekhat Ya'ar, North, 23.v.2003, A. Freidberg (1♀); Herzliyya, 15.vi.2002, A. Freidberg (1♂); **Southern Coastal Plain:** Rehovot, 20.v.2001, W. Kuslitzki, on *Ficus* sp. (1♀). EGYPT: SINAI: **Sinai Mountains** (Wadi Tubug, 1600 m, 23.vi.1998, A. Freidberg and F. Kaplan (2♂; 2♀); Wadi Shag, 25.vi.1998, L. Friedman, on *Amygdalus* sp. (8♂; 4♀), 26.vi.1998, V. Chikatunov (2♂; 4♀); Wadi Tinia, 1800−2000 m, 26.vi.1998, L. Friedman (11♂; 16♀); Wadi Zawatin, 1800−2000 m, 26.vi.1998, L. Friedman (1♂; 2♀); near St. Katharina, 1.viii.1974, J. Halperin, on *Verbascum sinaiticum* (2♂; 1?).

Distribution

France, Slovenia, Croatia, Rumania, Bulgaria, Greece, Turkey, Syria, Lebanon, Israel,

Jordan, Egypt, Armenia, Azerbaijan (Wanat, 1995).

Host plants

Centaurea cyanoides Berger (Asteraceae). The larvae develop in the rootstalk (first record).

Phenology

Single adults were collected from April to September; emergence: May; mass migration to trees in Sinai: end of June.

Remarks

During our collecting trip in the Sinai Mountains on June, 1998, we collected about 50 specimens of *C. decolor* in 3–4 days (the only apionid species collected during this trip), whereas the other recorded specimens were collected sporadically throughout Israel and Sinai.

**Ceratapion* (*Angustapion*) *sejugum* (Desbrochers, 1893)

(Figs. 35, 36)

Material examined

ISRAEL: **Hermon:** Har Dov, Mizpe Ramta, 16.vi.1999, L. Friedman, on *Quercus* sp. (1♂); Nahal 'Ar'ar, near Lower Ski Station, 1600 m, 25.v.2001, E. Orbach (1♀); **Golan Heights:** Panyas, 23.v.1998, A. Freidberg (1♀); 29.v.2000, L. Friedman (1♂); **Upper Galilee:** Dafna [Daphne Oaks], 7.xii.1946, H. Bytinski-Salz, on *Quercus ithaburensis* (1♀), Dan, vi.2000, Y. Hershkovitch (1♂); Tel Dan, 16.v.2003, V. Kravchenko (1♂); Tel Hay, 16.v.2000, N. Dorchin (3♂, 3♀); Ramot Naftali, 33°05'N 35°29'E, 2.vi.2004, A. Freidberg (1♂).

Distribution

Turkey, Syria, Caucasus (Wanat, 1995), Israel.

Host plants

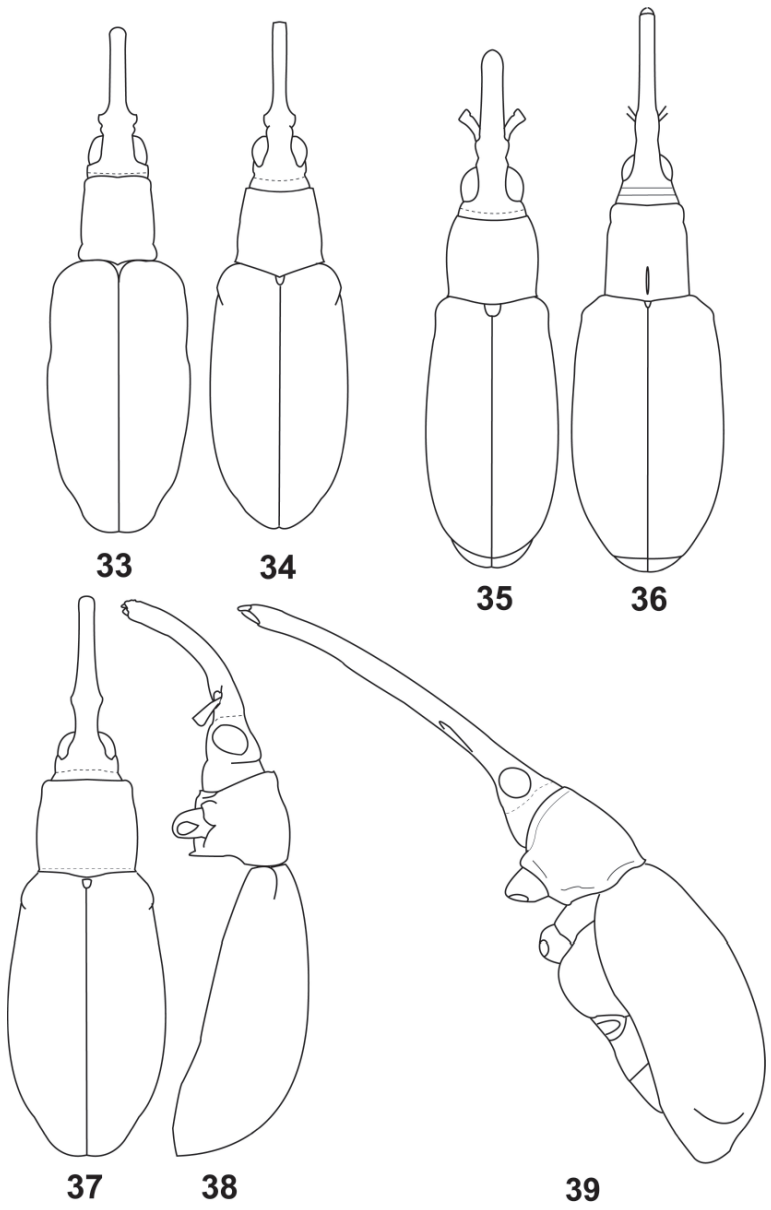
Unknown.

Phenology

Unclear. Numerous specimens were observed on the evening of 16.v.2000 attracted to street lights and crawling on trees and walls at Tel Hay, Upper Galilee. This probably marks the time of adult emergence.

Remarks

Bodenheimer (1937) erroneously recorded this species as *Apion macrorrhynchum* Eppelsheim, but the whereabouts of the specimens is unknown. The females of *C.*



Figs. 33−39. Tribes Ceratapiini (33−38) and Malvapiini (39): 33. *Ceratapion decolor*, female, dorsal view. 34. *Ceratapion decolor*, male, dorsal view. 35. *Ceratapion sejugum*, female, dorsal view. 36. *Ceratapion sejugum*, male, dorsal view. 37. *Ceratapion ramoni* n. sp., female, dorsal view. 38. *Ceratapion ramoni* n. sp., female, lateral view. 39. *Rhopalapion longirostris*, female, lateral view.

akbesianum, *C. sejugum* and *C. macrorrhynchum* are similar and almost indistinguishable (Wanat, 1995).

**Ceratapion* (*Angustapion*) *ramoni* Friedman and Freidberg, n. sp.

(Fig. 37, 38, 40)

Diagnosis

Ceratapion ramoni belongs to the *macrorrhynchum* species group within the subgenus *Angustapion* Wanat. It is close to *aegyptiacum* (Wagner, 1911) and *boehmi* (Desbrochers, 1870), both known only from Egypt; it is intermediate between these two species in many characters, such as length of rostrum, shape of pronotum and elytra, and shape of scales. It is well defined by the shape of the scales: the scales of *ramoni* (Fig. 40) are piliform to narrow-lanceolate, 8–9 times as long as wide, moderately bent, vestiture considerably thicker than in *aegyptiacum*; the scales of *boehmi* (Fig. 41) are thick, 3–4 times as long as wide, lanceolate, slightly bent only at apices, generally the vestiture has mosaic appearance, separating it from *aegyptiacum* and *ramoni*; the scales of *aegyptiacum* (Fig. 42) are thin, 6–9 times as long as wide, piliform, bent; the vestiture of *ramoni* is creamy-yellowish, darker than the whitish vestiture of *aegyptiacum*, although this character requires confirmation through the examination of additional specimens. The elytra of *ramoni* (Fig. 37) are wider and more rounded, at widest point 1.7–1.9 times as wide as at base; while in *aegyptiacum* and *boehmi* this ratio is 1.14–1.29 and 1.25–1.33, respectively.

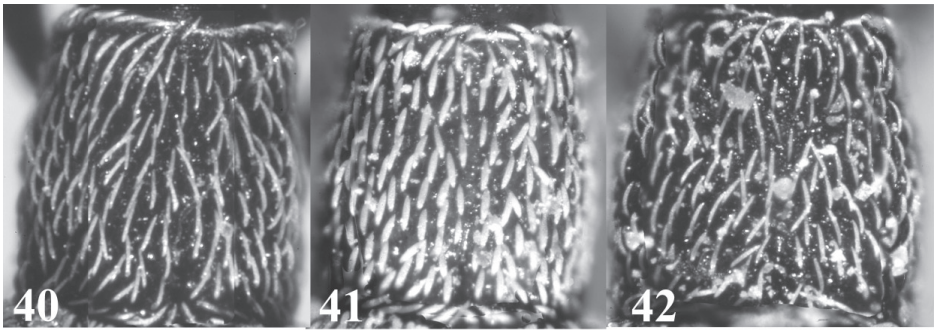
Description

Female. **Body**. Length: 2.65–2.95 mm; dark brown, matte; surface granulose. Vestiture thick, comprised of white to creamy-yellowish, piliform and narrow-lanceolate recumbent scales, 5 times as long as wide, arranged in two irregular rows on elytral intervals and condensed at base of 3rd interval. Apices of scales on intervals overpassing bases of forestanding scales; apices of scales in striae not reaching bases of forestanding scales. Length of scales 0.08–0.09 mm.

Rostrum.Curved, slightly punctate; prorostrum cylindrical, bare anteriorly, covered posteriorly by thin setae, with fine longitudinal striolae; mesorostrum moderately dilated, forming round teeth; metarostrum shorter than eye. Rostrum length 1.00–1.06 mm. Antenna inserted at basal 0.25 of rostrum; scapus: length 0.21–0.26 mm, width 0.08–0.09 mm; 1st funicular segment: length 0.10–0.12 mm, width 0.08 mm; 2nd–7th segments: length 0.05–0.07 mm, width 0.06–0.08 mm; club oblong, lanceolate, length 0.24–0.30 mm, width 0.11–0.12 mm. Antennal pubescence coarse and dense.

Head. Subconical. Eye moderately convex, almost 3 times as long as temple. Frons flat, slightly convex at base of rostrum, coarsely granulate. Temples subparallel. Vertex impressed.

Pronotum. Subrectangular, slightly longer than wide, slightly constricted anteriorly and basally, with sides slightly rounded; base slightly bisinuate; length 0.56–0.66 mm; anterior width 0.44–0.52 mm, posterior width 0.54–0.60 mm. Punctation comprised of



Figs. 40–42. *Ceratapion* spp., female, pronotum in dorsal view: 40. *C. ramoni n. sp.* 41. *C. boehmi*. 42. *C. aegyptiacum*.

round deep punctures, wider than interpunctural spaces. Prescutellar fovea oblong.
Scutellum. Small, rounded, granulate, bare.
Elytra. Moderately convex in lateral view; sides slightly arched anteriorly, broadest before middle in dorsal view; length 1.88–2.12 mm, width 1.00–1.04 mm; humeral callus prominent; interstriae 1–1.5 times as wide as striae, flat, granulate, striae deep, specialized setae not observed. Strial formula: 1, 2, 3+4, 5+6, 7+8, 9.
Abdomen. Abdominal sternites covered with thicker pubescence.
Legs. Brown, densely covered with shallow punctures and thick apically truncate scales. Claws simple. Measurements of leg parts: profemur: length 0.56–0.60 mm, width 0.19–0.20 mm; protibia: length 0.58–0.72 mm, width 0.10–0.14 mm; 1st protarsomere length 0.06–0.10 mm; 2nd protarsomere length 0.04–0.10 mm; 3rd protarsomere length 0.03–0.09 mm; fore onychium length 0.06–0.10 mm; mesofemur: length 0.55–0.58 mm, width 0.15–0.18 mm; mesotibia: length 0.50–0.64 mm, mesotibia width 0.10–0.18 mm; 1st mesotarsomere length 0.06–0.07 mm; 2nd mesotarsomere length 0.05–0.08 mm; 3rd mesotarsomere length 0.06 mm; mid onychium length 0.06–0.10 mm; metafemur: length 0.56–0.62 mm, width 0.15–0.20 mm; metatibia: length 0.60–0.68 mm, width 0.10–0.16 mm; 1st metatarsomere length 0.08 mm; 2nd metatarsomere length 0.05 mm; 3rd metatarsomere length 0.05–0.06 mm; hind onychium length 0.05–0.10 mm.

Male. Unknown.

Etymology

The species is named in memory of Colonel Ilan Ramon, the first Israeli astronaut, who died tragically together with his six companions when the space shuttle Columbia (STS–107) crashed over Texas on February 1, 2003. Ilan Ramon's name coincides with Makhtesh (Crater) Ramon and Har (Mountain) Ramon, the area where the type series was collected.

Distribution

Endemic to Israel (Central Negev): the two known specimens were found between the Israeli-Egyptian border and the western end of Makhtesh Ramon, although the entire distribution area probably includes other parts of the Central Negev and Sinai.

Material examined

Holotype ♀, ISRAEL: Har Ramon, 950 m, 8.v.2003, A. Freidberg (TAUI). Paratype: ISRAEL: Rt. 171, Bor Loz, 3 km West, 8.v.2003, L. Friedman (1♀; TAUI).

Host plants

Unknown.

Remarks

In this study we examined a male of *C. aegyptiacum* labeled "Abou Kir 26.6.14 coll. Alfieri Egypte" and a female of *C. boehmi* labeled "Wadi Hoff 11.5.22 coll. Alfieri Egypte", kindly sent by Dr A. M. El-Torkey, Classification Section, Plant Protection Research Institute, Dokki, Giza, Egypt. Data on these two species are included in Wanat (1995).

**Ceratapion* (*Ceratapion*) *damryi* (Desbrochers, 1894)

(Fig. 32)

Material examined

ISRAEL: **Yizre'el Valley:** Newé Ya'ar, 29.xii.1957, on *Vicia sativa* (1♂).

Distribution

France (including Corsica), Italy (including Sicily and Sardinia), Portugal, Spain (including Baleares), Austria, Rumania, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Bulgaria, Greece, Turkey, Morocco, Algeria, Tunisia, Libya (Wanat, 1995), Israel.

Host plants

Not reared in Israel. In Europe a known pest of artichoke, *Cynara scolymus* Linnaeus (Wanat, 1995).

**Ceratapion* (*Ceratapion*) *gibbirostre* (Gyllenhal, 1813)

(Fig. 31)

Material examined

ISRAEL: **Upper Galilee:** Har Meron, 1100 m, 22.v.1998, A. Freidberg (1♂).

Distribution

Tunisia, Morocco, Algeria, Spain, Portugal, Malta, France (including Corsica), Belgium, The Netherlands, UK, Ireland, Italy (including Sicily and Sardinia), Switzerland, Germany, Denmark, Sweden, Finland, Latvia, Poland, Ukraine, Czech Republic, Slovakia, Austria, Hungary, Rumania, Moldova, Slovenia, Croatia, Serbia, Bosnia and Herzegovina, Montenegro, Macedonia, Bulgaria, Greece, Cyprus, Turkey, Lebanon, Syria, Egypt, Iran, Armenia, Azerbaijan, Georgia, Russia (to Karelia in the north and to the meridian 93° in the east) (Wanat, 1995).

Host plants

Not reared in Israel. In Europe breeds in *Carduus* spp. and *Cirsium* spp. (Wanat, 1995).

****Ceratapion* (*Ceratapion*) *klapperichi* Wanat, 1995**

(Figs. 28, 29)

Material examined

ISRAEL: **Judean Hills:** Kefar ‘Ezyon [Palestine, Et-Zion], 24.vii.1935, A. Rabinovitch (1♂, 1♀).

Distribution

Jordan (Wanat, 1995), Israel.

Host plants

Unknown.

Ceratapion (*Echinostroma*) *basicorne* (Illiger, 1807)

(Figs. 21, 23)

Material examined

ISRAEL: **Hermon:** 2100 m, 17.vi.1999, A. Freidberg (1♂; 2♀), 2000 m, 27.v.1999, L. Friedman (1♂), 5.viii.2004, L. Friedman, on *Juniperus* (1♀), 1800 m, 25.v.1998, V. Chikatunov (1♂), 11.vi.2003, A. Freidberg (1♂), 12.vi.2003, L. Friedman (7♂; 1♀), 1700 m, 22.vi.1973, A. Freidberg (1♀), 5.viii.2004, L. Friedman, on *Prunus* (3♀), 1600 m, 27.ix.1972, D. Furth (1♀), 12.vi.2003, L. Friedman (1♀).

Distribution

Sweden, Denmark, Belgium, France, Germany, Switzerland, Austria, Italy (including Sicily), Poland, Czech Republic, Hungary, Rumania, Russia (Karelia, Volga River area, Daghestan), Ukraine, Slovakia, Croatia, Bosnia and Herzegovina, Albania, Bulgaria, Greece, Turkey, Cyprus, Lebanon, Israel, Georgia, Armenia, Azerbaijan, Iran. The occurence in Morocco and Algeria (Hoffmann, 1958) requires confirmation (Wanat, 1995).

Host plants

Recorded from *Centaurea triumfettii* All. (Halperin and Fremuth, 2003). In Europe recorded from *Centaurea cyanus* Linnaeus and *Centaurea solstitialis* Linnaeus (Clement *et al*., 1989, Wanat, 1995). We assume that *C. solstitialis* is also a host in the study area.

Phenology

Collected mostly in May-June, which may coincide with emergence period.

Remarks

The species was listed as *Apion subdentirostre* Desbrochers (Bodenheimer, 1937), which is a junior synonym. In the study area collected only on Har Hermon, but expected also on Har Dov, the only two localities in which *Centaurea solstitialis* is found.

Ceratapion (*Echinostroma*) *scalptum caviceps* (Desbrochers, 1870)

(Figs. 20, 22)

Material examined

ISRAEL: **Hermon:** 2200 m, 26.vi.1997, V. Chikatunov (1♂), 2100 m, Mizpe Shlagim, 11.vi.2003, A. Freidberg (1♀), 2000 m, 22.vi.1973, A. Freidberg (1♀), 1800 m, 25.v.1998, V. Chikatunov (2♀), 1750 m, 26.vi.1997, A. Freidberg (1♂, 1♀), 12.vi.2003, L. Friedman (2♀), 1700 m, 23.vi.1973, Bytinski-Salz (1♂), 26.vi.1997, L. Friedman, on *Pyrus syriacus* (1♀); **Golan Heights:** Nahal ‘Iyyon, HaTanur, 5.vi.2002, A. Freidberg (1♂); Qazrin, 20.v.1997, L. Friedman, on *Carthamus glaucus* (3♀), 20.v.1997 (1♂, 1♀), 12.v.1998 (1♂), all V. Chikatunov, on *Carthamus glaucus*, 4.v.1999, L. Friedman, ex *Carthamus glaucus* (3♂, 7♀), 10.v.2006, L. Friedman (1♀); **Upper Galilee:** Qiryat Shemona, 28.v.2003, A. Freidberg (1♂, 1♀); Hula valley, 30.iv.1962, on *Trifolium* sp. (1♂), Ramot Naftali, 13.v.1998, V. Chikatunov (1♂), 13.v.1998, A. Freidberg (1♀), 28.v.2003, L. Friedman (1♂, 3♀), 10.v.2006, L. Friedman (1♀); Har Meron, 1100 m, 22.v.1998, A. Freidberg (1♀), Kefar Shammay, 6.x.1974, A. Freidberg (1♂), Gesher Benot Ya’aqov, 7.v.1987, A. Freidberg (1♀); **Lower Galilee:** Sha’ab, 19.v.1976, D. Gerling (1♀); **Carmel Ridge:** Nahal Oren, 16.v.1999, I. Lopatin (1♀); Zikhron Ya’aqov, 20.v.1973, J. Kugler (1♂); **Northern Coastal Plain:** Nahsholim, 14.v.1959, on *Trifolium* sp. (1♂); **Samaria:** Yarhiv, 31.xii.1972, D. Furth (1♀); Peza’èl, 13.v.1984, Q. Argaman (1♀); **Jordan Valley:** Teveriya [Tiberias], 14.v.1949, A. Moscona (1♂); ‘En Gev, 23.v.1949, H. Bytinski-Salz, on *Carthamus* sp. (1♂, 1♀); **Southern Coastal Plain:** Bet Dagan, 9.vii.1958, on *Trifolium* sp. (1♀).

Distribution

Bulgaria, Greece, Turkey, Cyprus, Syria, Lebanon, Israel, Russia (Daghestan), Georgia, Armenia, Azerbaijan, Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan, Kyrghyzstan, Iran, Afghanistan, Pakistan (Wanat, 1995).

Host plants

Carthamus glaucus Bieb. (Asteraceae) (Halperin and Fremuth, 2003). We found the

larvae and the pupae in the lower part of stems.

Phenology

Emergence: end of May; adults collected mostly in May-June; aestivation: July-October (?); single specimens collected in autumn on trees.

Remarks

Melamed-Madjar (1969b) reported this species as *Apion pilicorne* Desbrochers.

Diplapion Reitter, 1916

This genus contains 10 species in the West Palaearctic region, as far east as 60°E. Host plants: Asteraceae, tribe Anthemideae (*Anthemis*, *Argyranthemum*, *Artemisia*, *Chamaemelum*, *Leucanthemum*, *Marticaria* and *Tripleurospermum*) (Wanat, 1995). One species occurs in the study area.

Diplapion squamans (Desbrochers, 1906)

(Figs. 24, 25)

Material examined

ISRAEL: **Carmel Ridge:** Hefa, Hod-haCarmel, 8.iv.1994, E. Orbach (1♀); **Southern Coastal Plain:** Yavne, 11.vii.1981, Q. Argaman (1♀); **Dead Sea Area:** 'En Gedi, 18.vi.1958, J. Wahrman (1♀); **Northern Negev:** Gilat, 16.i.1958 (1♀); Mash`abbé Sade, 19.iii.1978, D. Furth (1♂); **Central Negev:** 'Avedat, 8.ix.1957, J. Wahrman (2♀); Nahal Boqér, 20.iv.2005, A. Freidberg (1♀); Sedé Boqér, 29.v.2002, L. Friedman (1♂, 1♀).

Distribution

Syria, Israel, Jordan, Egypt, Armenia (Wanat, 1995).

Host plants

Unknown.

Remarks

Recorded from Israel as *Apion* (*Diplapion*) *detritum* Rey (Melamed-Madjar, 1969b). Dr M. Wanat (personal communication, 1998) wrote that: "The species turns out to be more variable in rostrum length and shape of body scales than I wrote in my monograph. Differences from *D. detritum* become thus weaker and its species status should be further studied".

Omphalapion Schilsky, 1901

This genus contains nine species in the West Palaearctic region (North-West Africa, Europe, Asia Minor, Caucasus, and Western Kazakhstan). Host plants: Asteraceae, tribe Anthemidae (*Anthemis*, *Marticaria*, *Tripleurospermum* and *Achillea*) (Wanat, 1995). Two species occur in the study area.

Key to species of *Omphalapion* in Israel (based on Wanat, 1995)

1. Elytra piceous black (males)..... **2**
-. Elytra metallic blue or green (females) **3**
2. Elytra/pronotum maximum width ratio 1.65–1.80; endophallus unarmed in basal half ..... ***O. concinnum***
-. Elytra/pronotum maximum width ratio 2.4–2.5; endophallus with conspicuous long spines in basal half..... ***O. pseudodispar***
3. Head narrow, subconical, 0.9 times as long as wide; temples much longer than half eye diameter ..... ***O. concinnum***
-. Head transverse, 0.6 times as long as wide; temples shorter than half eye diameter ..... ***O. pseudodispar***

Omphalapion concinnum (Schilsky, 1906)

(Figs. 26, 27)

Material examined

ISRAEL: **Golan Heights:** Qusbīye, 31.i.1978, D. Furth (2♀), **Samaria:** Qedumim, 6.ii.2001, L. Friedman (1♀). Wanat (1995) recorded this species from Tel Dan and Zefat (**Upper Galilee**), and Ginosar **(Jordan Valley**).

Distribution

Lebanon, Israel, Iran (Wanat, 1995).

Host plants

Unknown. The female from Qedumim was collected on a young thistle.

Phenology

Unclear. All three females were collected in the late winter, approximately on the same dates.

Omphalapion pseudodispar (Wanat, 1995)

Material examined

Wanat (1995) recorded this species from Israel without exact locality. No specimens were available for study in Israeli collections.

Distribution

Austria, Czech Republic (Moravia), Hungary, Bosnia, Macedonia, Bulgaria, Moldova, Turkey, Israel, Iran (Wanat, 1995).

Host plants

Unknown, possibly *Anthemis* spp. (Wanat, 1995).

Tribe **Kalcapiini Alonso-Zarazaga, 1990**

Kalcapion Schilsky, 1906

This genus includes three species in Europe, North Africa and the Near East and one species in Afghanistan. Host plants: monophagous of the genus *Mercurialis* (Euphorbiaceae) (Alonso-Zarazaga, 1990b). One species occurs in the study area.

***Kalcapion semivittatum* (Gyllenhal, 1833)**

(Fig. 10)

Material examined

ISRAEL: **Hermon:** 1600 m, 28.v.2000, L. Friedman (1♂); Nahal ‘Ar’ar, 1 km NNE Birket Man, 1450 m, 18.v.2001, E. Orbach (1♀); **Golan Heights:** Panyas, 24.ix.1997, A. Freidberg (1♂); Mezudat Nimrod, 27.v.1999, L. Friedman (1♂); **Upper Galilee:** Tel Dan, 20.vii.1983, Y. Zvik (1♂); Hermon Field School, 25.v.1999, L. Friedman (1♂); Nahal ‘Ammud, 17.x.1972, D. Furth (1♂, 1♀); 24.vi.1981, M. Kaplan (1♂, 1♀); Har Meron, 900 m, 21.x.1996, L. Friedman, on *Arbutus andrachne* (4♂, 4♀), 21.x.1996, N. Dorchin, on *Quercus* (2♀); Har Kefir, 800 m, 27.iv.2001, E. Orbach (1♂, 1♀; ORB); Kabri, 18.x.1973, D. Furth (6♂, 3♀); 16.iv.1981, Q. Argaman (1♂, 1♀); **Lower Galilee:** Basmat Tab’un, 14.v.1999, L. Friedman (3♀), Qiryat Tiv’on, 21.ix.1988, on *Quercus* sp. (1♂, 1♀), 27.IX, on *Pistacia* sp. (1♂), all E. Orbach (ORB); **Carmel Ridge:** Nahal Yagur, 11.xi.1996, on *Arbutus andrachne* (7♂, 5♀); Nahal Yagur, 11.xi.1996, on *Quercus calliprinos* (3♂, 2♀), on *Viburnum tinus* (4♂, 4♀), on *Laurus nobilis* (14♂, 8♀), all L. Friedman; Hefa, 22.x.1977, A. Freidberg (1♂, 1♀); Nahal Oren, 3.xi.1977 (1♂), 9.v.1979 (4♂, 4♀), all D. Furth, 8.i.1996 (1♂, 3♀), 28.i.1996 (1♂, 2♀), 5.iii.1996 (1♂, 3♀), 18.iii.1996 (1♀), 16.iv.1996 (1♀), 13.v.1996, (1♂, 1♀), 26.xi.1996, (2♂, 1♀), 17.xii.1996 (1♂, 2♀), 31.xii.1996 (4♂, 1♀), 13.i.1997 (6♂, 5♀), 11.ii.1997 (1♂, 2♀), 28.i.1997 (1♂), 12.iii.1997 (1♂), all Pavliček and Chikatunov, 28.x.1996, on *Ceratonia siliqua* (1♂, 1♀), 12.xi.1996, on grass (3♂, 2♀), 26.xi.1996, on *Quercus calliprinos* (3♂, 1♀), 26.xi.1996, on *Phillyrea latifolia* (1♂), all L. Friedman, 26.iv.1999, A. Freidberg (7♂, 3♀); Zikhron Ya’aqov, 20.iv.1932, on citrus (5♀; PPIS), 21.iv.1932, (1♂, 1♀; PPIS), **Northern Coastal Plain:** Nahsholim, 14.v.1959, on *Trifolium* (1♂; PPIS); Ga’aton, 6.ii.2000, L. Friedman (1♂, 1♀); **Yizre’el Valley:** Newé Ya’ar, 13.iv.1957, on alfalfa (1♂; PPIS), **Samaria:** Jatt, 9.ii.73. D. Furth (3♂); Even Yizhaq (Gal’éd), 20.ii.1973, D. Furth (1♂); **Jordan Valley:** Kursi, 15.xii.1977, D. Furth (1♀); Kinneret, 21.ii.1973, D. Furth (1♂); Gesher, 8.i.1978, D. Furth (1♂); **Central Coastal Plain:** Nahshonim, 14.i.1978, D. Furth (1♂); Tel Aviv, 28.vii.1949, Bytinski-Salz (1♂, 2♀); Ramat Gan, 2.vi.1932, on citrus (2♀; PPIS); **Southern Coastal Plain:** Miqwé Yisrael, 6.viii.1933, on citrus (1♀; PPIS), 13.vi.1949, Bytinski-Salz, on *Juglans*; Palmahim, iv.1961, Katznelson (1♂); Rehovot, 30.v.1934, on citrus (1♂; PPIS); **Foothills of Judea:** Lod, 1.xii.1921, P.A. Buxton, on olive (1♂); Park Canada, 4.xi.1996, on *Quercus ithaburensis* (1♀); Park Canada, 4.xi.1996 (5♂, 7♀), all L. Friedman; Netiv-HaLamed-He, 27.i.1973, D. Furth (1♀); **Judean Hills:** ‘En Hemed [Aqua Bella], 14.vi.1958, Wahrman (1♀); Abu Ghōsh, 17.iv.1948, Moscona (1♂); **Dead Sea Area:** Qumeran [W. Totes Meer, Kumran], 390 m, 15.iii.1958, J. Klapperich (1♀; HNHM); ‘En Gedi, 9.i.1973, D. Furth (1♂). Recorded from Samaria (‘Askar, near Shekhem) and Judean Desert (Yeriho) by Voss (1964).

Distribution

Azores, Canaries, Portugal, Spain, UK (England), The Netherlands, France, Germany, Austria, Switzerland, Italy, Malta, former Yugoslavia, Albania, Hungary, Greece,

Bulgaria, Rumania, Turkey, Cyprus, Georgia, Jordan, Morocco, Algeria, Tunisia (Dieckmann, 1977; Voss, 1964), Israel (Bodenheimer, 1937).

Host plants

Reared in Israel from *Mercurialis annua* Linnaeus (Euphorbiaceae) by us and by Halperin and Fremuth (2003). The larvae develop in stem-knot galls that contain 1−5 larvae. Known as monophage of this plant (Dieckmann, 1977; Alonso-Zarazaga, 1990b; Ehret, 1990; Gønget, 1977).

Phenology

Beginning of oviposition period: March; immature development takes about three weeks; emergence: April-May. Adults were collected on trees throughout the year, most abundantly in January-June and October-November.

Remarks

Misidentified by Halperin and Fremuth (2003) as *K. pallipes* (Kirby), a widely distributed European species.

Squamapion Bokor, 1923

This genus contains about 30 species in the Palaearctic Region (Alonso-Zarazaga, 1990b; Wanat, 1997; Alonso-Zarazaga and Lyal, 1999). Host plants: Lamiaceae. Three species occur in the study area.

Key to species of *Squamapion* in Israel

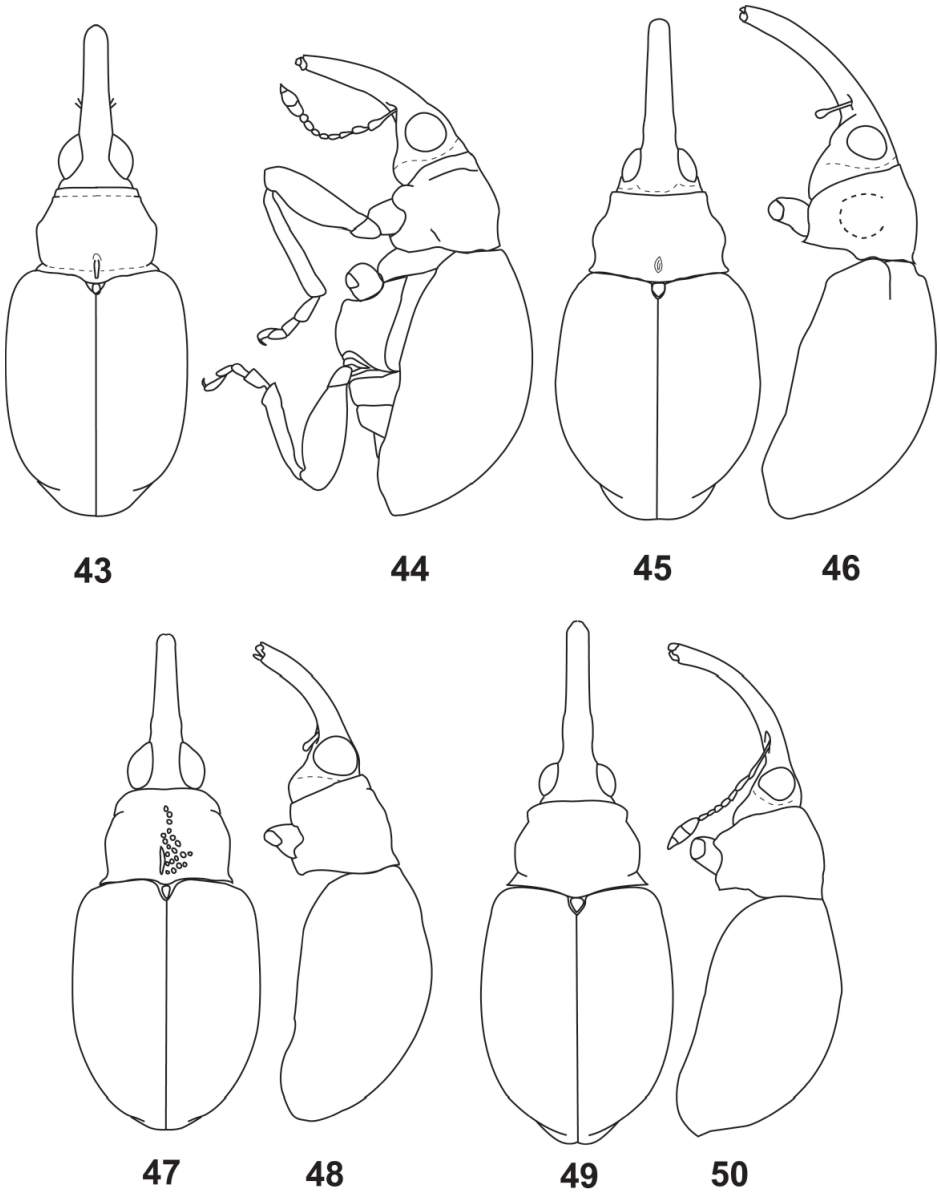
1. Legs entirely dark brown or black; vestiture piliform (Fig. 13); body stout, 2.0−2.3 times as long as wide (Figs. 43−46); body length 1.5−1.6 mm ..... ***S. terrasanctae* n. sp.**
-. Legs at least partly red; vestiture piliform or squamiform (Figs. 14−16); body slender, 2.3−2.5 times as long as wide (Figs. 58−61) **2**
2. Vestiture on elytra comprised of short, thick, white truncate scales, uniformly distributed over each interstriae, forming uniform grayish coloration, strial scales hardly overlap (Figs. 14, 15); female rostrum longer than, and male rostrum as long as, head and pronotum combined, testaceous at apex (Figs. 58, 59); antennal scapus longer than 3 basal funicular segments combined; male metatibia armed with spine; body length 1.3−2.1 mm..... ***S. phocopus***
-. Vestiture on elytra comprised of long, thin, white, piliform, pointed scales, arranged in 2 rows along midline of each interstria, forming pattern of longitudinal strips; strial scales overlap (Fig. 16); female rostrum as long as, and male rostrum shorter than, head and pronotum combined, black at apex; antennal scapus shorter than 3 basal funicular segments combined; male metatibia not armed with spine (Figs. 60, 61); body length 1.9−2.1 mm . ***S. delagrangei***

**Squamapion delagrangei* (Desbrochers, 1895)

(Figs. 16, 60, 61)

Material examined

ISRAEL: **Golan Heights:** Qusbīye, 4.v.1979, D. Furth (1♂); **Upper Galilee:** Tel Dan, 6.v.1979,



Figs. 43−50. *Squamapion* spp., habitus: 43. *S. terrasanctae* n. sp., male, dorsal view. 44. *S. terrasanctae* n. sp., male, lateral view. 45. *S. terrasanctae* n. sp., female, dorsal view. 46. *S. terrasanctae* n. sp., female, lateral view. 47. *S. bifarium*, male, Cyprus, dorsal view. 48. *S. bifarium*, male, Cyprus, lateral view. 49. *S. bifarium*, female, Cyprus, dorsal view. 50. *S. bifarium*, female, Cyprus, lateral view.

D. Furth (1♀), Tel Hay, 2 km N, 24.viii.1972, D. Furth (2♂), ‘Enot ‘Enan, 18.xi.1973, D. Furth (1♂), Sifsufa, 18.xi.1973, D. Furth (1♀); **Lower Galilee:** HaSolelim, 3.x.2001, L. Friedman, on *Mentha longifolia* (11♂, 12♀).

Distribution

Greece, Syria (Wagner, 1932), Turkey, Israel.

Host plants

We suspect *Mentha longifolia* (Linnaeus) Hudson (Lamiaceae) to be a host.

Phenology

Unclear. Mass collecting was made on blooming *M. longifolia* at HaSolelim in October, which may indicate the breeding season.

****Squamapion phocopus*** **(Eppelsheim, 1888)**

(Figs. 14, 15, 58, 59)

Material examined

ISRAEL: **Upper Galilee:** Nahal Keziv, 6.ii.200, L. Friedman, on *Salvia fruticosa* (1♀); Kefar Meron, 27.vi.1997, L. Friedman (1♀); **Carmel Ridge:** Nahal Yagur, 11.xi.1996, L. Friedman (1♀); Nahal Oren, 8.x.1996 (5♀), 28.x.1996 (4♀), 12.xi.1996 (1♀), 23.ii.1998 (2♀), all L. Friedman, 30.ix.1997, V. Chikatunov (1♀), 27.iii.1996 (1♀), 28.v.1996 (2♀); 9.vii.1996 (3♀); 8.x.1996 (2♀); 13.v.1997 (2♂, 1♀); 27.v.1997 (1♂), 9.vi.1997 (2♂, 5♀); 18.v.1998 (4♂, 13♀), 2.vi.1998 (5♂, 4♀), 15.vi.1998 (4♀), 6.vii.1998 (7♀), 27.vii.1998 (11♀) all V. Chikatunov and T. Pavliček, 30.v.1998, A. Freidberg (15♂, 42♀); **Southern Coastal Plain:** Nizzanim, 3.vi.1997, V. Chikatunov (1♀).

Distribution

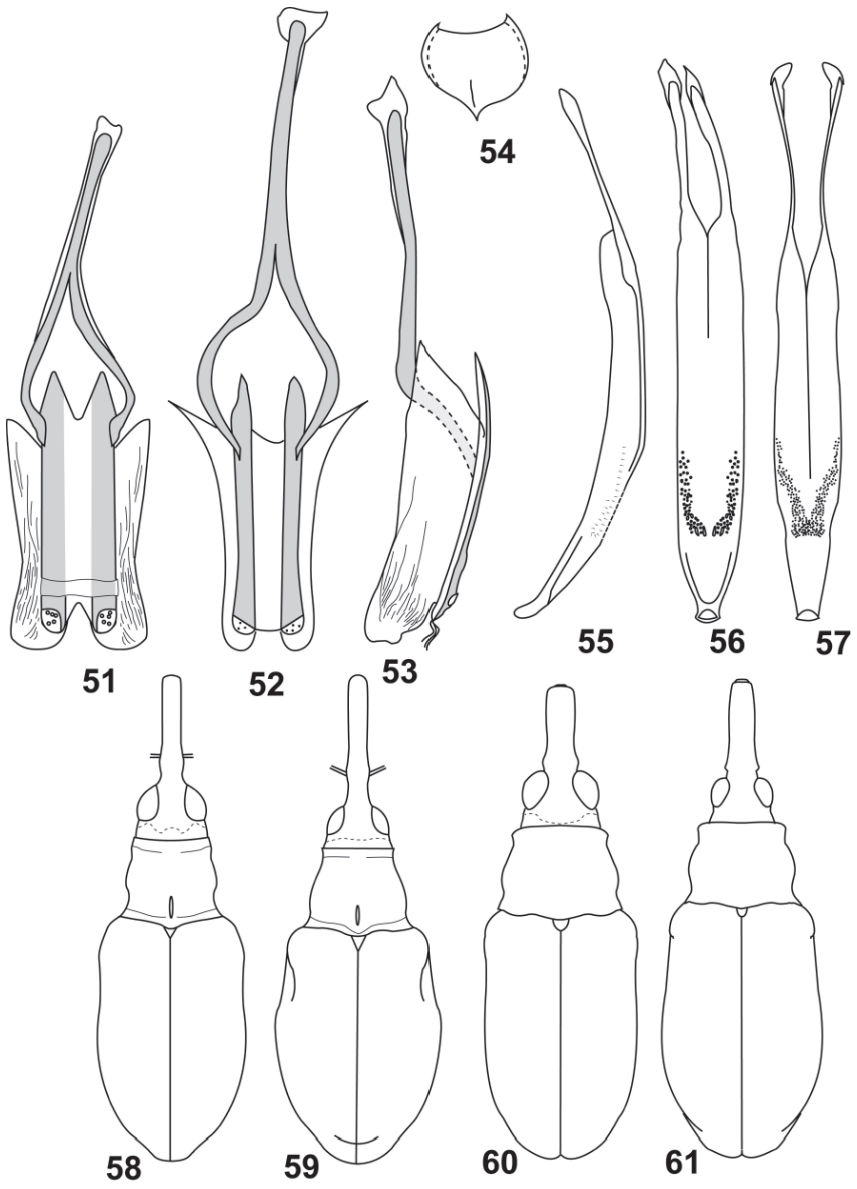
Greece (Voríai Sporadhes) (Wagner, 1932), Turkey (Hayat *et al*., 2002), Jordan (Alonso-Zarazaga, 1990), Lebanon, Israel.

Host plants

The collection of a female on *Salvia fruticosa* Mill. (Lamiaceae) in early February suggests this might be a host. The same plant is also abundant in Nahal Oren (Carmel Ridge), where numerous specimens were collected during May-June.

Phenology

Hibernation: November-February; beginning of breeding season: early February; emergence and mass migration to trees: April-May; aestivation: June-October; autumn migration to trees: October-November.



Figs. 51−61. *Squamapion* spp.: 51. *S. terrasanctae* n. sp., tegmen, dorsal view. 52. *S. bifarium*, tegmen, dorsal view. 53. *S. terrasanctae* n. sp., tegmen, lateral view. 54. *S. terrasanctae* n. sp., spiculum gastrale, dorsal view. 55. *S. terrasanctae* n. sp., aedeagus, lateral view. 56. *S. terrasanctae* n. sp., aedeagus, dorsal view. 57. *S. bifarium*, aedeagus, dorsal view. 58. *S. phocopus*, male, dorsal view. 59. *S. phocopus*, female, dorsal view. 60. *S. delagrangei*, male, dorsal view. 61. *S. delagrangei*, female, dorsal view.

Remarks

Halperin and Fremuth (2003) reported this species from Israel under the name *S. jordanianum* (Voss, 1965). Alonso-Zarazaga (1990) suggested that *S. jordanianum* is a synonym of *S. phocopus* or closely related to the latter. Voss (1965) stated that *S. jordanianum* has the mesotibia and metatibia mucronate and used this character for establishing a new subgenus *Teuchocnemapion* Voss (Voss, 1966), for it. M. A. Alonso-Zarazaga (1990b) examined the type series of *S. jordanianum* and found that only the metatibia is armed with a spine, but mesotibia and metatibia are not mucronate. All male specimens collected in Israel lack spine or mucron on mesotibia. We studied part of the type series of "*Apion jordanianum*" Voss deposited in the Hungarian Natural History Museum, Budapest, Hungary (HNHM), kindly sent by Dr. O. Merkl, labeled: "O. Jordan, J. Klapperich, Wadi Sir b. Am. [bei Amman], 600 m, 8.vi.[19]56" (1 male with dissected genitalia, mounted on blue plastic card and 6 females) and "Libanon, J. Klapperich, 1959, Ainab, 650 m, s. Beirut, 23.ix" (one female). We found the studied series identical to the specimens collected in Israel. Therefore we can confirm that *jordanianum* is a junior synonym of *phocopus*.

The occurence of this species in the sandy dunes of Nizzanim is very doubtful, and could be a result of erroneous labeling.

***Squamapion terrasanctae* Friedman and Freidberg, n. sp.**

(Figs. 13, 43–46, 51, 53–55, 57)

Diagnosis

This species closely resembles the European *S. atomarium* (Kirby), *S. bifarium* (Balfour-Browne) (Figs. 47–50, 52, 56), which was described from Cyprus (Balfour-Browne, 1944), and *Squamapion* sp. cf. *bifarium* recorded from north-east Turkey by Hayat *et al*. (2002).

S. terrasanctae differs from *S. bifarium* in the denser pubescence, broader scales, flatter frons, that is less concave at base of rostrum, more convex laterally pronotum, and less convex eyes (eye of the male *S. bifatium* 1.15 times, eye of the male *S. terrasanctae* 0.67 times as wide as frons). The rostrum of *S. terrasanctae* is as wide as that of *S. atomarium*, while in *S. bifarium* the rostrum is distinctly narrower in both sexes. The host plant of *S. atomarium* is *Thymus* spp. (Dieckmann, 1977), whereas the host plants of *S. terrasanctae* is *Satureja thymbra* and *Majorana syriaca*. The host plant of *S. bifarium* is unknown. We found one female on *Mentha longifolia* ssp. *cypriaca* in the Troodos Mountains on Cyprus, but it is not clear if it is a migrating or breeding specimen. *S. bifarium* belongs to the *vicinum*-group of *Squamapion*, for which *Mentha* spp. are known hosts (Wanat, 1997).

Description

Male (Figs. 43, 44, 51, 53–56). **Body**. Length 1.50–1.62 mm. Body black, except: antennal scapus usually testaceous, occasionally brown or yellow; 1st–4th funicular segments testaceous, 5th and 6th segments dark brown, seldom testaceous, 7th segment

and club dark brown; tibiae and tarsi dark brown to black. Vestiture dense, comprised of white piliform to narrow-lanceolate scales. Scales on pronoum 5.5−7 times as long as wide, broader and denser than scales on elytra; latter arranged in single row on elytral intervals, condensed at base of elytr, overpassing bases of forestanding scales; scales in interstriae shorter, not overpassing bases of forestanding scales.

Rostrum. In dorsal view straight laterally, slightly narrowed at apex; in lateral view moderately curved, prorostrum conical, narrowed to apex. Length 0.46−0.50 mm, apical width 0.10−0.12 mm, basal width 0.12−0.16 mm. Rostrum shagreened, covered with scales at least at basal 0.6. Antennae inserted at basal 0.09−0.16 of rostrum, scapus length 0.13−0.16 mm, 1st funicular segment 0.06−0.08 mm, 2nd segment 0.05−0.06 mm, segments 3rd–6th 0.04 mm; club ovate, length 0.14−0.16 mm, width 0.07−0.08 mm.

Head. Subquadrate. Eye in dorsal view: convex, length 0.18 mm, width 0.10 mm, 0.67 times as wide as frons; eye in lateral view: round, 4.5 times as long as temple. Frons slightly convex, coarsely punctate and pubescent, with 1−3 striolae at base of rostrum.

Pronotum. Slightly transverse, narrower than elytra; length 0.40−0.44 mm; width: anteriorly 0.36−0.38 mm, at middle 0.50−0.52 mm, posteriorly 0.56–0.59 mm, strongly constricted subanteriorly and subposteriorly, distinctly rounded in middle part; disc convex, densely punctate, punctures more than 4 times as wide as interpunctural spaces. Base bisinuate. Prescutellar fovea oblong, distinct.

Scutellum. Oval, usually wider in anterior part; impunctate, shagreened, bare.

Elytra. Length 1.06−1.12 mm, width at base 0.67−0.69 mm, maximum width 0.74−0.78 mm, 1.4 times as long as wide; moderately convex in lateral view, nearly parallel-sided and slightly rounded at apex in dorsal view. Humeral callus slightly prominent, distinct. Striae deep, 0.5 times as wide as interstriae; latter flat, transversely wrinkled. One specialized seta present at apex of 9th interstria.

Abdomen. 1st abdominal sternite flat or slightly convex, with concave anterior projection between metacoxae, 1.7 times as long as 2nd, 3.7 times as long as 3rd, 2.6 times as long as 4th and 1.7 times as long as 5th sternite; 1st and 2nd sternites punctate similar to pronotum, 3rd–5th sternites impunctate, granulate. Abdominal sternites 1st–4th covered with scales of same kind as on rest of body, while 5th sternite more densely covered with narrower, slightly longer, straight, subtransluscent scales; 5th sternite rounded posteriorly, with more or less concave area medially.

Legs (Fig. 44). Mesocoxae separated by 0.4 times own diameter. Claws dentate at base. Metafemur incrassate, with anterior margin in dorsal view more convex than that in pro- and mesofemur. Profemur: length 0.44 mm, width 0.16 mm; protibia: length 0.52 mm, width 0.07 mm; 1st protarsomere: length 0.12 mm, width 0.07 mm; 2nd protarsomere length 0.08 mm; 3rd protarsomere length 0.08 mm; proonychium length 0.10 mm; mesofemur: length 0.35 mm, width 0.15 mm; mesotibia: length 0.48 mm, width 0.10 mm; 1st mesotarsomere length 0.12 mm; 2nd mesotarsomere length 0.08 mm; 3rd mesotarsomere length 0.07 mm; mesonychium length 0.09 mm; metafemur: length 0.45 mm, width 0.19 mm; metatibia: length 0.46 mm, width 0.11 mm; 1st metatarsomere length 0.11 mm; 2nd metatarsomere length 0.08 mm; 3rd metatarsomere length 0.06 mm; metaonychium length 0.09 mm.

Male genitalia (Figs. 51, 53–56). ***Tegmen*** (Fig. 51, 53): Tegminal plate boat-shaped, oblong, about twice as long as wide; tegminal apodeme as long as tegminal plate, dilated apicad; basal piece fused to prostegium; prostegium deeply notched, with large, triangular laterointernal tooth; median carinae sclerotized, well separated by not sclerotized area; lateral parts about 2.5 times as wide as median carinae, membranous; fenestrae undistinct, but fenestral area well-defined; suprafenestral sclerite rounded or subquadrate, with few round sensilla and a few macrochaetae attached apically. ***Aedeagus*** (Figs. 55, 56): slender, nearly 7 times as long as wide, curved, median keel slightly sclerotized at basal third; apex constricted, rounded, bent upwards in profile; aedeagal apodeme half as long as tube; endophallus with bisinuate strip of minute denticles turning outwards before apex to form M-shaped figure. ***Sternite 9*** (spiculum gastrale) (Fig. 54): cordiform, concave, uniformly sclerotized.

Female (Figs. 45, 46). **Body**. Length 1.69–1.78 mm. Body black, tibiae and tarsi black or dark brown, antennal scapus brown.
Rostrum. Slender, strongly curved in lateral view, widened at antennal insertion; covered uniformly by scales from base to antennal insertion and with small setiform scales in apical part; length 0.64–0.70 mm, width at apex 0.10–0.12 mm, width at base 0.16 mm. Antennae inserted in basal 0.80–0.90 of rostrum. Eye in dorsal view: convex, length 0.14–0.17 mm, width 0.08–0.09 mm, 0.64–0.72 times as wide as frons; eye in lateral view: round, 3.5–4.2 times as long as temple.
Pronotum. Transverse; length 0.39–0.40 mm; width: anteriorly 0.40–0.42 mm, at middle 0.54–0.56 mm, posteriorly 0.58–0.6 mm. Anterior and basal constrictions less distinct than in male.
Elytra. 1.39–1.49 times as long as wide, laterally more rounded than in male. Length of elytra 1.17–1.31, width at base 0.60 mm, maximal width 0.84–0.88 mm.
Abdomen. 1st abdominal sternite strongly convex, 1.6 times as long as 2nd, 4.3 times as long as 3rd, 3.8 times as long as 4th and 1.5 times as long as 5th.
Legs. Metafemur: length 0.45–0.48 mm, width 0.15–0.16 mm.

Etymology

The specific epithet refers to the distribution of this species in the Holy Land = Terra Sancta, the Land of Israel.

Material examined

Holotype: ♂ ISRAEL: Shoham, 2.iii.2004, L. Friedman, on Labiatae (TAUI). Paratypes: ISRAEL: Same data as holotype (13♂, 9♀, TAUI); HaTanur, 24.viii.1972, D. Furth (1♂, TAUI); ‘En Zetim, 5.v.1999 L. Friedman, on olive (1♀, TAUI), 10.v.2006, L. Friedman, on *Majorana syriaca* (7♂, 7♀, TAUI), 8.v.2007, L. Friedman, on *Majorana syriaca* (8♂, 23♀, TAUI); Nahal Qana Reserve, 290m, 5KmSW Qarne Shomeron, 32°08’N 35°04’E, 9.vii.2007, A. Freidberg (1♀), L. Friedman (1♀); ‘Ez Efrayim, 1.v.1998, L. Friedman, on olive (1♀, TAUI); Umm ‘Safā forest, 26.iii.2006, L. Friedman, on *Satureja thymbra* (1♂, 1♀, TAUI), ex *Satureja thymbra* (1♂, 1♀, TAUI); Newé Shalom, 13.v.1997, R. Hoffman (1♀, TAUI); Nataf, 11.iii.2001, L. Friedman, on *Satureja thymbra*

(1♂, 2♀, TAUI); Ramat Razi`él, 11.iii.2001, L. Friedman, on *Satureja thymbra* (7♂, 21♀, TAUI; 3♂, 1♀, MW); Qiryat ‘Anavim, 18−19.xii.1929, F. S. Bodenheimer (1♂, TAUI); Matta’, 18.iii., 2007, L. Friedman (3♀; TAUI); Shoham, 2.iii.2004, V. Chikatunov (2♂, 3♀, TAUI), 31.iii.2006, L. Friedman (2♂, 6♀, TAUI). Part of paratypes will be donated to BMNH, NMNH, SZMN, MW, ZIN and SCHO. Geographic information on the above localities is given in the Distribution section.

Distribution

Israel: Upper Galilee (HaTanur, ‘En Zetim), Samaria (Nahal Qana Reserve, ‘Ez Efrayim, Umm ‘Safā forest), Central Coastal Plain (Shoham), Foothills of Judea (Newé Shalom), Judean Hills (Nataf, Ramat Razi`él, Qiryat ‘Anavim, Matta’). We expect that it also occurs in Lebanon, Syria and Jordan.

Host plants

Satureja thymbra Linnaeus and *Majorana syriaca* (Linnaeus) Rafin. (Lamiaceae). The infested part of the plant is unknown. A closely related European species, *Squamapion atomarium*, produces galls on stems of *Thymus* spp. (Dieckmann, 1977; Ter-Minassian, 1972a).

Phenology

Beginning of breeding season: mid-March; emergence: May; seldom collected on trees.

Remarks

The single specimen collected by Bodenheimer was identified by G. A. K. Marshall as *Apion atomarium* Kirby and recorded under this name (Bodenheimer, 1937).

The closeness of the ranges of *S. terrasanctae* and *S. bifarium* indicates the phylogenetic closeness of these species, which is why we examined the type material of *S. bifarium* (1 male and 3 females), kindly sent to us by R. Thompson and M. Barclay (both BMNH, London, UK), and a series of 60 females of *S. bifarium*, recently collected by us in Cyprus.

We studied two specimens of *Squamapion* sp. cf. *bifarium* from Turkey on which the record of Hayat *et al*. (2002) is based, kindly sent to us by Ing. K. Schön. These specimens belong neither to *S. bifarium* nor to *S. terrasanctae*.

Taeniapion Schilsky, 1906

This genus contains seven species in the Palaearctic Region. Host plants: Urticaceae (*Urtica* and *Parietaria*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). One species occurs in the study area.

Taeniapion rufescens (Gyllenhal, 1833)

(Fig. 9)

Material examined

ISRAEL: **Golan Heights:** Panyas, 24.ix.1997, A. Freidberg (2♂); Mezudat Nimrod, 27.v.1999, L. Friedman (2♀); **Upper Galilee:** Tel Dan, 24.ix.1997, L. Friedman (1♀); Nahal 'Ammud, 26.x.1977, D. Furth (2♀); Har Meron, 17.iii.1973, D. Furth (2♂, 1♀), 27.vi.1997, A. Freidberg (1♀), 1100 m, 33.ix.1997 (1♂), 26.v.1999 (1♂), all L. Friedman, 22.v.1998, A. Freidberg (2♂); **Lower Galilee:** Qiryat Tiv'on, 10.xii.1958, M. Sternlicht (1♀), 12.ix.1988, E. Orbach (1♂, 1♀) (ORB); Bet Lehem haGelilit, 10.iii.1997, L. Friedman (1♀); **Carmel Ridge:** Nahal Yagur, 11.xi.1996, L. Friedman, on *Viburnum tinus* (2♀), on *Quercus calliprinos* (1♀); Nahal Oren, 28.x.1996, on *Ceratonia siliqua* (5♂, 2♀), 12.xi.1996, on *Ceratonia siliqua* (1♂, 3♀), on *Pistacia lentiscus* (1♂), 16.xii.1996 (2♂, 3♀), 15.xii.1997 (2♀), 23.ii.1998 (6♂, 5♀), 26.iii.1998 (1♂, 1♀), al L. Friedman, 16.iv.1996 (2♀), 27.v.1996 (1♂), 1.iv.1997 (1♂), 9.vi.1997 (1♂), 2.ii.1998 (1♂), 24.ii.1998 (8♂, 5♀), 2.vi.1998 (1♂), 27.vii.1998 (1♂, 1♀), al V. Chikatunov and T. Pavliček, 6.v.1999, A. Freidberg (1♀), v.1999, L. Friedman ex *Urtica pilulifera* (1♂); **Samaria:** 'Askar, East to Shekhem [Ascar b. Nablus], 600 m, 24.iv.1958, J. Klapperich (2♂; 2♀; HNHM); Jatt, 9.ii.1973, D. Furth (1♀); 'Ez Efrayim, 4.xii.1997, L. Friedman (1♂); **Jordan Valley:** Bet Zera', vi.2006, A. Gofman, on pecan tree (2♂, 3♀); **Central Coastal Plain:** Mikhmoret, 25.iv.1987, Q. Argaman (1♀); Herzliyya, 26.xi.1981 (1♀), 11.vi.1998 (1♀), all A. Freidberg; Tel Aviv, TAU Zoo, 15.v.1998, L. Friedman (1♂), 15.vii.1998, A. Shlagman (1♂); Petah-Tiqwa, 10.vii.1933 (2♂, 4♀); Migdal Zedeq, 13.iv.1999, A. Freidberg (2♀), L. Friedman (1♂, 1♀); **Southern Coastal Plain:** Rehovot, 10.vii.1934 (1?), 3.x.1934 (1♀); Nizzanim, 4.vi.2002, L. Friedman (2♂, 2♀), 6.vi.2006, L. Friedman (6♂, 12♀); **Judean Hills:** Park Canada [Kubebeh bei Jerusalem], 600 m, 7.ix.1959, J. Klapperich (2♂; 1♀; HNHM); Park Canada, 4.xi.1996, L. Friedman (32♂, 28♀), on *Quercus ithaburensis* (15♂, 14♀); 'En Hemed [Aqua Bella], 14.vi.1958, J. Wahrman (1ex., not sexed), Yerushalayim, 7.vi.1929 (1♀), 13.viii.1930 (1♀), 24.viii.1930 (1♀), al Y. Tapuhi), **Judean Desert** (Nahal Perat [Wadi Qilt], 1 km W 'En Qelet [E. Qilt], 16.i.1984, D. Furth (2♂, 1♀). Recorded from Judean Hills (Ramallah, Turmus-Aya,) and Judean Desert (Yeriho) by Voss (1964).

Distribution

Morocco, Algeria, Spain, Italy (including Sicily), Austria (Central Tirol), Croatia (Dalmatia, Istria), Republic of Bosnia and Hercegovina, Greece (Corfu, Cephallenia, Thessalia), Lebanon, Syria (Wagner, 1918, 1932; Angelov, 1976), Jordan, Israel (Voss, 1964).

Host plants

Urtica pilulifera Linnaeus, *Urtica urens* Linnaeus (stem walls and nods). Angelov (1976) recorded *Parietaria* (Urticaceae) as host of this species. We cannot confirm this host association as we neither collected *T. rufescens* on *Parietaria*, nor reared it from this plant. We suspect that Angelov based his record on Wagner (1918), who in return cited Aubé (year not cited), recording *Taeniapion rufescens* from *Parietaria* and *Taeniapion rufulum* Wencker from *Urtica*. We suggest that this record is erroneous, resulting from a misunderstanding of the concept of these two apionid species. More knowledge on the biology of *T. rufescens* and *T. rufulum* from the entire Mediterranean region is needed

to settle this uncertanity.

Phenology

Immature development: April-May; emergence: May; collected on trees throughout the year.

Remarks

This species was misidentified as *Apion rufulum* Wencker (Bodenheimer, 1937), which was reported from the Middle East (Gønget, 1997) and specifically from Lebanon (Dieckman, 1977). Halperin and Fremuth (2003) recorded it from Israel as *T. reitterianum* (Wagner, 1912). *T. reitterianum* is known from the type specimen only, labeled "Ägyptus", which is lost (Wanat, personal communication), and the illustration in Wagner's paper shows this specimen, most likely a small male with abraded vestiture. Specimens collected in Israel match well the description of *T. rufescens* (Wagner, 1918). Alfieri (1976) reported both *T. rufescens* and *T. reitterianum* from the Nile Delta. We examined one female of *Taeniapion* from Egypt (Aboukir, 12.viii.1934, A. Rabinovitch), kindly donated by Dr A. M. A. El-Torkey, Giza, Egypt and found it conspecific with the Israeli specimens.

Tribe **Malvapiini Alonso-Zarazaga, 1990**

***Malvapion* Hoffmann, 1958**

This genus contains one species widely distributed in the south-west Palaearctic, one species in Afghanistan, and probably four species in the Afrotropical Region. Host plants: Malvaceae (*Malva*, *Althaea*, *Lavatera*) (Alonso-Zarazaga, 1990b). One species occurs in the study area.

***Malvapion malvae* (Fabricius, 1775)**

Material examined

ISRAEL: **Hermon:** 1800 m, 11.vi.2003, L. Friedman (1♂, 1♀), 1700 m, 5.vii.2004, L. Friedman, on *Prunus* (13♂, 5♀); **Upper Galilee:** Hawat Mattityahu, 4.v.1998, D. Oppenheim, on apple and pear [trees] (1♂); Nahal 'Ammud, nr. Hoqoq, 2.iv.1998, A. Freidberg (4♂, 4♀); Har Meron, 1100 m, 21.x.1996, L. Friedman, on *Quercus calliprinos* (1♀), N. Dorchin, on *Quercus* sp. (1♂); **Lower Galilee:** 'Afula, 13.v.1998, V. Chikatunov (1♀); **Carmel Ridge:** Nahal Oren, 8.x.1996 (1♂, 3♀), 28.x.1996 (6♀), 12.xi.1996, on *Pistacia lentiscus* (1♀), on *Quercus calliprinos* (1♂, 3♀), 16.xii.1996 (3♀), 23.ii.1998 (6♂, 11♀), 26.iii.1998 (1♂, 1♀), all L. Friedman, 18.iii.1996 (2♂), 16.iv.1996 (3♂, 6♀), 8.v.1996 (3♂), 12.v.1996 (1♂), 27.v.1996 (2♂, 4♀), 28.v.1996 (1♂, 3♀), 9.vii.1996 (2♂), 25.x.1996 (1♀), 3.vii.1997 (1♂), 17.xi.1997 (1♀), 2.ii.1998 (1♀), 24.ii.1998 (13♂, 5♀), 10.iii.1998 (2♂, 6♀), 6.iv.1998 (3♂), 18.v.1998 (1♂), 2.vi.1998 (3♂, 1♀), 6.vii.1998 (1♂), 16.viii.1998 (1♂), 30.ix.1998 (1♂), 5.i.1999 (1♂), all V. Chikatunov and T. Pavliček, 16.x.1996 (1♀), 30.ix.1997 (1♀), all V. Chikatunov, 30.v.1995 (1♀), 30.v.1998 (1♀), all A. Freidberg; Nahal Tut, 4.v.1978, D. Furth (1♂); **Northern Coastal Plain:** Sedot Yam, 4.v.1998, M. Fine (1♂); **Yizre'el Valley:** Bet Alfa, 2.v.1979, D. Furth (1♂); **Samaria:** Yarhiv, 14.iv.1981, D. Furth (3♀); Qedumim, v.1999, L. Friedman (1♂, 1♀); Nahal Tirza [W. Fari'a], 1.iii.1973,

(6♂, 1♀); Nahal Gilgal, 11.iii.1973, D. Furth (1♂, 1♀); **Jordan Valley:** 'En Gev, 17.ii.1973, D. Furth (2♂, 1♀), 8.v.1997, L. Friedman, ex *Malva* sp. (2♀); **Central Coastal Plain:** Mikhmoret, 25.iv.1981, Q. Argaman (1♂, 1♀); Rosh ha'Ayin, 24.iii.1973, D. Furth (1♂); Giv'at-Hayyim, 18.v.1983, I. Susman (1♀); Lod, 1.xii.1921, P. A. Buxton, on olive (1♀); Abu Gōsh, 6.iv.1948, A. Moscona (1♀); **Foothills of Judea:** Ben Shemen, 9.viii.1926 (1♀); Deir-Aiyūb, 20.iii.1939 (1♀), 11.iv.1939 (2♂, 1♀), al J. H. Brair, on vetch); **Judean Hills:** Shimshon, 7.ii.1973, D. Furth (2♂, 2♀); 'Ein 'Ariq, near Ramallah, 20.ix.1932, P. H. Jolles (1♀); Sattaf, 21.xi.1997 (1♀), 18.v.1998 (1♀), all L. Friedman; Yerushalayim, xi.1929 (1♂), 22.viii.1930, Y. Tapuhi (1♀), 25.viii.1952, J. Wahrman (1♂), 15.vi.1969 (1♂); Qiryat 'Anavim, 7.v.1931, Birne (1♀), 6.vi.1931, F. S. Bodenheimer (1♂), 7.ix.1942, H. Bytinski-Salz (2♀); **Judean Desert** ([W. Kelt] Nahal Perat, 30.iv.1974, D. Furth (1♂); Nahal Perat spill [W. Kelt], 14.ii.1974, D. Furth (1♂); (Nahal Perat [Wadi Qilt], 1 km W 'En Qelet [E. Qilt], 16.i.1984, D. Furth (1♂); 'Arad-Yam haMelah Rd., 31.iii.1998, L. Friedman (1♀); **Dead Sea Area:** [Jericho] Yeriho, 11.iii.1973, D. Furth (3♂, 2♀); Deir Hajla, wadi, 31°49'N 35°31'E, 16.iii.2004, A. Freidberg (1♂), L. Friedman (3♀); Deir Hajla, roadside, 31°49'N 35°30'E, 16.iii.2004, L. Friedman (3♀); Qasr el Yahud, bank of Yarden, baptism site, 17.iii.2004, L. Friedman (2♂); Nahal Qumeran, 21.xi.1997 (1♂, 4♀), 3.ii.1998 (6♂, 5♀), all L. Friedman; Mezada, 15.ii.1974, D. Furth (1♂); Zomet Zohar, 21.iv.2005, A. Freidberg (2♂); **Northern Negev:** Talmé-Yosef, 13.i.1997, L. Friedman (1♂); Revivim, 12.iii.1974, D. Furth (1♀); **Central Negev:** [Tel Yerucham] Giv'at Yeroham, 19.ii.1962 (1♂); Sedé Boqér, 29.v.2002, A. Freidberg (1♀). Recorded from Samaria ('Askar, near Shekhem), Judean Hills (Ramalla; Arub, near Hevron) and Judean Desert (Yeriho, -250 m) by Voss (1964). EGYPT: **Northern Sinai** (Nahal Nizzana, 12.iv.1974, D. Furth (1♂); **Central Sinai Foothills:** Qadesh Barnea', 3.iii.1978, D. Furth (1♀). Recorded from Sinai by Alfieri (1976).

Distribution

Wagner (1932) recorded this species from the Palaearctic Region, but B. Korotyaev (personal communications) restricts its distribution to the Western Palaearctic. Found as far north as southern parts of Germany and Poland (Gønget, 1997) and as far east as the Caucasus (Ter-Minassian, 1972a) and southern Middle Asia east to Tajikistan (Nasreddinov, 1975a, 1975b). In UK locally abundant in southern and central England (Morris, 1990).

Host plants

Malva sp., *Lavatera cretica* Linnaeus (in nutlets of fruit). In Europe reared from *Alcea*, *Althaea*, *Lavatera* and *Malva* (Schilsky, 1906a; Urbann, 1923; Dieckmann, 1977; Alonso-Zarazaga, 1990b; Ehret, 1990).

Phenology

Emergence: May; collected on trees throughout the year.

Rhopalapion Schilsky, 1906

This genus contains one widespread species in the West Palaearctic (including Israel) which was introduced into the USA; and the taxonomic position of a few species from

Congo (formerly Zaire) is doubtful. Host plants: Malvaceae (*Alcea*, *Althaea*, *Gossypium*, *Malva*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999; Warner, 1964).

***Rhopalapion longirostre* (Olivier, 1807)**

(Fig. 39)

Material examined

ISRAEL: **Golan Heights:** West to Har Shipon, 30.iv.2006, L. Friedman (1♂, 2♀); **Upper Galilee:** Nahal Senir, 12.v.1998, L. Friedman (1♂); Tel Dan, 1.ii.1978, D. Furth (1♀); Hermon Field School, nr. Senir, 26.vi.1997, ex *Alcea dissecta* (50♂, 50♀), 5.v.1999 (5♂, 3♀), all L. Friedman; Elon, 21.v.1962, H. Bytinski-Salz (1♂); Nahal 'Ammud, nr. Huqoq, 2.iv.1998, A. Freidberg (3♂, 3♀); **Lower Galilee:** Gilboa', 10.iii.1997, L. Friedman (9♂, 3♀); Alonim, 17.ii.1973, A. Freidberg (1♀); **Carmel Ridge:** Nahal Oren, 4.v.1980, D. Furth (1♂, 1♀), 27.iii.1996 (1♂), 24.ii.1998 (1♂), all V. Chikatunov and T. Pavliček, v.1997, L. Friedman, ex *Alcea setosa* (20♂, 20♀); Zikhron Ya'aqov, 3.v.1961, L. Fishelsohn (2♂, 4♀), 1.v.1998, A. Freidberg (2♂, 2♀); 'En haShofet, 21.iv.1974, D. Furth (5♂, 6♀); Oranim, 28.v.1958, H. Bytinski-Salz (1♀); **Northern Coastal Plain:** Nahsholim, 27.v.1959, on *Malva* sp. (1♂); **Yizre'el Valley:** Me 'Ammi, 15.vii.1972, M. Kaplan (1♀); Zomet ha'Amaqim (Jalame), 18–22.v.1993, A. Freidberg, on *Alcea setosa* (6♂, 5♀); **Samaria:** 'Ofra, 3.ix.1981 (3♂); **Jordan Valley:** 'En Gev, 2.iv.1998, A. Freidberg (4♂, 2♀); **Central Coastal Plain:** Netaniya, 20.vii.1980, Q. Argaman (2♂, 2♀); Ganné 'Am, viii.1983, A. Shoob (10♂, 10♀); **Judean Hills:** Bet Shemesh, 30.iii.2004, L. Friedman (20♂, 20♀); 'Amminadav, 18.viii.2002, L. Kurtzfeld (2♂); Ma'ale Adummim, 23.iv.2006, C. Grach (1♀); **'Arava Valley:** 'En Yahav, 1.iv.1974, D. Furth (1♂); **Northern Negev:** Hazerim, 10.v.1991, E. Orbach (2♂, 3♀).

Distribution

Europe (except north), Mediterranean region (Voss, 1964; Dieckmann, 1977); Caucasus (Ter-Minassian, 1972a), Middle Asia (Nasreddinov, 1975a, 1975b), Afghanistan (Meregalli and Osella, 1978), USA (introduced pest) (Warner, 1964; Kissinger, 1967, 1968).

Host plants

Alcea dissecta (Baker), *Alcea setosa* (Boissier) (Malvaceae) (fruit). Halperin and Fremuth (2003) recorded it from *Althaea* spp. In Europe reared from *Alcea rosea* and *Gossypium* sp. (Urbann, 1923; Dieckmann, 1977; Alonso-Zarazaga, 1990b; Ehret, 1990). In USA recognized as pest of cotton (*Gossypium* sp.) (Warner, 1964; Kissinger, 1967).

Phenology

Hibernation: June-March; mating: March; emergence: May. The adults do not leave their host plant immediately after emerging, but remain on it for a few weeks, hiding among the sepals. It is noteworthy that the plant is completely dry at this point. No adults were found on trees.

Biology

The female makes a hole with her rostrum in sepals of flower buds and lays a round yellowish egg among the sepals. Although we found only a single egg after each oviposition, we can not rule out the possibility that females can lay more than one egg at a time. When the flower opens, the larva moves to the center of the flower and probably develops among the stamens. When the fruit ripens, the larva enters the shell of the fruit and the seed (nutlet), where it pupates. The immature development takes about a month.

Parasitoids

Pseudotorymus sp. (Torymidae).

Tribe **Metapiini Alonso-Zarazaga, 1990**

***Metapion* Schilsky, 1906**

This genus contains about twenty species in the Mediterranean region, Caucasus and Middle Asia (Iran, Afghanistan, Kazakhstan, Tajikistan (Wagner, 1932; Nasredinov, 1975b; Faust 1890a, 1890b) and East Siberia (Buryatia) (Bajtenov, 1981). Host plants: Rutaceae (*Ruta*, *Haplophyllum*) (Alonso-Zarazaga, 1990b). One species occurs in the study area, and there is a doubtful record of a second species.

**Metapion normandi* (Desbrochers, 1899)

(Figs. 19, 70, 71)

Material examined

ISRAEL: **Dead Sea Area:** Avenat, 23.v.2005, L. Friedman (2♀); 'En Gedi, 18.vi.1958, J. Wahrman (1♀); Mizpe Shalem palms, 23.v.2005, L. Friedman (2♂, 4♀); **Northern Negev:** Nizzana, 10 km E, 9.vi.1997, L. Friedman (1♂); Nizzané Sinay, 12.iv.2002, L. Friedman, on *Haplophyllum buxbaumi* (3♂, 6♀); Shivta, 9.vii.2001, L. Friedman, on *Haplophyllum buxbaumii* (4♂); Yeroham, 4.viii.1981, Q. Argaman (1♀); **Central Negev:** Zeva'im, Makhtésh Gadól, Rt. 225, 3 km E Rt.206, 9.vii.2001, A. Freidberg (1♂), Makhtésh Gadól, 9.vii.2001, L. Friedman, on *Haplophyllum buxbaumii* (2♂, 5♀); Zomet Rotem, 9.vii.2001, on *Haplophyllum buxbaumii*, L. Friedman (15♂, 12♀), A. Freidberg (13♂, 10♀), 9–19.vi.2001, ex *Haplophyllum buxbaumii*, L. Friedman (44♂, 47♀); Oron, Rt. 206, 21.iv.2005, L. Friedman (1♀).

Distribution

Tunisia (Desbrochers, 1899; Wagner, 1932), Israel.

Host plants

Haplophyllum buxbaumii (Poiret) Boissier (Rutaceae).

Phenology

All specimens collected in June-July; emergence: beginning of July.

**Metapion oculare* (Gyllenhal, 1833)

Material examined

Recorded from Israel by Melamed-Madjar (1969b) as *Apion breiti* Wagner, 1910, but no specimens were available in Israeli collections.

Distribution

Albania, Macedonia, Bulgaria, Romania (Dobrudja), Ukraine (Crimea), Caucasus (Wanat, 1992).

Remarks

The specimens recorded from Israel by Melamed-Madjar (1969b) as *Apion breiti* were lost. *M. breiti* was synonymized by Wanat (1992) with *M. oculare*. However, we presume that Melamed-Madjar's (1969b) specimens were misidentified and actually belonged to *M. normandi*. According to Wanat (1992), the expected host plants are *Ruta* spp. (Rutaceae). However, to date we have failed to discover this species on *Ruta chalepensis* in Israel.

Supertribe Apionitae Schönherr, 1823
Tribe **Apionini Schönherr, 1823**
Apion Herbst, 1797

This genus contains 16 species in the Palaearctic Region. One species was introduced into Australia as a biocontrol agent. Host plants: Polygonaceae (*Rumex*, *Emex*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). One species occurs in the study area.

Apion frumentarium (Linnaeus, 1758)

Material examined

ISRAEL: **Hermon:** 1900 m., 21.v.1979, D. Furth (1♂), 1800 m, 11.vi.2003, A. Freidberg (2♂); **Upper Galilee:** Shelomi, 8.i.1975, F. Kaplan (1♀), A. Freidberg (1♀); Sasa, 1.vii.1972, D. Furth (1♂); Har Meron, 18.xi.1973, D. Furth (1♀), 30.ix.1976, A. Freidberg (1♀), 1.v.1995, V. Chikatunov (1♂, 1♀); **Carmel Ridge:** Hefa [Kaifa], E. Reitter (2♂); 1.iii.1949, H. Bytinski-Salz (1♂); Nahal Oren, 18.v.1998, T. Pavliček and V. Chikatunov (1♀); **Northern Coastal Plain:** Kabri, 18.xi.1973, D. Furth (1♀); Qesariya, 1.iii.1988, J. Scott, on *Emex spinosa* (3♀); Sedot Yam, 4.v.1998, M. Fine (1♂); Hadera, [Birket Atta] Berekhat Ya'ar, 1.v.1998, A. Freidberg (1♂, 1♀); **Samaria:** Nahal Gilgal, 29.xi.1972, D. Furth (1♀); **Jordan Valley:** Migdal, 5 km W, 31.iii.1968, Pener *et al*. (1♂); Migdal, 22.iii.1945, H. Bytinski-Salz (1♂); Bet She`an, 22.vii.1981, Q. Argaman (1♀); Ma'ale Efrayim, 4.x.1982, Q. Argaman (1♂); **Central Coastal Plain:** Avihayil, 8.iii.1939 (1♀); Shefayim, 29.ii.1988, J. Scott, on *Emex spinosa* (5♂, 2♀); Yaqum, 15.iii.2000, T. Kimhi (1♀); Herzliyya, 17.i.1982, malaise trap (1♀), 11.v.1997 (1♂), 13.iv.2002 (1♂, 2♀), 4.v.2002

(1♂), 17.v.2002 (1♀), 15.vi.2002 (2♀), 8.iv.2005 (14♀), all A. Freidberg; Kefar Saba, Bet Berl, 13.ii.1968, Y. Yefenov (2♀); Kefar Saba, 9.v.1997, Y. Nadler (1♀); Tel Aviv unv., Zoo, 15.iii.1998, D. Goldenberg, on *Rumex* sp. (1♀), 19.iv.1999, H. Ackerman (1♀); Tel Aviv, vii.1926 (2♂; PPIS), 20.ii.1930 (1♀; PPIS), 16.vii.1930(1♂), 28.vii.1931 (1♀; PPIS), all F. S. Bodenheimer, 19.xi.1940, H. Bytinski-Salz (1♂, 1♀), 16.ii.1957 (1♀); Ramat Gan, 20.iii.1942, H. Bytinski-Salz (1♀); Tel Aviv, Ramat Hen, 31.x.1969, M. Kaplan (1♀); Tel Aviv, Abu-Kabir, 19.xii.1971, M. Kaplan (1♀); Petah Tiqwa, xi.1924, F. S. Bodenheimer (1♂; PPIS), 4.xi.1955 (1♂), 9.xii.1981 (1♂); **Southern Coastal Plain:** Miqwé Yisrael, vi.1935, R. Gabrielith (1♂); Bet Dagan, 18.xi.1957, on alfalfa (1♀; PPIS), 6.v.1959, on clover (1♂); Nes Ziyyona, iii. I. Aharoni (1♀); Rehovot, 8.ii.1947, H. Bytinski-Salz (1♂, 1♀), iii.1931, I. Aharoni (2♂), 20.x.1967 (1♀); Palmahim [Rūbīn], iv.1931, I. Aharoni (1♀); Giv'at-Brener, xii.1950, Deqel [Dekel], on *Trifolium* sp. (1♀); Karmé-Yoséf, 15.iii.1997, A. Kenan (1♂); Karmiyya? ['Ein Karamija], 12.viii.1927, G. Hammad (6♂); 'Azza, 29.iv.1999, W. Kuslitzki, date plantation (2♂, 1♀); **Foothills of Judea:** Hulda,iii.1931, I. Aharoni (1♀); Shoresh, 8.v.1974, D. Furth (1♀); **Judean Hills:** Kesalon, 21.vii.2002, A. Freidberg (1♀); [Aqua Bella] 'En Hemed, 14.vi.1958, J. Wahrman (3♂, 10♀), 24.iv.1961, J. Wahrman (3♂, 2♀), 26.v.1961, U. Ritte (1♀), 8.v.1964, A. Shulov *et al*. (1♂), 26.viii.1972, D. Furth (1♂, 3♀); Sattaf, 16.xii.1999, L. Friedman (1♀); Har Tayyasim, 21.vii.2002, A. Freidberg (2♂, 1♀); Qiryat 'Anavim, 12.vi.1939 (1♀), 30.v.1946 (2♂, 1♀), 1.vi.1950 (1♂); all H. Bytinski-Salz, 23.vi.1939 (1♂, 1♀); 8.ix.1949 (1♀), 24.ix.1952 (1♂), all E. Swirski, v.1931 (1♂), 10.vii.1957, on leaf of *Amygdalus* sp. (1♀), all F. S. Bodenheimer; Bet Zayt, 13.vi.1934 (1♂, 3♀); 'En Kerem, 25.iii.1957, on *Vicia* sp. (1♀); 25.iv.1957, on bean (1♀; PPIS); Yerushalayim, 15.i.1956, D. Rozen (1♂, 1♀), 15.iv.1957, H. Ginsburg (1♀), 21.v.1958, Shulov *et al*. (1♂); 26.ii.1963, P. Amitai (1♂), 2.v.1969 (1♂), 27.ii.1973, M. Tintpulver (1♂), 26.iv.1963 (1♂), 10.x.1964 (1♀), J. Margalit, 2.v.1969 (1♂); Biddu, 31.v.1974, D. Furth (2♂); 'En Gazit ['Ein Hūsān], 14.v.1970 (1♀), 7.v.1972 (1♂); **Dead Sea Area:** Yeriho, 22.ii.1931, F. S. Bodenheimer (2♂, 1♀), 18.iv.1982, Q. Argaman (1♂); Deir Hajla, wadi, 16.iii.2004, I. Zonstein (1♀), 'En Gedi, 26.iii.1957, A. Shulov *et al*. (3♂, 4 ♀), 1.xii.1973, M. Tintpulver (1♀); **Northern Negev:** Sharsheret, 26.xi.1973, D. Furth (1♂, 2♀); Gilat, 27.ii.1988, J. Scott, on *Emex spinosa* (2♀); Gevulot, 31.xii.1983, E. Shey-Dor (1♂, 1♀); Horbat Sa'adon, 17.vii.1961, J. Wahrman (1♂), 17.ix.1961 (1♂), 30.vi.1962 (1♀), all Katznelson); **Central Negev:** Haluqim, [Khalukim Ridge], 26.iii.2002, Gilad (1♀); Yeroham, Iris Reserve, 31.iii.1998, L. Friedman, ex *Emex spinosa* (1♂, 1♀); Sedé Boqér, 29.v.2002, A. Freidberg (1♀). Recorded from Samaria (,Askar, near Shekhem), Judean Hills (Turmus-Aya; Ramalla; Kubebeh, near Jerusalem) and Judean Desert (Yeriho, -200−-250 m) by Voss (1964).

Distribution

Europe (except Finland and Russian Karelia), south-west and Middle Asia (Voss, 1959b; Nasreddinov, 1975b; Gønget, 1997as *A. miniatum* Germar). Introduced from Israel into Australia as a biocontrol agent (Scott *et al*., 2000, as *A. miniatum*).

Host plants

Emex spinosa Linnaeus (Polygonaceae). Usually the larvae infest the lower parts of stems. However, when the plant is heavily infested, the larvae are also found in the roots, the upper part of the stem, and the branches. Recorded from *Rumex* spp. (Polygonaceae) (Halperin and Fremuth, 2003). In Europe recorded from *Rumex hydrolapathum* Huds., *R. obtusifolis* L., *R. crispus* L., *R. patientia* L. and *R. conglomeratus* Murr. (Dieckmann, 1977).

Phenology

In the Coastal Plain (Tel Aviv) oviposition takes place in March, whereas in the Central Negev (near Yeroham) immature development ends at the same time; immature development lasts about a month; adults are found on trees throughout the year.

Remarks

The species was recorded as *A. miniatum* by Baudi (1894) and Bodenheimer (1937).

Tribe **Aplemonini Kissinger, 1968**

Helianthemapion **Wagner, 1930**

This genus contains four species in the West Palaearctic (mostly in the Mediterranean region). Host plants: Cistaceae (*Fumana*, *Helianthemum* and *Tuberaria*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). One species occurs in the study area.

Helianthemapion velatum **(Gerstaecker, 1854)**

Material examined

Recorded from Israel (Bodenheimer, 1937) and Sinai (Wadi Helal, v) (Alfieri, 1976), but no specimens were available for study in Israeli collections.

Distribution

Central and Southern Europe, Caucasus, Turkey, Syria (Wagner, 1932), Cyprus (Dieckmann, 1977), Israel (Bodenheimer, 1937), Egypt (Alfieri, 1976).

Host plants

Helianthemum nummularium (Scherf, 1964; Dieckmann, 1977); *H. apenninum* L., *Fumana procumbens* Dunal, *Tuberaria guttata* L. (Dieckmann, 1977), *Cistus* sp. (dubious record) (Urbann, 1923)

Onychapion **Schilsky, 1901**

This genus contains about 13 species occurring mostly in arid or semiarid areas of the Palaearctic Region: the Mediterranean region (Spain, North Africa, Near East), Caucasus, Iran, Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan, Mongolia, Saudi Arabia. It is also known from the Palaeotropical region: India, Pakistan, and Chad. Host plants: Tamaricaceae (*Tamarix*, *Reaumuria*), Polygonaceae (*Calligonum*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999; Schön, 1993). Four species occur in the study area.

Key to species of *Onychapion* in Israel

1. Rostrum curved; antennae inserted at base of rostrum, antennal scrobes round; host: *Tamarix* spp.; body length 1.0−1.5 mm ..... ***O. tamarisci***
-. Rostrum straight; antennae inserted at basal 0.18−0.33 of rostrum, antennal scrobes slightly

sulciform; hosts: *Tamarix* spp. or *Calligonum comosum* **2**

2. Onychium as long as 1st or 2nd tarsomere; pronotum transversely rugulose; vestiture comprised of piliform scales (Fig. 18); on *Calligonum comosum*; body length 1.5−2.2 mm.. ***O. dumonti***
-. Onychium 0.7−1.0 times as long as remaining part of tarsus; pronotum reticulate or transversely rugulose; vestiture comprised of lanceolate scales (Fig. 17); on *Tamarix* spp. **3**
3. Pronotum reticulate; body brown to reddish; body length 1.1−1.8 mm, rarely above 1.5 mm ..... ***O. poupillieri***
-. Pronotum transversely rugulose; body dark brown; body length 1.8 mm..... ***O. vincenti***

Onychapion (*Aphoplopodapion*) *poupillieri* (Wencker, 1864)

(Fig. 17)

Material examined

ISRAEL: **Southern Coastal Plain:** Magen, 20.i.2002, W. Kuslitzky (3♂, 3♀); **Jordan Valley:** Ma'ale Gilboa', 8.vi.1982, Q. Argaman (1♂, 1♀); **Dead Sea Area:** Nahal Qumeran, 3.ii.1998, N. Meltzer and V. Kravchenko, on *Tamarix* sp. (1♂); 'Enot Zuqim, 3.iii.1998, N. Meltzer and V. Kravchenko, ex *Tamarix nilotica* #2, 18.iii.1998 (1♂), 9.vi.1997 (1♀), 18.v.1998 (2♂, 1♀), all L. Friedman; 'Enot Samar, 22.vi.1998, on *Tamarix* sp. #2 (1♂), 21.vii.1998, ex *Tamarix* sp. #4 (1♀), all N. Meltzer and V. Kravchenko; Nahal David spill, nr. 'En Gedi, 14.ii.1971, D. Gerling (1♂); Nahal Ze`elim, 12 km S 'En Gedi, 22.xii.1970, D. Gerling (1♀); 'Ein-el-Turaba, 27 km S 'En Gedi, 14.ii.1971, D. Gerling (1♂); Nahal Parsa, 1.iv.1999, V. Chikatunov and N. Meltzer (1♂,1♀); Nahal Zohar spill, 35 km S 'En Gedi, 11.iv.1971 (1♂, 1♀), 6.v.1971(1♀), 24.vii.1971 (1♀), all D. Gerling; Zomet Zohar, 9.vi.1997, L. Friedman (1♂, 3♀), 4.iv.1998 (1♀), 22.iv.1998 (1♀), all A. Freidberg; **'Arava Valley:** Nahal Zin, [Wadi Fuqra], 18.iii.1947, A. Moscona (1♂), 4.xii.1997, A. Maklakov (1♂), 22.iii.1998, I. Yarom and V. Kravchenko, on *Tamarix* sp. #1 (1♂), 6.iv.1998, I. Yarom and V. Kravchenko, on Tamarix sp. #1 (1♀), 4.vi.1998, N. Meltzer (16♂, 20♀); Hazeva Field School, 18.iii.1998, E. Ashkenazi (1♀), Nahal Neqarot, N Sappir, 6.iv.1998, I. Yarom and V. Kravchenko, on *Tamarix* sp. #4 (1♀); Yotvata, 21.ix.1957, J. Wahrman (1♂); **Northern Negev:** Magen, 4.v.1972, Limon (2♂, 2♀); **Central Negev:** 'En 'Avedat, 22.ii.1973, Limon (2♀).

EGYPT: SINAI: Tarfat el-Kadarin, 17.v.1972, A. Lupo, on *Tamarix* (2♂, 3♀); Wadi Wassit, 17.v.1972, A. Lupo (2♀).

Distribution

Spain, western North Africa (Wagner, 1932), Israel (Gerling and Kugler, 1973), Egypt (Alfieri, 1976).

Host plants

One specimen emerged from *Tamarix nilotica* (Ehrenb.) Bunge (Tamaricaceae), but the part of the plant in which the larva develops is unknown. Alfieri (1976) reported that a few specimens "emerged from galls of *Eriophyes strobilobius* on *Tamarix nilotica*" in the vicinity of Cairo.

Phenology

Collected on *Tamarix* spp. predominantly from February to July, with the number of

collected specimens rising sharply in the second half of this period. A single record of an emergence in July is dubious.

Onychapion (*Hoplopodapion*) *dumonti* (Peyerimhoff, 1929)

(Fig. 18)

Material examined

ISRAEL: **Central Negev:** Zomet Rotem, 9.vi.1997 (1♂), 1.iii.2000 (1♂, 1♀), 9.vii.2001 (1♂, 1♀, 1 teneral), all L. Friedman, on *Calligonum comosum*; Mishor Rotem, 16.iii.1999, L. Friedman, on *Calligonum comosum* (26♂, 20♀).

Distribution

Algeria, Tunisia (Schön, 1993), Israel (Halperin and Fremuth, 2003).

Host plants

Reared from *Calligonum comosum* L'Herit (Polygonaceae) by Halperin and Fremuth (2003) and by us. The infested part of the plant is unknown.

Phenology

Unclear. A single newly emerged (teneral) specimen was collected on 9.vii.2001.

Onychapion (*Hoplopodapion*) *vincenti* (Desbrochers, 1904)

Material examined

ISRAEL: **Dead Sea Area:** Nahal Parsa, 1.iv.1999, V. Chikatunov and N. Meltzer, on *Tamarix* (1♂). Halperin and Fremuth (2003) recorded *O. vincenti* from the northern Negev (October).

Distribution

Egypt (Wagner, 1932; Alfieri, 1976), Israel (Halperin and Fremuth, 2003).

Host plants

Recorded from *Tamarix* spp. by Halperin and Fremuth (2003).

Onychapion (*Onychapion*) *tamarisci* (Gyllenhal, 1839)

Material examined

Recorded from Northern Sinai (El Arish, vi) (Alfieri, 1976), but no specimens were available for study in Israeli collections. Voss (1964) recorded one specimen from southern Jordan (Wadi Ma'in near the Dead Sea). The specimen was not available for study. All specimens we saw from the Jordanian side of the 'Arava Valley belonged to *O. poupillieri*.

Distribution

Mediterranean region (Alfieri, 1976; Voss, 1964; Wagner, 1932), Caucasus (Ter-Minassian, 1972a), Afghanistan (Voss, 1959b).

Host plants

Tamarix spp. (Alfieri, 1976).

Perapion Wagner, 1907

This genus contains about 40 species in the Palaearctic and Nearctic regions, a few species in India, and one species in South Africa (Cape region); the latter species was introduced into Australia as a biocontrol agent. Host plants: Polygonaceae (*Rumex*, *Emex*, *Polygonum*, *Calligonum*, *Atraphaxis*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999; Legalov, 2000). Four species are recorded from the study area.

Key to species of *Perapion* in Israel

1. Body black, shiny, elytra with blue, green or violet tinge; frons densely punctate and striolate. Tarsi broad, second tarsomere 0.5−1 times as long as wide, mesophilic and meso-hygrophilous species; body length 2.0−3.5 mm. **2**
-. Body and elytra dark brown, matte; frons sparsely punctate, not striolate; male legs not armed. Tarsi narrow, second tarsomere 1.5−2 as long as wide, xerophilic species; body length 1.7−2.0 mm. **3**
2. Punctures on head and pronotum round; elytra 1.5−1.6 times as long as wide, narrowly rounded in apical third, apices of elytra visible in dorsal view; in male 1st metatarsomere armed with ventral spine..... ***P. violaceum***
-. Punctures on head and pronotum oblong; elytra 1.2−1.3 times as long as wide, rounded in apical third, apices of elytra not visible in dorsal view ..... ***P. affine*** (based on specimens from Europe)
3. Apical part of rostrum cylindrical; basal flange of pronotum 1.3 times as wide as apical flange, pronotum impunctate or punctures minute; body wide, elytra distinctly rounded at sides, at least 2.6 times as wide as base of pronotum (Figs. 72−75); on *Polygonum arenastrum*, in areas with the Mediterranean type of vegetation ..... ***P. eretzisrael*** **n. sp.**
-. Apical part of rostrum flattened; apical flange of pronotum 1.1 times as wide as basal flange, pronotum with distinct round punctures; body slender, elytral at sides slightly rounded, less than twice as wide as base of pronotum (Figs. 66, 67); on *Calligonum comosum*, in sand dunes, desert ..... ***P. marseuli***

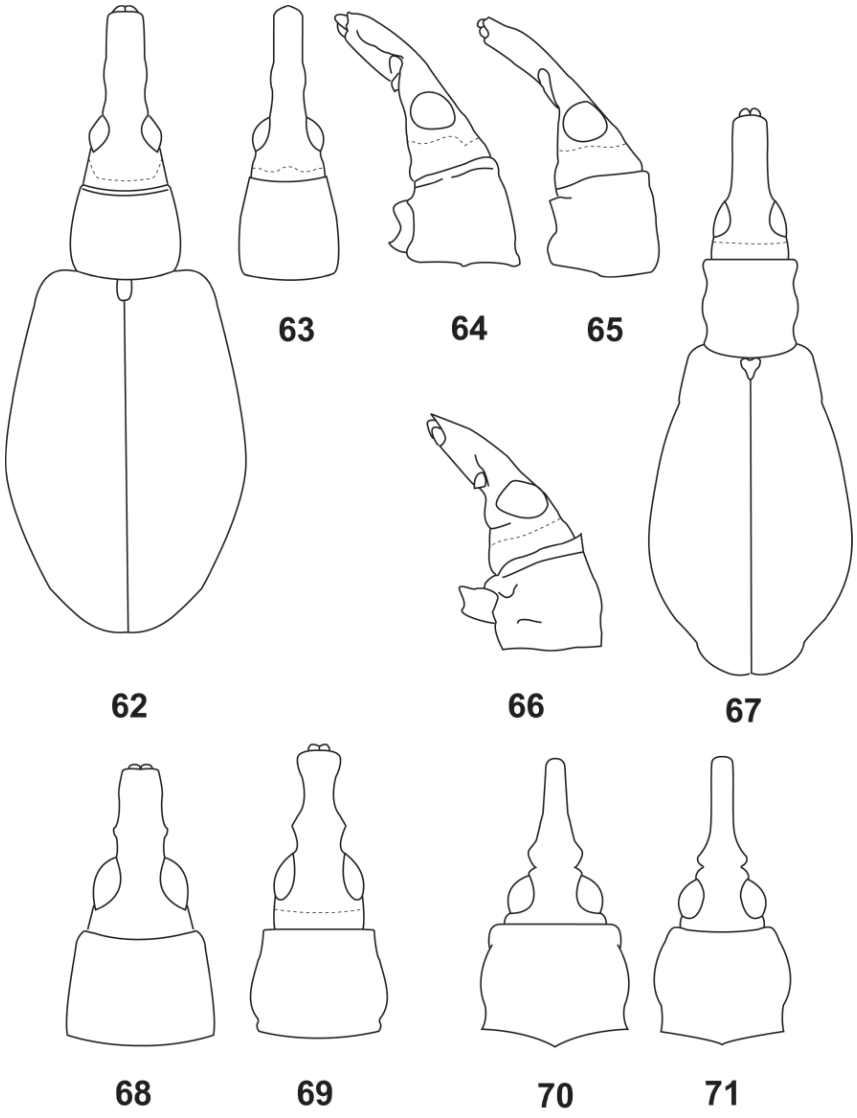
Perapion affine (Kirby, 1808)

Material examined

Recorded from Israel by Bodenheimer (1937), but as no specimens were available for study in Israeli collections, this requires confirmation.

Distribution

Widely distributed over the Palaearctic Region (Wagner, 1932; Ehret, 1990; Gønget, 1997), but so far no records from Asia are known (Krivets and Legalov, 2002; Legalov and Opanasenko, 2000; Nasreddinov, 1975). The most eastern record is the Caucasus (Daghestan, middle and high mountain regions) (Ter-Minassian (1972a).



Figs. 62−71. Tribes Aplemonini (62−69) and Metapiini (70, 71): 62. *Perapion violaceum*, male, dorsal view. 63. *Perapion violaceum*, female, head and pronotum, dorsal view. 64. *Perapion violaceum*, male, head and pronotum, lateral view. 65. *Perapion violaceum*, female, head and pronotum, lateral view. 66. *Perapion marseuli*, male, head and pronotum, lateral view. 67. *Perapion marseuli*, male, dorsal view. 68. *Pseudoperapion brevirostre*, male, rostrum, dorsal view. 69. *Pseudoperapion brevirostre*, female, rostrum, dorsal view. 70. *Metapion normandi*, male, head and pronotum, dorsal view. 71. *Metapion normandi*, female, head and pronotum, dorsal view.

Host plants

Reared in Europe from *Rumex acetosa* L. (Scherf, 1964).

Perapion eretzisrael Friedman and Freidberg, n. sp.

(Figs. 72–79)

Diagnosis

P. eretzisrael belongs to the *myochroum* species-group, distributed in the arid areas of North Africa and the Middle East (*marseuli* (Wencker)) and Middle Asia (*arenarium* (Bajtenov), *myochroum* (Schilsky), *vulpecula* Schubert and probably *dealbatum* Bajtenov, *jelineki* Bajtenov, *kuraense* Bajtenov, *smreczynskii* Bajtenov). It is well defined from *marseuli* in the form of rostrum, pronotum and elytra, pronotal punctation and in the host plant.

Description

Male (Figs. 72, 73). **Body**. Length: 1.76–1.80 mm. Maximum width of elytra: 0.76–0.82 mm, in apical third. Body, elytra, legs and antenna dark brown, surface finely microreticulate. Vestiture moderately dense, comprised of white, long, recumbent, piliform scales, not arranged in regular rows on elytral intervals, slightly more condensed at base of 3rd interval.

Rostrum. Cylindrical, almost straight, nearly parallel-sided, mesorostrum weakly widened, pubescent, microreticulate, only apex glabrous, shiny, 0.34–0.38 mm long. Antenna inserted in anterior part of basal third of rostrum, scapus 0.08 mm, 1st funicular segment: 0.06 mm, 2nd–6th segments: 0.04 mm, club: 0.18 mm, wide, ovate, segments clearly separated, apical segment pointed, not pubescent. Antennal scrobes latero-ventral, foveiform.

Head. Subrectangular. Eye round, comparatively large, prominent. Frons flat, pubescent, neither striolate nor punctate, width 0.10–0.12 mm. Vertex slightly convex. Temple about 0.6 times as long as eye.

Pronotum. Trapezoidal, length: 0.34–0.36 mm, width: anterior 0.30–0.32 mm, posterior: 0.40–0.44 mm; slightly flattened dorsally; sides weakly arched, convex at middle, slightly constricted posteriorly; base nearly straight. Disc pubescent, sparsely punctate, punctures minute, round, shallow, smaller than single ommatidium, interspaces more than 4 times as wide as puncture, flat, microreticulate, prescutelular fovea rounded, very shallow.

Scutellum. Subtriangular, elongate, slightly concave, bare, with apex rounded and slightly elevated.

Elytra. Flattened basally, slightly convex in apical 0.25, pyriform, humeral calli slightly prominent; interstriae more than 5 times as wide as striae, convex, microreticulate, covered with 1–2 irregular rows of scales, thicker and denser in apical third; striae deep, specialized setae not observed. Strial formula: 1, (2+9), (3+4), (5+6)+(7+8).

Legs. Slender; mesocoxae contiguous; femora scarcely incrassate; male legs unarmed; onychium 0.6 times as long as first three tarsomeres combined. Claws slightly swollen at base.

Male genitalia (Figs. 76–79). ***Tegmen*** (Fig. 78): tegminal plate concave, rounded, slightly longer than wide; tegminal apodeme 3 times as long as tegminal plate, dilated apicad; basal piece fused to prostegium; prostegium shallowly notched, with small, rounded laterointernal tooth; postfenestral sector moderately sclerotized; fenestrae transverse, curved, separated, closed internally and externally; apical lobes transverse, rounded, separated by triangular notch, not reaching fenestral area; suprafenestral sclerite with about dozen round sensillae; membranous lobes microsetose. ***Aedeagus*** (Figs. 76, 77): flat, wide, moderately curved, bent and slightly expanded in apical third, with sclerotized median keel; apex rounded, slightly recurved in profile; aedeagal apodeme shorter than tube; endophallus with large area of minute denticles at base of tube, 10 longitudinal rows of larger denticles from apex to middle part of tube, and 6 or 7 transverse folds at base of middle part. ***Sternite 9*** (spiculum gastrale) (Fig. 79): Y-shaped, thick, manubrium 6 times as long as arms, latter rounded.

Female (Figs. 74, 75). **Body**. Length: 1.86–1.88 mm. Maximum width of elytra 0.88 mm. Vestiture, sculpture and coloration as in male.
Rostrum. More slender than in male, 0.44 mm long. Temple 0.5 times as long as eye.
Pronotum. Length: 0.38 mm; width: anterior: 0.38 mm, posterior: 0.44 mm.

Etymology

The name of this species refers to its distribution in the Land of Israel, "Eretz Israel" in Hebrew, a noun in apposition.

Material examined

Holotype ♂, ISRAEL: Umm el Ghanam, 26.v.2005, L. Friedman, ex *Polygonum arenastrum*, 5.vi.2005 (TAUI). Paratypes**,** Umm el-Ghanam, 28.v.2003, L. Friedman (1♀, TAUI); Umm el Ghanam, 26.v.2005, L. Friedman, on *Polygonum arenastrum*, (2♂, 1♀, TAUI); Umm el Ghanam, 26.v.2005, L. Friedman, ex *Polygonum arenastrum*, 5.vi.2005 (2♂, 1♀, TAUI); Umm el Ghanam, 17.viii.2005, L. Friedman (6♂, 1♀, TAUI), same A. Freidberg (8♂, 9♀, TAUI); Migdal Afeq (labeled "Migdal Zedeq"), 13.xii.1997, A. Freidberg (1♂, TAUI). Part of paratypes will be donated to BMNH, NMNH, SZMN, MW, ZIN and SCHO. Geographical information on the above localities is given in the Distribution section.

Distribution

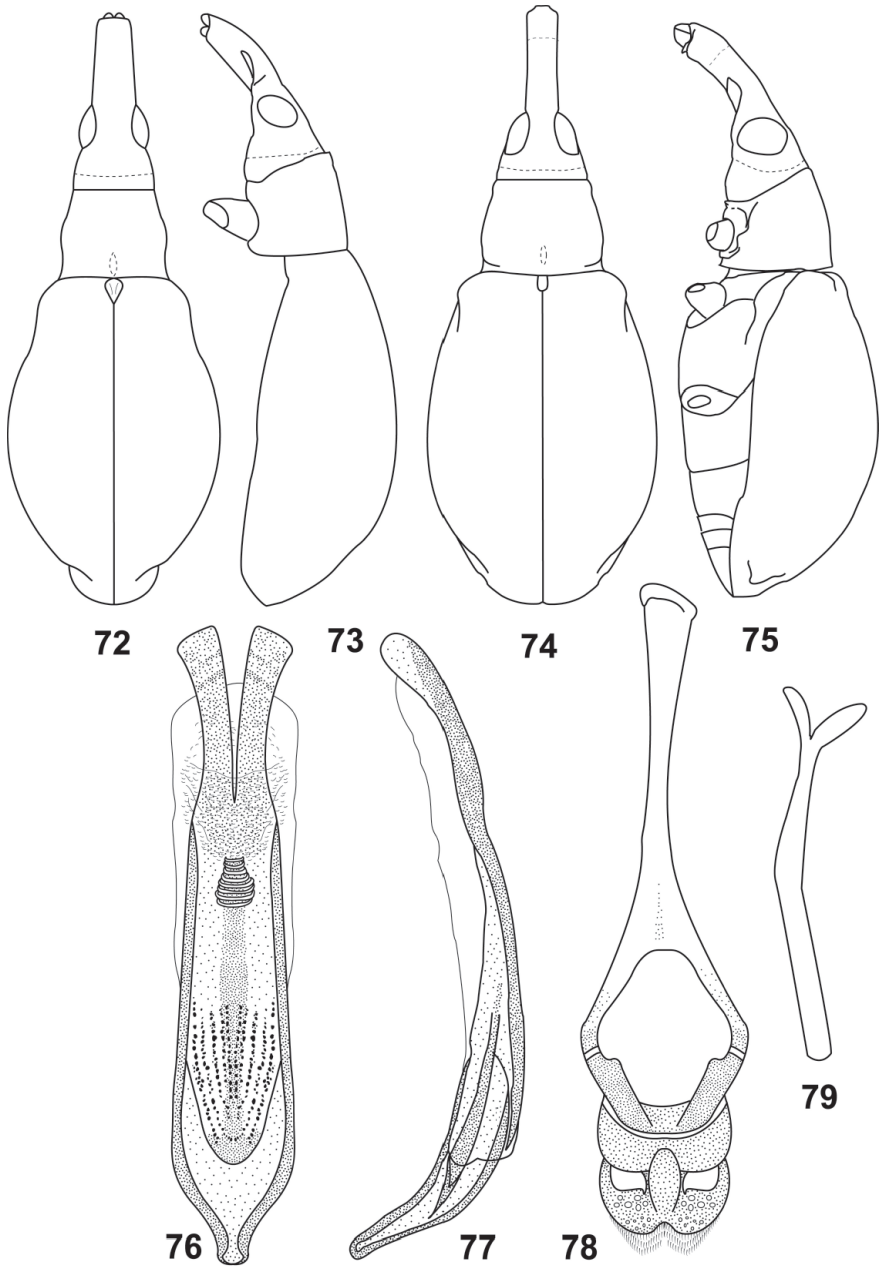
Endemic to Israel, collected in Lower Galilee and the foothills of Judea.

Host plants

Polygonum arenastrum Boreau (Polygonaceae). The infested part unknown.

Phenology

Breeding season: April-May; emergence: June-August. Not collected on trees.



Figs. 72–79. *Perapion eretzisrael* n. sp.: 72. Male, dorsal view. 73. Male, lateral view. 74. Female, dorsal view. 75. Female, lateral view. 76. Aedeagus, dorsal view. 77. Aedeagus, lateral view. 78. Tegmen, dorsal view. 79. Spiculum gastrale.

Remarks

The host plant, *Polygonum arenastrum*, is a typical ruderal species widespread throughout the Mediterranean zone of Israel, occurring in many types of biotopes, including roadsides and fields (Feinbrun-Dothan and Danin, 1991). We expect the distribution of *Perapion eretzisrael* eventually to match that of its host in Lebanon and Syria.

***Perapion marseuli* (Wencker, 1864)**

(Figs. 66, 67)

Material examined

ISRAEL: **Central Negev:** Mishor Rotem, 1.iv.1991, J. Halperin, on *Calligonum comosum* (2♀), 10.i.1991, J. Halperin, on *Calligonum comosum* (1♀), 16.iii.1999, L. Friedman, on *Calligonum comosum* (1♀); Zomet Rotem, 1.iii.2000, L. Friedman, on *Calligonum comosum* (1♀); Oron, Rt. 206, 21.iv.2005, L. Friedman (1♂?, teneral); **'Arava Valley:** S Yahel, 1.vi.1991, J. Halperin, on *Calligonum comosum* (1♀).

Distribution

Algeria, Tunisia (Wagner, 1932), Iran (Borumand 1998), Israel (Halperin and Fremuth, 2003).

Host plants

Reared from *Calligonum comosum* L'Herit (Polygonaceae) by Halperin and Fremuth (2003) and by us. The infested part is unknown.

***Perapion violaceum* (Kirby, 1808)**

(Figs. 62–65)

Material examined

ISRAEL: **Golan Heights:** Senir, 12.v.1998, V. Chikatunov (1♀); Nahal 'Iyyon Reserve [HaTanur], 7.v.1979, D. Furth (1♀); **Upper Galilee:** Hula Valley, 3.ii.1958, on alfalfa (1♀), 10.v.1958, on clover (1♀; PPIS), 6.v.1959, on clover (1♂; PPIS), **Carmel Ridge:** Hefa [Kaifa], E. Reitter (1♀); **Jordan Valley:** Bet Zaida Natural Reserve, 29.v.2006, E. Orbach (2♀; ORB); **Central Coastal Plain:** Nahsholim, 10.i.1960, on vetch (1♂); **Southern Coastal Plain:** Bet Dagan, 6.v.1959, on clover (1♂); Rehovot, iv.1931, I. Aharoni (1♀); Palmahim [Rūbīn], iv.1930, I. Aharoni (1♂, 1♀).

Distribution

Widely distributed over the Palaearctic Region (Wagner, 1932, Gønget, 1997), but so far no records from Asia are known (Krivets and Legalov, 2002; Legalov and Opanasenko, 2000; Nasreddinov, 1975). The most eastern record is the Caucasus (Daghestan, middle and high mountain region) (Ter-Minassian (1972a).

Host plants

Not reared in Israel. Reared in Europe and in the Caucasus from stems of *Rumex acetosa* and *Polygonum* (Ter-Minassian, 1972a; Dieckmann, 1977; Ehret, 1990).

Phrissotrichum Schilsky, 1901

In the Mediterranean region this genus contains 11 species according to Alonso-Zarazaga (1990b), and five species according to Ehret (1997). Host plants: Cistaceae (*Cistus*, *Halimium*, *Helianthemum*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). One species occurs in the study area.

Phrissotrichum tubiferum (Gyllenhal, 1833)

Material examined

ISRAEL: **Upper Galilee:** Har Meron, 1100 m., 19.v.1998 (5♂, 1♀), ex *Cistus creticus* (9♂, 14 ♀), 5.v.1999 (16♂, 2 ♀), 26.v.1999 (5♂, 1 ♀), all L. Friedman, 14.iv.1999, A. Freidberg (7♂), 26.v.1999, V. Chikatunov (3♂); **Judean Hills:** Sattaf, 21.xi.1997 (1♂), 18.v.1998, ex *Cistus creticus* (6♂, 2♀), all L. Friedman; Yerushalayim, 8.iv.1988, J. Halperin, on *Cistus* sp. (2♀))

Distribution

Circummediterranean (Wagner, 1932, Angelov, 1976, Dieckmann, 1977, Ehret, 1997).

Host plants

We reared this species from flower capsules and fruits of *Cistus creticus* Linnaeus (Cistaceae). Recorded from *Cistus* spp. (Halperin and Fremuth, 2003).

Phenology

Oviposition: May; emergence: June. Adults are found on host plants from late spring to late autumn. Not collected on trees.

Biology

The egg is laid in flower buds and open flowers. Larval development starts among the stamens. As the fruit ripens, the larva penetrates it from above, continues to feed and pupates inside. Development lasts about four weeks. A few larvae can develop in the same fruit, but usually in different seeds.

Remarks

Found only in two localities: the summit of Har Meron, at an altitude of about 900−1100 m (Upper Galilee), and near Sattaf springs, at an altitude of 600 m (Judean Hills), although the host plant is very abundant in the Mediterranean zone of Israel.

Pseudoperapion Wagner, 1930

This genus contains a single species in the western part of the Palaearctic Region, including Israel. Host plants: Hypericaceae (*Hypericum perforatum* and *H. hirsutum*) (Schilsky, 1906a; Urbann, 1923; Scherf, 1964; Alonso-Zarazaga, 1990b; Ehret, 1990; Alonso-Zarazaga and Lyal, 1999).

**Pseudoperapion brevirostre* (Herbst, 1797)

(Figs. 68, 69)

Material examined

ISRAEL: **Southern Coastal Plain:** Nizzanim, 6.vi.2000 (3♂, 3♀), 11.vi.2001 (9♂, 16♀), 8.vi.2004 (1♀), all L. Friedman, all on *Hypericum triquetrifolium*).

Distribution

Europe, Algeria, Turkey, Caucasus (Gønget, 1997; Ter-Minassian, 1972a, Wagner, 1932), Israel (only in sand dunes between Ashdod and Ashqelon).

Host plants

Not reared in the study area, but collected on the flowers of *Hypericum triquetrifolium* Turra (Hypericaceae), a widespread ruderal plant in the Mediterranean zone of Israel that is most likely its host. In northern Germany fruit capsules of *Hypericum perforatum* L. and *Hypericum hirsutum* L. are infested (Dieckmann, 1977).

Phenology

Breeding period: June. We visited Nizzanim regularly, but *P. brevirostre* was found only during this short period, which also matches the blooming period of *H. triquetrifolium*. We speculate that hibernation lasts from July to the beginning of June. In northern Germany adults appear from April to October, and oviposition occurs in June-August (Dieckmann, 1977).

Tribe **Exapiini Alonso-Zarazaga, 1990**

Exapion Bedel, 1887

This genus contains 36 species in the west Palaearctic region and Caucasus, with the majority of species known from south-western Europe. Introduced into Australia and New Zealand as a biocontrol agent. Host plants: Fabaceae, trees and shrubs of the tribe Genisteae (*Genista*, *Calicotome*, *Echinosparthum*, *Echinacea*, *Cytisus*, *Chamaecytisus*, and *Ulex*)) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). One species occurs in the study area.

Exapion cannescens (Desbrochers, 1894)

(Fig. 7)

Material examined

ISRAEL: **Golan Heights:** Panyas, 2.vii.1997, L. Friedman, ex seeds of *Calicotome villosa* (1♂,

5♀); **Upper Galilee:** Hermon Field School, v.1997, L. Friedman, ex *Calicotome villosa* (22♂, 12♀); **Carmel Ridge:** Nahal Oren, 27.iii.1996 (1♂, 2♀), 1.iv.1997 (1♀), 10.iii.1998 (1♂), all V. Chikatunov and T. Pavliček, 6.vii.1997, L. Friedman, on/ex seeds of *Calicotome villosa* (19♂, 27 ♀); **Samaria:** Qedumim, iv.2000, L. Friedman (1♀); 'Ez Efrayim, 4.xii.1997, on/ex *Calicotome villosa* (3♂, 1♀), 13.iii.1998 (3♀), 1998, on *Calicotome villosa* (6♂, 10♀), all L. Friedman; Rantis junction, 28.ii.2001, L. Friedman (1♂, 1♀); **Central Coastal Plain:** Tel Aviv, Netivey Ayalon roadsides, 10.iii.2001, L. Friedman (1♀); Ramat Gan, 7.iii.2005, S. Wertheimer, ex *Calicotome villosa* (2♀); **Southern Coastal Plain:** Mavqi'im, 31°37N 34°34'E, 18.ii.2004, I. Zonstein (2♂), L. Friedman (1♀); **Judean Hills:** Sattaf, 21.xi.1997, L. Friedman (1♂); Yerushalayim, 'En Kerem, 5.xi.1941 (2♂, 4♀).

Distribution

Greece, Turkey, Syria, Lebanon, Israel (Wagner, 1932).

Host plants

Calicotome villosa (Poiret) Link (Fabaceae) (seeds).

Phenology

Oviposition starts with fruit ripening of *C. villosa* in January-February; emergence: May. Adults do not migrate to trees.

Biology

The eggs are laid into the pod, near the seed, when the pod is still green and soft. Immature development lasts about a month. Adults never bore emergence holes, but wait until the pods open naturally. Some pods open late, and the adult beetles may remain inside from a few months (in nature) up to about a year (in the laboratory).

Parasitoids

Three species of parasitoids emerged from the dry pods of *C. villosa*: *Triaspis* sp. (Braconidae), *Eupelmella* sp. (Eupelmidae) and *Tetrastichus* sp. (Eulophidae). However, there is no certainty that they are parasitoids of only *E. cannescens*. Larvae of parasitoids were found on both Apionidae and Bruchidae larvae infesting the pods, and one parasitoid larva had a secondary parasitoid on it. *Triaspis* spp. are known as parasitoids of Apionidae (Nikol'skaya, 1952). *Triaspis floricola* is known from *Eutrichapion arrogans* in Israel (Melamed-Madjar, 1970), although it is known also from Bruchidae (Nikol'skaya, 1952; Peck *et al*., 1964). *Eupelmella* spp. are extremely wide-ranged parasitoids and secondary parasitoids, and can parasitize both beetles and their braconid parasites (Nikol'skaya, 1952; Peck *et al*., 1964). *Tetrastichus* spp. are wide-ranged parasitoids of eggs or larvae of many insects (Nikol'skaya 1952, Peck *et al*., 1964).

Remarks

In addition to *E. cannescens*, two other seed predators were found by us in *C. villosa* pods: namely, *Bruchus ulicis* Mulsant & Rey and *Bruchidius lividimanus* (Gyllenhal); these species were also reported by Anton *et al*. (1997) from *C. villosa* in Israel. Both apionid and bruchid larvae were often found in the same pod, and there are a few obvious biological differences between them: the bruchid larvae devour the seed internally, and pupate inside the seed with entire or slightly damaged shell, and adult bruchids penetrate both the shell of the seed and the shell of the pod when they emerge, producing a hole; the apionid larvae feed externally, pupate inside the broken shell remnants, and the adult apionids then wait until the pod opens naturally.

****Lepidapion* Schilsky, 1906**

This genus contains 10 to 16 species in the Mediterranean region, including the Canary Islands and Madeira. Host plants: Fabaceae (*Retama*, *Genista*, *Cytisus*, *Ulex*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). One species occurs in the study area.

****Lepidapion* (*Hidryocneme*) *alfierii* (Pic, 1915)**

(Figs. 6, 8)

Material examined

ISRAEL: **Upper Galilee:** Har Meron, 1100 m, 23.ix.1997, L. Friedman (1♂); **Carmel Ridge:** Nahal Oren, 15.vi.1998 (1♂), 6.vii.1998 (1♀), all V. Chikatunov and T. Pavliček); **Northern Coastal Plain:** Qesarya, 23.iv.1998, A. Freidberg (5♂, 4♀); **Central Coastal Plain:** Mikhmoret, 25.iv.1981, Q. Argaman (2♀); **Southern Coastal Plain:** Rishon leZiyyon, 23.iii.2005, W. Kuslitzky (1♀); Ashdod dunes, 9.viii.1997 (4♂, 2♀), 27.xi.1997 (5♀), 28.i.1998 (8♂, 7♀), all L. Friedman; Nizzanim, 3.vi.1997 (11♂, 16♀), 9.vi.1998 (7♂, 8♀), all L. Friedman, 8.vi.2004, A. Freidberg (1♂; 3♀) **Judean Desert:** 'Arad, Hatrurim, 21.xi.1997, L. Friedman (4♀), 'Arad-Dead Sea Rd., 23.iii.1999, L. Friedman (1♂, 2♀); **Dead Sea Area:** 'Enot Samar, 22.iv.1998, A. Freidberg (2♀); **Northern Negev:** Bor Mashash, 15.iv.1997 (2♂, 1♀), 7.iv.1998 (3♂, 3♀), all L. Friedman; Mishor Halamish, 10.vi.1997, L. Friedman (2♂, 1♀); Nahal Lavan, Rt. 10, 17.iv.1998 (8♂, 8♀), 7.v.1998 (3♂, 12♀), all A. Freidberg; **Central Negev:** Mamshit, 5.v.1961, J. Wahrman (1♀), 9.vi.1997, L. Friedman (1♀); Mishor Rotem, 16.iii.1999, L. Friedman (1♀); Mezad Tamar (Ma'ale Tamar), 9.vi.1997, L. Friedman (3♂, 1♀); Nahal Yamin, Ma'ale 'Aqrabbim, Rd., 9.vi.1997, L. Friedman (1♂); Nahal Boqér, 24.i.2000, A. Freidberg (1♀); 'En 'Avedat, 9.iii.1973, D. Furth (1♀); 'En Shaviv, 18−19.iv.2001, L. Friedman (2♀); Makhtésh Ramon, 15.iii.1975, A. Freidberg (1♂)

EGYPT: SINAI: **Sinai Mountains:** Moyat Ramliya, 30 km NE St. Katharina, 28.vi.1998, L. Friedman (31♂, 36♀), A. Freidberg and F. Kaplan (8♂, 10♀); Gebel El Murawah, 30 km SW Nuweiba', 28.vi.1998, L. Friedman (1♂, 2♀), A. Freidberg and F. Kaplan (3♀); St. Katharina, 40 km. NE, 27.vi.1998, A. Freidberg and F. Kaplan (4♂). OTHER MATERIAL: Wadi Isla, iii, Wadi El Arish, iv, (Alfieri, 1976).

Distribution

Egypt (Alfieri, 1976), Israel.

Host plants

Not yet reared. Consistently collected on *Retama raetam* (Forsskal) Webb, which is known as a host for other species of this genus, and is strongly suspected to be the host.

Phenology

Adults collected throughout the year only on the host plant.

Remarks

Most species of *Lepidapion* are difficult to distinguish from each other, as both their external features and genitalic characters are very uniform. The taxonomic validity of many species requires a re-evaluation, following which many are expected to be synonymized. The original description of *L. alfierii* by Pic (1915) is brief and uninformative, providing only a few characters. M. Pic compared *L. alfierii* to *L. cretaceum* (Rosenhauer, 1856), a species widespread in southern Europe and North Africa, but mentioned only one difference: elytra of *L. alfierii* are less significantly striated and more uniformly colored than in *L. cretaceum* (Pic, 1915). Alfieri (1976) reported *L. alfierii* from Egypt, but considered it to be a junior synonym of *L. cretaceum*. Halperin and Fremuth (2003) reported this species as *Hidryocneme cretaceum*. We compared the material from Israel and the Sinai Peninsula with some specimens from Spain and Tunisia, kindly sent to us by Ing. K. Schön, and observed no differences in the male genitalia. However, we found that the scales that compose the elytral pubescence are larger in the specimens from Israel and Sinai than in specimens from Spain and Tunisia, and are slightly but significantly concave. This might have led Pic to state that "the elytral coloration is more uniform and striae are less conspicuous – the scales are overlapping like tiles and concealing the striae". We prefer to leave *L. alfierii* as a valid species, as opposed to the opinion of Halperin and Fremuth (2003). The subgenus *Hidryocneme* differs from *Lepidapion* s. str. in the presence of both round recumbent and oblong semierect scales on the tibiae and femora (Alonso-Zarazaga, 1990).

Tribe **Oxystomatini Alonso-Zarazaga, 1990**
Subtribe Catapiina Alonso-Zarazaga, 1990
***Catapion* Schilsky, 1906**

This genus contains about 25 species in the Palaearctic Region. Host plants: Fabaceae, tribes Loteae (*Acanthyllis*), Trifoleae (*Melilotus*, *Medicago*, *Ononis*, *Trifolium*), and Galegeae (*Astragalus*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). Seven species occur in the study area.

Key to species of *Catapion* in Israel

1. Onychium more than twice as long as 3rd tarsomere; on *Astragalus* spp. (Fig. 100) ..... ***C. halperini* n. sp.**
-. Onychium as long as 3rd tarsomere (Fig. 101) **2**

2. Frontal stria from metarostrum nearly to vertex (Figs. 90, 106) ..... ***Catapion* sp.**
-. Frontal stria limited to frons, not extending to base of rostrum **3**
3. Eye touching frontal line in lateral view, or projecting beyond it; frons excavated or concave; punctation of rostrum, head and pronotum coarser (Figs. 80–83)..... **4**
-. Eye not touching frontal line in lateral view; frons convex; punctation of rostrum, head and pronotum less coarse (Figs. 84–89)..... **5**
4. Eye projecting over frons in lateral view; frons excavated; pronotum noticeably transverse (Figs. 80, 81)..... ***C. pubescens***
-. Eye not projecting over frons in lateral view; frons concave; pronotum about as long as wide (Figs. 82, 83)..... ***C. jaffense***
5. Elytra with bluish tinge, pubescence translucent; rostrum conical, at base wider than frons in dorsal view..... ***C. burdigalense***
-. Elytra black, pubescence white; rostrum cylindrical, at base as wide as frons in dorsal view **6**
6. General appearance black, body less pubescent; elytral scales sparser, each extending to level of base of adjacent scales; rostrum 1.1–1.2 times as long as pronotum in male and 1.2–1.3 times as long as pronotum in female; female rostrum with finest sparse pubescense, vanishing toward apex (Figs. 84, 85)..... ***C. curtisii***
-. General appearance grayish, body more conspicuously pubescent; elytral scales denser, each extending to level of middle of adjacent scales; rostrum usually more than 1.3 times as long as pronotum in both sexes; female rostrum usually covered with coarse and dense pubescence nearly up to apex (Figs. 86, 87)..... ***Catapion* sp. nr. *seniculus***

****Catapion burdigalense* (Wencker, 1858)**

(Figs. 88–89)

Material examined

ISRAEL: **Golan Heights:** Panyas, 27.v.1999, A. Freidberg (1♀), 29.v.2000, L. Friedman (1♀); Nahal Senir, 24.v.1999, L. Friedman (1♂).

Distribution

Southern Europe, North Africa, Syria, Jordan (Voss, 1964).

Host plants

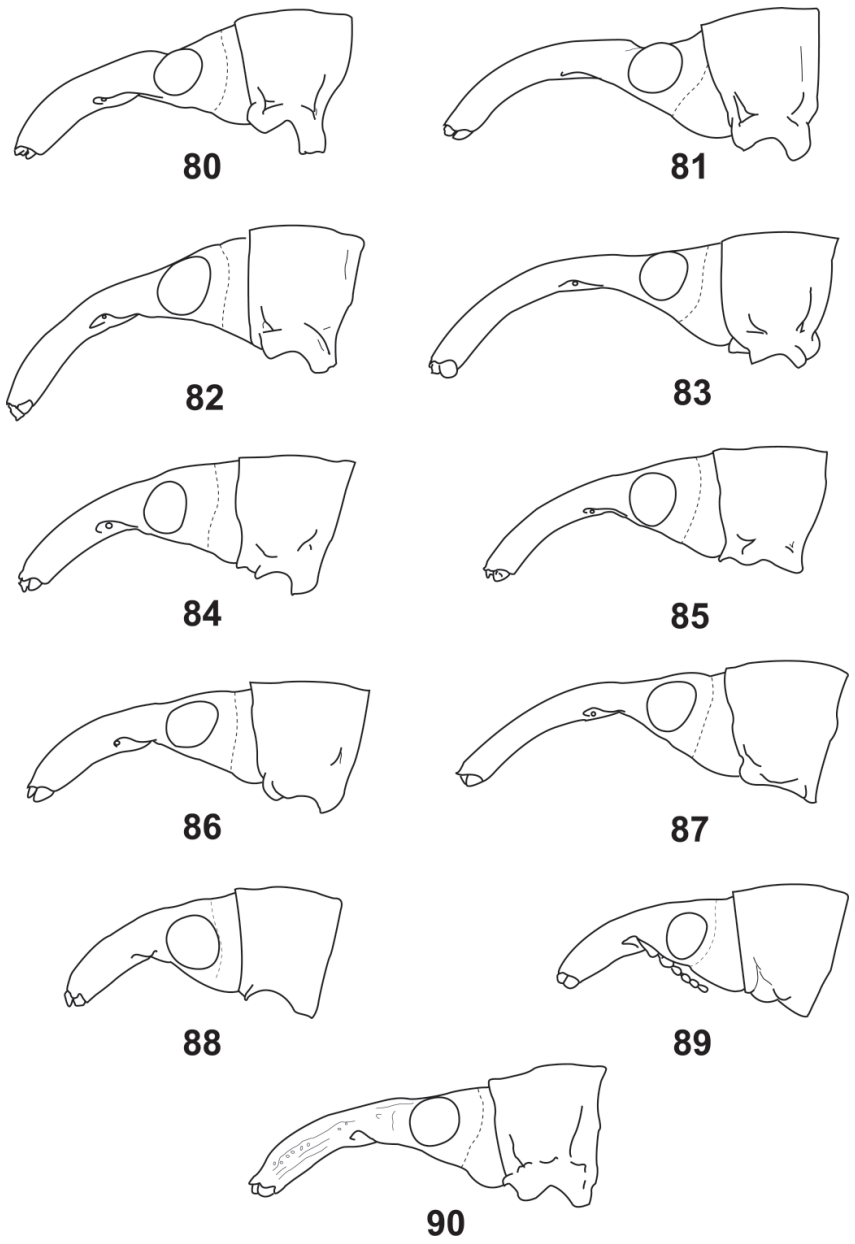
Not reared in the study area. Inducing stem and root galls on *Medicago minima* (Urbann, 1923; Voss, 1965) and *Ononis viscosa* (Hoffmann, 1958). Collected on trees.

****Catapion curtisii* (Stephens, 1831)**

(Figs. 84, 85)

Material examined

ISRAEL: **Hermon:** 2000 m, 29.v.2000, L. Friedman, on *Juniperus* sp. (1♂; 2♀), 5.viii.2004, L. Friedman on *Juniperus* (1♂; 2♀), 1800 m, 25.v.1998, V. Chikatunov (17♂; 21♀), 11.vi.2003, A. Freidberg (1♀), 1700 m, 5.viii.2004, L. Friedman (4♂; 3♀), 1600 m, 20.v.1997 (1♂), 26.vi.1997, (2♂), 17.vi.1999 (2♂), 28.v.2000 (3♀), 1300 m, 21.v.2002 (1♂; 2♀), 6.vi.2002 (1♂, 1♀), 12.vi.2003 (3♀), all L. Friedman; Har Dov Mizpe Ramta, 16.vi.1999, L. Friedman (1♂; 1♀); **Golan Heights:** Panyas, 33°15'N 35°42'E, 5.vi.2002, L. Friedman (1♀).



Figs. 80–90. *Catapion* spp., head and pronotum, lateral view: 80. *C. pubescens*, male. 81. *C. pubescens*, female. 82. *C. jaffense*, male. 83. *C. jaffense*, female. 84. *C. curtisii*, male. 85. *C. curtisii*, female. 86. *Catapion* sp. nr. *seniculus*, male. 87. *Catapion* sp. nr. *seniculus*, female. 88. *C. burdigalense*, male. 89. *C. burdigalense*, female. 90. *Catapion* sp., male.

Distribution

UK, western Europe (coasts of the Atlantic Ocean), the Mediterranean region (coastal rocks) (Gønget, 1997).

Host plants

Not reared in the study area. In Europe reared from *Trifolium repens* Linnaeus and *T. fragiferum* Linnaeus (Hoffmann, 1958; Dieckmann, 1977; Gønget, 1997). Collected on trees.

Catapion jaffense (Desbrochers, 1896)

(Figs. 82, 83)

Material examined

ISRAEL: **Golan Heights:** Qazrin, 14.v.1996, V. Chikatunov (1♂), 12.v.1998, L. Friedman (1♀), V. Chikatunov (1♂, 1♀); **Carmel Ridge:** Damun, 15.x.1959, J. Halperin (1♀); Nahal Oren, 24.ii.1998, V. Chikatunov and T. Pavliček (1♂); **Samaria:** ‘Ez Efrayim, 1.v.1998, L. Friedman (2♂, 2♀); Qedumim, 19.x.2000 (1♀), 27.xii.2000 (1♂), 29.xii.2000 (1♀), 25.iv.2001 (1♀); **Foothills of Judea:** Bet Meir, 8.v.1958, J. Werner (1♀); Newé Shalom, 19.v.1997 (1♀), 14.vi.1997 (1♀), all R. Hoffman), **Judean Hills:** ‘En Hemed [Aqua Bella], 14.vi.1958, J. Wahrman (1♀); Yerushalayim, 4.viii.1941, J. H. Brair (1♀), 28.viii.1947, W. Prechner (1♀), Qiryat ‘Anavim, 17.ix.1942, H. Bytinski-Salz (1♂); Silwān, 16.ix.1947, H. Sabri, (2♂, 1♀); Ramat Avishov, 18.i.2002, Y. Mandelik (1♂); ‘Adullam, 3.iv.2003, U. Columbus, T. Levanony (2♂).

Distribution

Central, eastern and south-eastern Europe (Gønget, 1997), eastern Mediterranean.

Host plants

Not reared in the study area, but the specimens from Qazrin, Golan Heights, were collected in an *Ononis spinosa* Linnaeus thicket. Reared from *Ononis* spp. by Halperin and Fremuth (2003). In Europe reared from *Ononis* spp. (Gønget, 1997). Collected on trees.

Remarks

Described from Jaffa vicinity (now part of Tel Aviv-Yafo). Recorded from Israel as *Apion seniculus* var. *jaffense* by Bodenheimer (1937), and as *C. jaffense* by Halperin and Fremuth (2003).

Catapion pubescens (Kirby, 1811)

(Figs. 80, 81)

Material examined

ISRAEL: **Hermon:** 1800 m, 25.v.1998, V. Chikatunov (1♀); **Upper Galilee:** Ramot Naftali, 28.v.2003, L. Friedman (1♀), 10.v.2003, L. Friedman (1♀); Rihaniya, 22.v.1998, A. Freidberg

(1♂); **Lower Galilee:** 1 km W HaSolelim, 31.vii.2001, E. Orbach (1♀); **Carmel Ridge:** Nahal Kelah, 22.v.2001, L. Friedman (1♀); Nahal Oren, 16.xii.1996, L. Friedman (1♂); Zikhron Ya'aqov, 1.v.1998, A. Freidberg (1♀); **Yizre`el Valley:** Néwé Ya'ar, 14.ii.1957, on *Trifolium* (1♂); **Central Coastal Plain:** Shefayim, 21.ii.1984, Q. Argaman (1♂); **Judean Hills:** 'En Hemed [Aqua Bella], 14.vi.1958, J. Wahrman (1♂), Shoresh, 16.vii.1984, J. Halperin (2♀), **Southern Coastal Plain:** 'Ayanot, 22.iv.1992, J. Halperin (1♂). Recorded from Judean Hills (Arub, near Hevron) by Voss (1964).

Distribution

Europe, North Africa, Caucasus, Syria, Israel, Jordan, Kazakhstan, Uzbekistan, Kyrgyzstan, Siberia (Wagner, 1932; Voss, 1964; Ter-Minassian, 1972; Dieckmann, 1977; Gønget, 1997; Halperin and Fremuth, 2003). Records from Siberia and Middle Asia are doubtful, not supported by recent research (Krivets and Legalov, 2002; Legalov and Opanasenko, 2000; Nasreddinov, 1975).

Host plants

Reared from *Trifolium* spp. (Halperin and Fremuth, 2003). In Europe associated with various small yellow-flowered *Trifolium* (Gønget, 1997) and *Coronilla scorpioides* (L.) Koch. (Ehret, 1990). Collected on trees.

**Catapion* sp. near *seniculus* (Kirby, 1808)

(Figs. 86, 87)

Material examined

ISRAEL: **Hermon:** 2000 m, 2.v.2000, L. Friedman, on *Juniperus drupacea* (2♂, 1♀), 5.viii.2004, L. Friedman, on *Juniperus drupacea* (1♂; 5♀), 1800 m, 25.v.1998, V. Chikatunov (15♂, 10♀), 27.v.1999, L. Friedman (1♂), 1800 m, 11.vi.2003, L. Friedman (1♀), 1700, 5.viii.2004, L. Friedman (1♂, 1♀), 1600 m, 20.v.1997, L. Friedman, on *Pyrus syriaca* (1♀), 26.vi.1997, L. Friedman (1♂), 23.v.1998, A. Freidberg (1♀), 12.vi.2003, L. Friedman (2♀); Majdal Shams, 12.v.1998, L. Friedman (1♂); Har Dov, karst, 16.vi.1999, A. Freidberg (1♀); **Golan Heights:** Panyas, 23.v.1998, A. Freidberg (1♂, 1♀); Mezudat Nimrod, 27.v.1999, L. Friedman (2♂, 2♀), Qazrin, 20.v.1997, V. Chikatunov (1♀); **Upper Galilee:** 20.ii.1963, on clover (1♀); Hermon Field School, 5.v.1999, L. Friedman, on *Anagyris foetida* (1♀), on *Convolvulus arvensis* (1♂); Hawat Mattityahu, 4.v.1998, D. Oppenheim, on apple and pear [trees]er, on apple and pear [trees] (2♀); Har Meron, 8.viii.1972, D. Furth (1♂); **Lower Galilee:** Tiv'on, 16.x.1958, (1♂, 1♀; PPIS), 22.x.1968 (2♀; PPIS), all M. Sternlicht, on *Quercus ithaburensis*; **Carmel Ridge:** Nahal Yagur, 11.xi.1996, L. Friedman, on *Quercus calliprinos* (1♀); Nahal Oren, 11.viii.1994 (1♀), 28.i.1996 (1♀), 8.v.1996 (1♀), 28.v.1996, 17.xii.1996 (1♂, 1♀), all V. Chikatunov and T. Pavliček (2♀), 8.x.1996 (1♀), 26.xi.1996 on *Quercus calliprinos* (1♂; 1♀), 16.xii.1996 (1♀), all L. Friedman, 28.i.1997 (1♀), 13.v.1997, V. Chikatunov and T. Pavliček (1♀), 15.xii.1997, L. Friedman (2♂), 17.xi.1997 (1♂), 28.i.1998 (1♂), V. Chikatunov and T. Pavliček, 23.ii.1998, L. Friedman (8♀), 18.v.1998 (3♀), 2.vi.1998 (1♂; 1♀), 6.vii.1998 (1♀), 27.vii.1998 (4♀), all V. Chikatunov and T. Pavliček; 6.v.1999, A. Freidberg (1♂); **Northern Coastal Plain:** 'Akko, 27.ii.1957, on *Trifolium* sp. (1♂, 3♀ TAUI; 1♂, 1♀; PPIS); Sedot Yam, 4.v.1998, M. Fine (5♂, 8♀); **Samaria:** Qedumim, 19.x.2000, L. Friedman (1♀), 'Ez Efrayim, 1.v.1998, L. Friedman, ex *Trifolium* sp. (1♀); **Jordan**

Valley: Hammat Gader, 9.i.1978, D. Furth (1♀); **Central Coastal Plain:** Ilanot, 24.iv.1984, Q. Argaman (2♂); Shefayim, 21.ii.1984, Q. Argaman (1♀); Herzliyya, 11.v.1997, A. Freidberg, on pine and oak (1♀); Tel Aviv, 30.v.1927, F. S. Bodenheimer (1♀); Migdal Afeq [Migdal Zedeq], 13.iv.1999, L. Friedman (1♀); 13.iv.1999, L. Friedman, ex *Trifolium resupinatum* 15–17.v.1999 (2♂, 5♀); **Southern Coastal Plain:** Bet Dagan, 1.v.1959, on *Trifolium* sp. (2♀), 8.v.1961, on clover, (12♀; PPIS), 30.iv.1963, on clover (12♀; PPIS); Yavne, 9.vi.1982, Q. Argaman (1♂, 1♀) **Foothills of Judea:** Park Canada, 4.xi.1996, L. Friedman, on *Quercus ithaburensis* (1♂, 3♀), 4.xi.1996, L. Friedman, on *Ceratonia siliqua* (1♂); 'En Hemed [Aqua Bella], 1.iv.1948, A. Moscona (1♀); 1.xii.1950 (1♀), 14.vi.1958 (1♂), all J. Wahrman; **Judean Hills:** Sattaf, 18.v.1998, L. Friedman (1♂); Yerushalayim, 15.vi.1958, H. Ginsburg (1♂, 1♀); Qiryat 'Anavim, 19.v.1930 (1♀), 17.ix.1942 (1♂), all H. Bytinski-Salz; Silwān, 16.ix.1947, H. Sabri, (1♂); **Judean Desert:** Nahal Perat, 1 km W 'En Perat, 16.i.1984, D. Furth (1♀). Recorded from Samaria (Kaddonie, near Tul Karem; 'Askar, near Shekhem), Judean Hills (Turmus-Aya; Ramallah; Kubebeh, near Yerushalayim; Arub, near Hevron) and Judean Desert (Yeriho) by Voss (1964).

Distribution

The Near East (including Cyprus), Iran (M. Wanat, personal communication).

Host plants

We reared this species from stems of *Trifolium resupinatum* Linnaeus and other *Trifolium* spp. (Fabaceae). Recorded from *Trifolium* spp. by Halperin and Fremuth (2003). The larvae develop in stems and root-stalks.

Phenology

Adults collected throughout the year. Oviposition period: mid-February; emergence: mid-April; spring migration to trees: May-June. As only a few specimens have been collected between June and January, the time of aestivation and hibernation is unclear; no significant autumn appearance observed.

Remarks

M. Wanat and K. Schön intend to describe this species in the near future. Fremuth and Halperin (2003) recorded it as *C. seniculus*. In the same publication they also recorded *Catapion corsicum* (Desbrochers, 1888) from Israel, which was reported from Cyprus too (Balfour-Browne, 1944). However, examination of all relevant specimens of *Catapion* in the Halperin's collection showed their conspecificity with *Catapion* sp. nr. *seniculus*.

***Catapion* sp.**

(Figs. 90, 106)

Material examined

ISRAEL: **Upper Galilee:** Har Addir, 900 m, 23.ix.1997, A. Freidberg (1♂).

Distribution

Israel.

Host plants

Unknown.

Remarks

The single studied specimen generally resembles *C. calabricum* A. et F. Solari, 1922 (M. Wanat, personal communication), and *C. pubescens*. It differs from *C. pubescens* in the massive, coarsely punctate and densely setose rostrum, and coarse striolation of the frons, which is less concave than in *C. pubescens*. More specimens of both sexes are required in order to clarify the taxonomic position of this species.

***Catapion halperini* Friedman and Freidberg, n. sp.**

(Figs. 91−100)

Diagnosis

C. halperini is larger than all other Israeli species of *Catapion* and has sparser punctation and pubescence, smaller scales, frons not striolate, granulation of the body surface more evident. Tarsi slender, narrow, as in many desert Apionidae (M. Wanat, personal communication), 3rd tarsomere bilobate, as long and nearly as wide as 1st tarsomere, with narrow and short lobes, onychium more than twice as long as 3rd tarsomere, and 1.5 times as long as the remaining part of tarsus. Structure of the male genitalia is typical to *Catapion*, except weak exposal of the prostegium. *C. halperini* closely resembles the Caucasian *C. schneideri* (Tournier) and the Middle Asian *C. semicyanescens* (Desbrochers). We compared our specimens with males and females of both species, kindly sent to us by Dr M. Wanat, who was the first to notice the affinity between these species. All three species have slender tarsi with long onychium. *C. schneideri* closely resembles *C. halperini* also in the projected denticle ventral to the eye, but differs in less coarse surface sculpture, especially on the head and pronotum, in the interstrial spaces being wider, the rostrum less evenly arched and the elytra with slight bluish tinge. *C. semicyanescens* has no projected denticle ventrally to the eye, and its elytra have noticeably dark blue tinge, contrasted with the black head and pronotum.

Description

Male (Figs. 91, 93). **Body**. Length: 1.95−2.10 mm; maximum elytral width: 0.75−0.85 mm, in middle. Body and appendages black, shiny. Vestiture sparse, comprised of white, piliform, recumbent scales. Head and pronotum granulate, with sparse punctation.

Rostrum. Cylindrical in basal 0.75, slightly tapered toward apex, microreticulate and pubescent in basal third, shiny and glabrous at apical 0.66, straight from base to apical part of mesorostrum, slightly bent at basal part of prorostrum (at border between microreticulate and glabrous areas); prorostrum nearly straight, mesorostrum slightly

swollen. Distinct punctures arranged in regular longitudinal rows from base to apex. Length: 0.60−0.65 mm. Antennae inserted in basal third of rostrum, scapus slender, length: 0.11 mm, 1st funicular segment elliptical, twice as long as wide, length: 0.06 mm, 2nd–4th segments slightly oblong, length: 0.04 mm, 5−7th segments spherical, length: 0.03 mm; club oblong, ovate, slightly pubescent, segments clearly separated, length: 0.16 mm, 1st and 2nd segments transverse, subequal, apical segment conical, pointed. Antennal scrobes lateroventral, foveiform.

Head. Subconical. Eye ovoid, not prominent. Frons as wide as eye in dorsal view, flat, width: 0.17−0.18 mm; punctures large, punctation varying from denser than on pronotum to nearly lacking; no striolae present. Vertex slightly convex, divided from gular region by shallow, varyingly distinct, transverse constriction. Temple 0.33 times as long as eye. Ventral surface of head flat, well defined from transversely rugulose gular region by transverse groove, densely granulate, raised above gular region, with posterior ridge projected ventral to eye, forming small acute denticle, best visible in lateral view.

Pronotum. Length: 0.45−0.46 mm; width: anterior: 0.44−0.45 mm, posterior: 0.54 mm. Trapezoid, slightly longer than wide slightly convex dorsally, slightly constricted anteriorly and posteriorly, with sides and base straight. Disc pubescent, sparsely punctate, punctures larger than single ommatidium, round, shallow, but distinct; punctation irregular, interspaces more than 1.5−3.0 times as wide as punctures, flat; prescutellar fovea oblong, sulciform or lanceolate, shallow; basal flange absent.

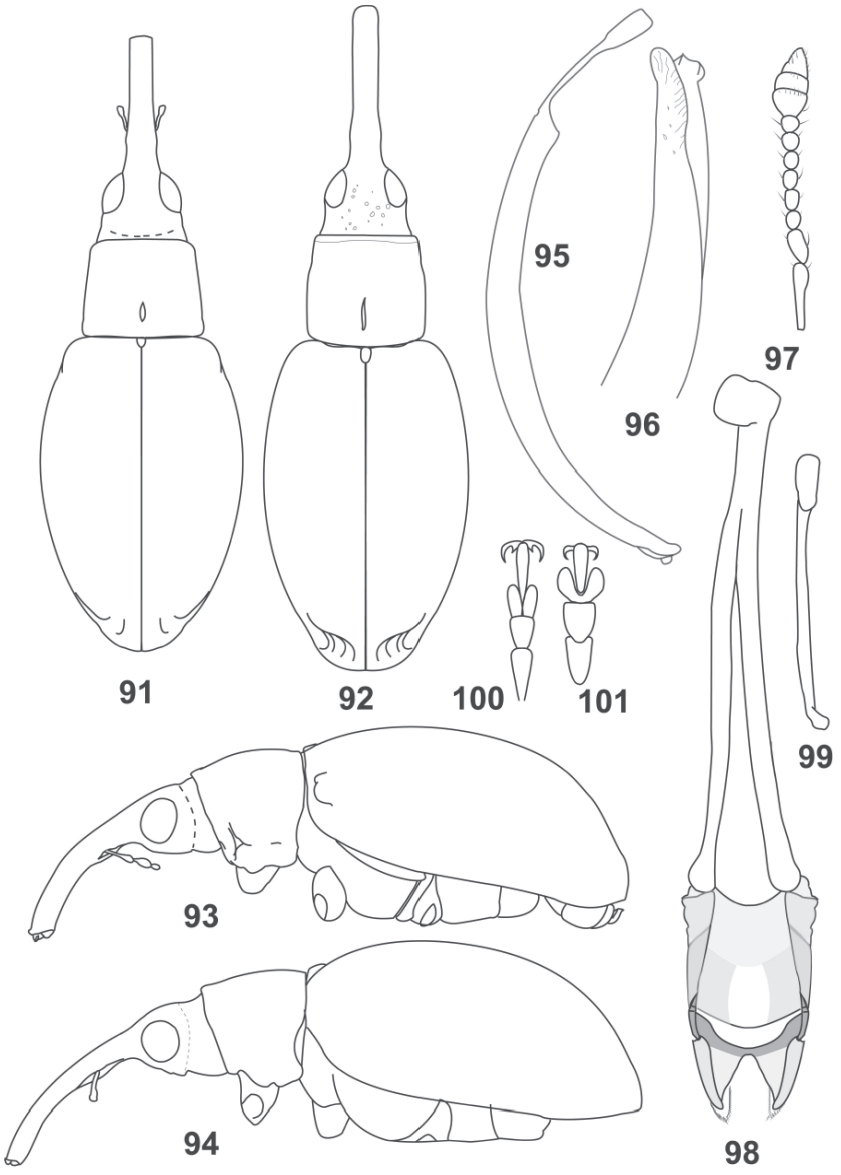
Scutellum. Rectangular, 1.5−2.0 times as long as wide, concave, bare, rounded at apex.

Elytra. Uniformly convex, humeral calli slightly prominent, interstriae 3.5 times as wide as striae, slightly convex, shiny, strongly transversely wrinkled, covered with 1 row of scales, not overlapping or overlapping only at apices and bases; no specialized setae. Strial formula: 1+9, 2+(8+7), 3+4, 5+6.

Legs. Procoxae contiguous, closer to anterior margin of prosternum than to posterior margin; mesocoxae distant. Tibiae covered anterodistally by with dense brush of brownish bristles. Length of tarsomeres: 1st 0.07 mm, 2nd 0.09 mm, 3rd 0.07 mm, onychium 0.15 mm. Claws dentate. Legs not sexually dimorphic.

Male genitalia (Figs. 95, 96, 98, 99). ***Tegmen*** (Fig. 98): Tegminal plate oblong, strongly enveloping aedeagus; tegminal apodeme slender, 2.5 times as long as tegminal plate, strongly dilated apicad; basal piece articulated to dorsal part of tegminal plate, prostegium slightly exposed, posterior margin straight; postfenestral sector slightly sclerotized; fenestrae transverse, continuous, opened externally; median notch triangular, not reaching fenestrae, 0.25 times as long as tegminal plate; suprafenestral sclerite transverse, sensilla not observed; membranous lobes triangular, with tufts of microtrichia at apex. ***Aedeagus*** (Figs. 95, 96): Long, slender, uniformly and strongly curved, heavily sclerotized; tube of aedeagus cylindrical, parallel-sided, apex of aedeagus flat, rounded, slightly curved; apodeme 0.3 times as long as tube; endophallus not armed. ***Sternite 9*** (spiculum gastrale) (Fig. 99): devoid of arms, flattened at apex.

Female (Figs. 92, 94). **Body**. Length: 2.32 mm; maximum elytral width: 0.96 mm, at



Figs. 91−101. *Catapion* spp.: 91. *C. halperini* n. sp., male, dorsal view. 92. *C. halperini* n. sp., female, dorsal view. 93. *C. halperini* n. sp., male, lateral view. 94. *C. halperini* n. sp., female, lateral view. 95. *C. halperini* n. sp., aedeagus, lateral view. 96. *C. halperini* n. sp., apex of aedeagus. 97. *C. halperini* n. sp., antenna. 98. *C. halperini* n. sp., tegmen, dorsal view. 99. *C. halperini* n. sp., spiculum gastrale. 100. *C. halperini* n. sp., male, tarsus. 101. *Catapion* sp. nr. *seniculus*, male, tarsus.

middle. The only examined female specimen is strongly abraded and not as shiny as the males. **Rostrum**. Length: 0.86 mm. Slender, cylindrical, evenly arched.
Head. Ventrally, beneath to eye, produced into small denticle.
Pronotum. Length 0.5 mm.
Elytra. Interstriae 4 times as wide as striae.

Etymology

The species is named in honor of our colleague, the retired Israeli forest entomologist, Dr Joseph Halperin, who collected the first specimen.

Material examined

Holotype ♂, ISRAEL: Sedé Boqér, 30.iii.2004, L. Friedman, on *Astragalus spinosus* (TAUI). Paratypes: ISRAEL: ‘Avedat, 22.iii.1989, J. Halperin, *Astragalus spinosus* (1♀; TAUI); Sedé Boqér, 30.iii.2004, L. Friedman, on *Astragalus spinosus* (1♂; TAUI) (abdomen dissected, glued on white rectangular card; genitalia extracted, attached in a plastic vial with glycerin); Nahal Perat, north-facing slope, Kefar Adummim, 27.ii.2007, A. Freidberg, on *Astragalus* (1♂; TAUI).

Distribution

Israel: Judean Desert, Central Negev.

Host plants

Most of the specimens were associated with *Astragalus spinosus* (Forsskal) Muschler, the most abundant species of *Astragalus* in the area, which is probably the host plant.

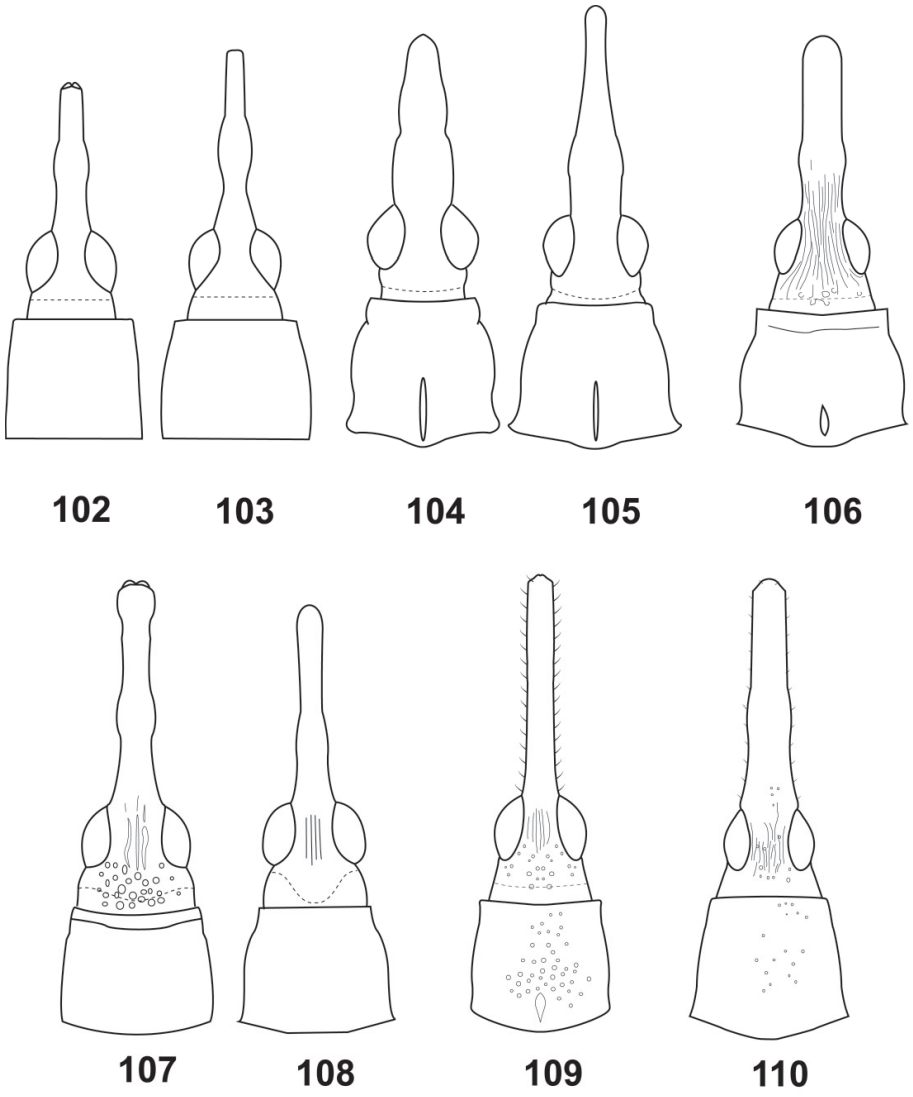
Subtribe Oxystomatina Alonso-Zarazaga, 1990

Eutrichapion Reitter, 1916

This genus contains one Holarctic, two Nearctic and about 18 Palaearctic species. Host plants: Fabaceae, predominantly *Lathyrus* and *Vicia*, one species on *Galega* and one on *Astragalus* (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). Four species occur in the study area.

Key to species of *Eutrichapion* in Israel

1. Densely hairy, vestiture long **2**
-. Nearly bare, vestiture very fine and sparse **3**
2. Legs partly red, or at least femora red; scutellum devoid of pubescence ..... ***E.* (*Eutrichapion*) *viciae***
-. Legs entirely or almost entirely black, at most tarsomeres partly brown; scutellum pubescent ..... ***E.* (*Cnemapion*) *vorax***
3. Elytra flat at base and convex at apex; vestiture absent from most parts of body, very sparse on legs, pronotum, apex of elytra, occasionally also on head; subocular patches distinct, scales composing it distinctly longer than other scales; pronotum laterally straight or slightly and evenly rounded; elytra usually with metallic blue or violet tinge (Figs. 102, 103, 111) ..... ***E.* (*Psilocalymma*) *arrogans***



Figs. 102−110. Tribe Oxystomatini, habitus: 102. *Eutrichapion arrogans*, male, head and pronotum, dorsal view. 103. *Eutrichapion arrogans*, female, head and pronotum, dorsal view. 104. *Oxystoma ochropus*, male, head and pronotum, dorsal view. 105. *Oxystoma ochropus*, female, head and pronotum, dorsal view. 106. *Catapion* sp., male, head and pronotum, dorsal view. 107. *Hemitrichapion filicorne*, female, head and pronotum, dorsal view. 108. *Hemitrichapion pavidum*, female, head and pronotum, dorsal view. 109. *Holotrichapion ononis*, female, head and pronotum, dorsal view. 110. *Holotrichapion* ?*antennale*, female, head and pronotum, dorsal view.

-. Elytra convex at base and apex; vestiture distinct, more or less uniform; subocular patch indistinct, length of scales uniform; pronotum laterally rounded; elytra with metallic greenish-blue tinge (Figs. 114, 118) ..... ***E.* (*Psilocalymma*) sp. cf. *punctigerum***

Eutrichapion (*Cnemapion*) *vorax* (Herbst, 1797)

Material examined

ISRAEL: **Golan Heights:** Panyas, 29.v.2000, L. Friedman (1♀); **Upper Galilee:** 'En Te`o, 21.ii.1973, D. Furth (2♀); Bar'am Forest, 27.vi.1997, A. Freidberg (1♀); Ziv'on, 26.v.1999, L. Friedman (18♂, 24♀); Har Meron, 21.x.1996, L. Friedman (1♂); Nahal 'Ammud, 18.xi.1973, D. Furth (1♀); Parod, 21.v.1997, A. Freidberg (2♀); **Carmel Ridge:** Nahal Yagur, 11.xi.1996, L. Friedman (2♀); Horeshat Arba'im, 22.v.2001, L. Friedman (1♂, 1♀); Nahal Oren, 23.ii.1998, L. Friedman (3♀), 10.iii.1998, V. Chikatunov and T. Pavliček (1♂). Recorded form Samaria (Turmus-Aya) and Judean Desert (Yeriho, -250 m) by Voss (1964).

Distribution

Europe, North Africa, Southwest Asia, Siberia (Dieckmann, 1977, Gønget, 1997), Caucasus (Ter-Minassian, 1972a), Israel (Halperin and Fremuth, 2003).

Host plants

Recorded in Israel from *Vicia* spp. (Halperin and Fremuth, 2003). In Europe reared from *Galega officinalis* (Urbann, 1923), *Ervum hirsutum*, *Lens* spp., *Pisum* spp. (Schilsky, 1906a), and *Vicia* spp. (Ehret, 1990).

Phenology

Hibernation: end of November - second half of February; emergence: probably first half of May; aestivation: June-October; autumn migration to trees: October-November; collected on trees throughout the year but rarely.

Remarks

Halperin and Fremuth (2003) raised *Cnemapion* to the generic level, which we do not accept. The record of *E. vorax* from the Judean Desert (Yeriho) (Voss, 1964) is dubious, but the specimen is not available for study.

Eutrichapion (*Eutrichapion*) *viciae* (Paykull, 1800)

Material examined

Recorded from Israel (Bodenheimer, 1937), although no specimens were available for study.

Distribution

Holarctic. Widespread across the Palaearctic Region (Wagner, 1932), recorded also from Alaska as *Eutrichapion alaskanum* Fall (Alonso-Zarazaga, 1990b, McNamara, 1991).

Host plants

In Europe reared from *Vicia* spp. and *Lathyrus* spp. (Urbann, 1923; Scherf, 1964; Ehret, 1990).

Remarks

This widely distributed and common Holarctic species was recorded from Cyprus by Balfour-Browne (1944), but seems never to have been collected in Israel. The record of *E. viciae* from Israel may be a result of misidentification of small *E. vorax* or *Hemitrichapion pavidum*.

Eutrichapion (***Psilocalymma***) ***arrogans*** **(Wencker, 1858)**

(Figs. 102, 103, 111)

Material examined

ISRAEL: **Hermon:** 2000 m, 22.v.1973, D. Furth (1♀); 1900 m, D. Furth (1♀); 1800 m, 25.v.1998, V. Chikatunov (1♀); 1600 m, 4.v.1999, L. Friedman (1♀); **Golan Heights:** Mezudat Nimrod, 23.iv.1998, V. Chikatunov (3♀); **Upper Galilee:** Shelomi, 19.iv.1997, V. Chikatunov (1♀); Har Meron Reserve, Peqi'in, 25.iv.2002, T. Stern (1♂); **Carmel Ridge:** Hefa [Kaifa], E. Reitter (1♀); **Northern Coastal Plain:** Dor [Tantura], 30.iv.1957, on *Medicago sativa* (1♂); Sedot Yam, 4.v.1998, M. Fine (1♀); **Samaria:** Qedumim, 23.iv.2001, L. Friedman (1♀); Shoham, 31.iii.2006, L. Friedamn (3♂); **Jordan Valley:** Park haYarden, 8.v.1997, V. Chikatunov (1♂)) **Central Coastal Plain:** Kefar Vitkin, 18.iii.1940 (1♀); Ga'ash, 7.xii.2001, A. Gazith and D. Milstein (1♀); Tel Aviv, Netivey Ayalon roadsides, 10.iii.2001, L. Friedman (1♂, 1♀); Petah Tiqwa, 28.xii.1933, E. Rivnay, on citrus (1♀), Yarqon springs, ii.2000, Y. Hershkovitch (1♀); **Southern Coastal Plain:** Miqwé Yisrael, 8.v.1947, H. Bytinski-Salz (1♀); Bet Dagan, 26.iii.1957, on *Medicago sativa* (1♂; TAUI, 1♀; PPIS); Rishon LeZiyyon, 26.i.1957, H. Ginsburg (1♀); Rehovot, 15.ii.1946 (1♂, 2♀), 15.ii.1947 (1♀), all H. Bytinski-Salz; Talmé Yehi`el [Masmiyya], 27.ii.1957, on *Vicia faba* (3♂, 7♀; TAUI, 3♀; PPIS), 20.iv.1959, on *Medicago sativa* (1♀), 3.v.1959, on *Medicago sativa* (1♂)) **Foothills of Judea:** Deir-Aiyūb, 11.iv.1939, J. H. Brair, on vetch (1♂); Latrun, 29.iii.1973, D. Furt (1♀); **Judean Hills:** Ben Shemen, 29.ii.1924 (1♂)' 'Adullam, 23.v.2004, E. Groner, V. Chikatunov (2♀). Recorded from Samaria ('Askar, near Shekhem) by Voss (1964).

Distribution

Turkey, Syria (Wagner, 1932), Israel (Melamed-Madjar, 1969a).

Host plants

Vicia sativa Linnaeus (Fabaceae). Development takes place predominantly in the terminal parts of plants, and larvae are often found in the leaf buds and in the side branches (Melamed-Madjar, 1969a).

Phenology

Aestivation and hibernation: late May to end of December; mating and oviposition period: January-February; emergence: March-April (Melamed-Madjar, 1969a).

Parasitoids

Trichomalus campestris Walker, *T. operosus* Förster (Pteromalidae), *Necremnus tidius* Walker, *Entedon longulus* Erdös (Eulophidae), *Triaspis floricola* Wesman (Braconidae) (Melamed-Madjar, 1969a).

Remarks

Melamed-Madjar (1969b) considered *E. arrogans* the most abundant species and the only pest apionid in Israel. However, during our survey only a small number of specimens were found. We talked recently to several Israeli farmers and agronomists, who do not consider any apionid species as an agricultural pest at present.

**Eutrichapion* (*Psilocalymma*) sp. cf. *punctigerum* (Paykull, 1792)

(Figs. 114, 118)

Material examined

ISRAEL: **Golan Heights**: Nahal ‘Iyyon Reserve, HaTanur, 20.ii.2002, L. Friedman (1♀).

Distribution

Unclear. Additional specimens that might belong to this undescribed species were found in southern Turkey and Syria (M. Wanat, personal communication). *Eutrichapion punctigerum* Paykull is widespread throughout Europe, North Africa, the Middle East and Kazakhstan (Dieckmann, 1977; Gønget, 1997).

Host plants

Not reared in the study area. *E. punctigerum* is oligophagous on *Vicia* (Hoffmann, 1958).

Remarks

This species is probably new to science; additional specimens are required for the final conclusion (M. Wanat, personal communication). The single specimen was collected in the extreme north of Israel, near the Lebanese border.

Hemitrichapion Voss, 1959b

This genus contains 28 species in the Palaearctic Region: 17 species with wide Palaearctic distribution (subgenera *Dimesomyops* and *Tinocyba*), two species in Macaronesia and coastal regions of Portugal, Spain and Morocco (subgenus *Lotapion*), three species in Middle and Central Asia and three species in north-eastern Asia (subgenera *Tinocyba* and *Microtinocyba*) and three species in the steppes of Iran, Afghanistan and former Soviet Middle Asia (subgenus *Hemitrichapion*). Host plants: Fabaceae, tribe Coronillaeae (*Coronilla*), tribe Hedysareae (*Hippocrepis*, *Onobrychis*), tribe Loteae (*Lotus*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999; Legalov, 2001). Two species occur in the study area.

Key to species of *Hemitrichapion* in Israel

1. Punctures on vertex not extending posteriorly for more than half length of eye; male prorostrum cylindrical, glabrous, its sides convex in dorsal view; female rostrum tapered, glabrous, shiny, 1.5−1.7 times as long as pronotum; male 1st abdominal sternite with denticle; male mesotibia mucronate (Fig. 108) ..... ***H.* (*Dimesomyops*) *pavidum***
-. Punctures on vertex extended posteriorly for more than half length of eye; male prorostrum tapered, coarsely punctate, its sides straight in dorsal view; female rostrum slightly dilated at apex, punctate, twice as long as pronotum; male 1st abdominal sternite without ventral denticle; male mesotibia not mucronate (Fig. 107) ..... ***H.* (*Tinocyba*) *filicorne***

**Hemitrichapion* (*Dimesomyops*) *pavidum* (Germar, 1817)

(Fig. 108)

Material examined

ISRAEL: **Hermon:** 1800 m, 25.v.1998, V. Chikatunov (1♂, 1♀), 27.v.1999, A. Freidberg (1♀), 12.vi.2003, L. Friedman (1♀); 1650, 17.v.2000, A. Freidberg (1♀); 1600 m, 26.vi.1997, A. Freidberg (1♂), 23.v.1998, A. Freidberg (1♂), 28.v.2000, L. Friedman (7♂, 8♀); **Upper Galilee:** Har Meron, 1100, 18.xi.1973, D. Furth (1♂, 3♀), 10.x.1994, V. Chikatunov (2♀), 21.x.1996, L. Friedman (1♂, 3♀), N. Dorchin (1♂), V. Chikatunov (2♂, 3♀), A. Freidberg (3♀), 19.v.1998, L. Friedman (1♀), 26.v.1999, L. Friedman (2♀).

Distribution

According to Wagner (1932) distributed across the Palaearctic Region. Dieckmann (1977) recorded it from Europe (except Scandinavia), Algeria, south-western Asia, Middle Asia and Siberia. Ter-Minassian (1972a) recorded it from the Caucasus. The records from Middle Asia and Siberia appear doubtful (B. Korotyaev, personal communications).

Host plants

Not reared in the study area. In Europe monophagous on *Coronilla varia* Linnaeus (Dieckmann, 1977).

Phenology

Unclear. Collected on trees in May-June and October-November.

**Hemitrichapion* (*Tinocyba*) *filicorne* (Wencker, 1864)

(Fig. 107)

Material examined

ISRAEL: **Hermon:** 1800 m, 25.v.1998, V. Chikatunov (1♀).

Distribution

Central Europe and the Mediterranean region (Wagner, 1932).

Host plants

Not reared in the study area. In Europe associated with *Lotus* spp. (Ehret, 1990).

Holotrichapion Györffy, 1956

This genus contains about nine species in the Palaearctic Region. Host plants: Fabaceae, tribe Trifoleae: *Ononis* host genus to the subgenus *Holotrichapion* s. str., *Medicago* host genus to the subgenus *Apiops*, and *Lathyrus* host to the subgenus *Schoenius* (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). Three species are recorded from the study area.

Key to species of *Holotrichapion* in Israel

1. Pubescence dense, comprised of long arched white scales (Fig. 109) .... ***H.* (*Holotrichapion*) *ononis***
-. Pubescence sparse, comprised of short straight translucent scales, or absent (Fig. 110) **2**
2. Frons punctate and striolate, sometimes punctures present in striolae (Fig. 110); rostrum and pronotum punctured; elytral interstria flat ..... ***H.* (*Schoenius*) *?antennale***
-. Frons striolate, punctures present on vertex only; rotrum and pronotum nearly glabrous, with obsolete sculpture; elytral interstria convex ..... ***H.* (*Schoenius*) *gracilicolle***

Holotrichapion (*Holotrichapion*) *ononis* (Kirby, 1808)

(Fig. 109)

Material examined

ISRAEL: **Hermon:** 2200 m, 27.v.1999, A. Freidberg (1♀), 2000 m, 22.v.1973, D. Furth (1♀), 1900 m, 3.v.1979, D. Furth (♂), 1800 m, 25.v.1998, V. Chikatunov (15♂, 12♀), 25.v.1999, L. Friedman (2♂), 27.v.1999, L. Friedman (4♂, 3♀), A. Freidberg (3♂, 1♀), 1650 m, 28.v.2000, L. Friedman (187♂, 224♀), 1600 m, 14.v.1996, V. Chikatunov (1♀), 20.v.1997, L. Friedman, on *Pyrus syriaca* (2♂, 5♀), V. Chikatunov (1♀), 26.vi.1997, A. Freidberg (2♂, 9♀), L. Friedman (2♂, 4♀), 23.v.1998, A. Freidberg (2♂, 1♀), 4.v.1999, L. Friedman (12♂, 9♀), 25.ix.1999, A. Freidberg (1♂), 17.v.2000, A. Freidberg (3♂, 4♀); Newe Ativ, 26.iv.1974, D. Furth (1♂); **Golan Heights:** Panyas, 23.v.1998, A. Freidberg (1♀); Mezudat Nimrod, 27.v.1999, L. Friedman (1♂); Mas'ada, 28.iv.1974, D. Furth (1♀); Qazrin, 4.v.1999, L. Friedman, on *Ononis* sp. (1♀). **Upper Galilee:** 13.iv.1959 4♂, 1♀; PPIS), Bar'am Forest, 27.vi.1997, A. Freidberg (6♂, 5♀), 27.vi.1997, L. Friedman (1♂, 1♀); Har Addir, 23.ix.1997, L. Friedman (1♀), A. Freidberg (1♂); Ziv'on, 26.v.1999, L. Friedman (2♂); Nahal 'Ammud, 17.x.1972 (1♂), 8.v.1973 (1♂), 26.vi.1973 (1♀), all D. Furth, 24.vi.1981, M. Kaplan (2♂, 4♀); Har Meron, 1100 m, 17.x.1972 (1♂), 14.v.1973 (1♀), 18.xi.1973 (1♀), all D. Furth, 30.ix.1976, A. Freidberg (1♀), 21.x.1996, A. Freidberg (1♀), L. Friedman (3♂, 2♀), L. Friedman, on *Arbutus andrachne* (6♂, 11♀), L. Friedman, on *Quercus calliprinos* (1♂), L. Friedman, on *Pistacia palaestina* (1♀), V. Chikatunov, on *Quercus calliprinos* (1♂, 3♀), N. Dorchin, on *Quercus* sp. (2♂, 3♀), 23.ix.1997, L. Friedman (2♂, 1♀), A. Freidberg (1♀), 23.iv.1998, V. Chikatunov (1♀), 19.v.1998, L. Friedman (1♂, 2♀), 22.v.1998, A. Freidberg (3♀), 800 m, 22.v.1998, A. Freidberg (1♂); Meron Field School, 800 m, 5.v.1999, L. Friedman (1♂), 18.viii.2003, L. Friedman (1♂, 1♀); Parod, 21.v.1997, L. Friedman (1♀), A. Freidberg (1♀); **Carmel Ridge:** Horeshat haArba'im, 27.iv.1998, L. Friedman (2♂, 2♀); Nahal Oren, 8.v.1996 (1♂), 24.ii.1998 (1♀), 18.v.1998 (2♂), all V. Chikatunov and T. Pavliček; 30.v.1999, A. Freidberg (3♀), 14.v.2003, L. Friedman (1♂); Zikhron Ya'aqov, 1.v.1998, A. Freidberg (1♀);

Northern Coastal Plain: Nahsholim, 14.v.1959, on alfalfa (1♂); Sedot Yam, 4.v.1998, M. Fine (2♂); **Samaria:** Qedumim, 11.iv.2001, L. Friedman (1♀), 20.ii.2006, L. Friedman (1♂, 1♀); **Jordan Valley:** Park haYarden, 2.iv.1998, A. Freidberg, on *Ononis spinosa* (28♂, 20♀, 2 teneral); **Northern Negev:** Mishmar haNegev, 16.v.1982, Q. Argaman (1♀).

Distribution

Europe, North Africa, the Middle East (Gønget, 1997).

Host plants

Reared from *Ononis* spp. in Europe (Hoffmann, 1958; Dieckmann, 1977; Gønget, 1997; Ehret, 1990) and in the Caucasus (Ter-Minassian, 1972a). In Israel associated with *Ononis* spp. (Halperin and Fremuth, 2003). We collected a few teneral specimens on *Ononis spinosa* Linnaeus (Fabaceae).

Phenology

Hibernation: end of November - end of February; emergence: early April - late May (based on collection of teneral specimens on the suspected host plant); spring mass migration to trees: April-June; aestivation: July - late September; autumn mass migration to trees: September-November.

****Holotrichapion* (*Schoenius*) ?*antennale* Desbrochers, 1896**

(Figs. 110, 115)

Material examined

ISRAEL: **Upper Galilee:** Misgav ‘Am, 20.v.1992, J. Halperin, on *Cedrus* (1♀).

Distribution

Israel, probably Turkey, Syria and Lebanon.

Host plants

Not reared in the study area. The closely-related species, *H. aethiops* and *H. gracilicolle*, are associated with *Lathyrus* spp. (Scherf, 1964; Hoffmann, 1958; Dieckmann, 1977).

Remarks

The only specimen belongs to the *aethiops* species group. Dr M. Wanat (personal communications) states that it is intermediate between *H. aethiops* (Herbst, 1797) and *H. gracilicolle* (Gyllenhal, 1839), and possibly conspecific with *H. antennale* Desbrochers, a dubious species.

Holotrichapion (*Shoenius*) *gracilicolle* (Gyllenhal, 1839)

Material examined

Recorded from Israel (Judean Desert, Mar-Saba) (Baudi, 1894) and cited by Bodenheimer (1937), but we found no specimens in Israeli collections.

Distribution

Central Europe, Mediterranean (Wagner, 1932), the Caucasus (Ter-Minassian, 1972a).

Host plants

Reared in Europe from *Lathyrus* sp. (larva in elongate filiform stem galls) (Scherf, 1964; Hoffmann, 1958) and *Vicia faba* L. (Ehret, 1990).

Remarks

The presence of this species in Israel is doubtful, as there is a single, old, record (Baudi, 1894) that is not supported by specimens. No specimens were collected in Israel during the last 100 years. We assume that this could be a misidentification of *Eutrichapion arrogans* or *Synapion splendidulum*.

Mesotrichapion Györffy, 1956

This genus contains 13 species in the Palaearctic Region. Host plants: Fabaceae, tribe Galegeae (*Astragalus*, *Oxytropis*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). One species occurs in the study area.

**Mesotrichapion* (*Mesotrichapion*) *subglabrum* (Desbrochers, 1870)

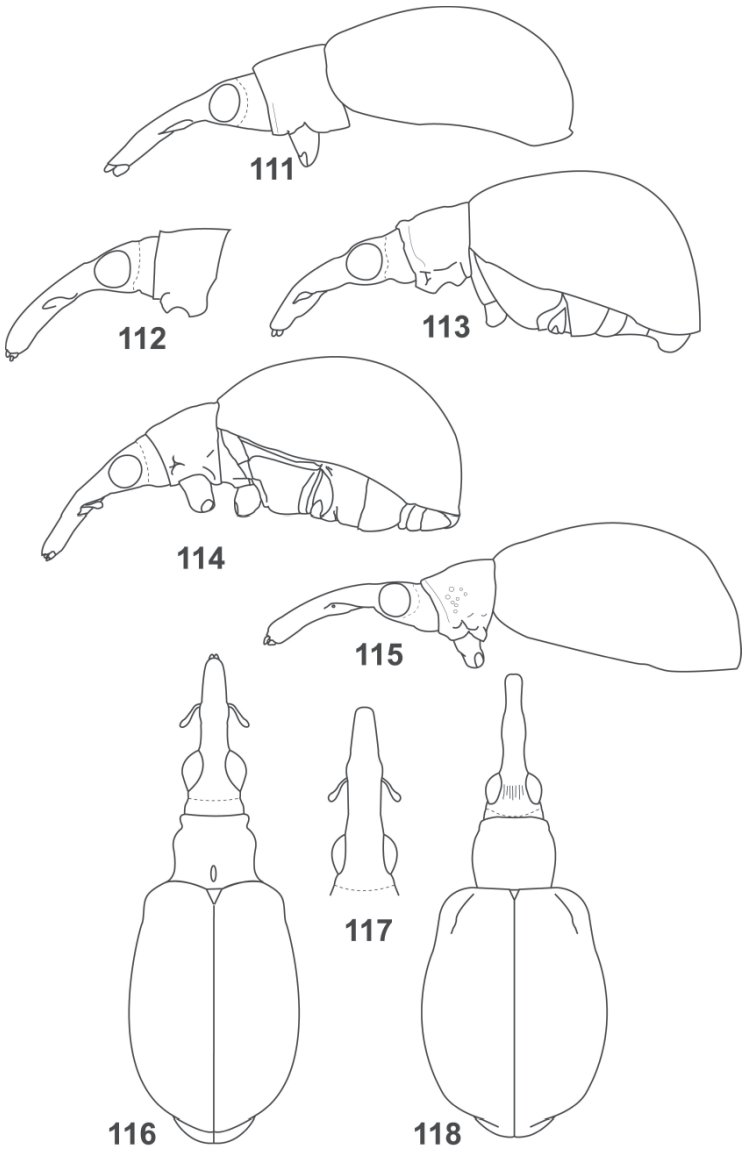
(Figs. 112, 113, 116, 117)

Material examined

ISRAEL: **Hermon:** 1800 m, 25.v.1998, V. Chikatunov (12♂, 7♀); 1600 m, 20.v.1997, on *Lonicera nummularifolia* (2♂, 1♀), on *Pyrus syriaca* (15♂, 11♀), all L. Friedman, V. Chikatunov (2♀), 26.vi.1997, L. Friedman (5♂, 6♀), 23.v.1998, A. Freidberg (7♂, 13♀), 4.v.1999, L. Friedman (12♂, 13♀), 1600 m, Nahal 'Ar'ar, 25.v.2001, E. Orbach (1♂, ORB); 1500–1600 m, 6.vi.2002, L. Friedman (3♂, 5♀), A. Freidberg (1♂, 2♀); 1400 m, 20.v.1997, L. Friedman (1♂), 25.v.1998, V. Chikatunov (1♀); 4 km N Newe Ativ, 1.v.1998, E. Orbach (2♀, ORB); 1300 m, 28.v.2002, L. Friedman (3♂); A. Freidberg (1♂, 6♀); **Golan Heights:** Merom Golan, 9.v.2006, L. Friedman, in soil (2♂); Ya'ar Yahudiyya, 20.iv.2001, E. Orbach (1♂ teneral); **Upper Galilee:** Hawat Mattityahu, 4.v.1998, D. Oppenheim, on apple and pear [trees] (1♀); Har Kefir, 850 m, 18.iv.1998, E. Orbach (2♀, ORB); Har Meron, 1100 m, 22.v.1998 (1♀), 14.iv.1999 (3♂, 1♀), all A. Freidberg.

Distribution

Eastern Mediterranean (Wagner, 1932).



Figs. 111−118. Tribe Oxystomatini, habitus: 111. *Eutrichapion arrogans*, male, lateral view. 112. *Mesotrichapion subglabrum*, female, head and pronotum, lateral view. 113. *Mesotrichapion subglabrum*, male, lateral view. 114. *Eutrichapion* sp. nr. *punctigerum*, female, lateral view. 115. *Holotrichapion* ?*antennale*, female, lateral view. 116. *Mesotrichapion subglabrum*, male, dorsal view. 117. *Mesotrichapion subglabrum*, female, head, dorsal view. 118. *Eutrichapion* sp. nr. *punctigerum*, female, dorsal view.

Host plants

Unknown

Phenology

Unclear. Migration to trees: May; a few specimens found in mid-May in the soil and under stones near Merom Golan water reservoir, which may coincide with beginning of aestivation.

Oryxolaemus Alonso-Zarazaga, 1990b

This genus contains four species in central and southern Europe and the Mediterranean region. Host plants: Fabaceae (*Anagyris*, *Genista*, *Calicotome*, *Cytisus*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999; Giusto, 1997). Two species occur in the study area.

Key to species of *Oryxolaemus* in Israel

1. Body length more than 2.6 mm; elytra with slight bluish tinge; larvae mine leaves of *Anagyris foetida* ..... ***O. croceifemoratus***
-. Body length less than 2.6 mm; elytra with slight greenish tinge; larvae mine leaves of *Calicotome villosa* ..... ***O. scabiosus***

Oryxolaemus croceifemoratus (Gyllenhal, 1839)

Material examined

ISRAEL: **Hermon:** 1600 m, 26.vi.1997, A. Freidberg (1♂), V. Chikatunov (1♀); **Golan Heights:** Panyas, 24.ix.1997, A. Freidberg (1♀); **Upper Galilee:** Hermon Field School, 5.v.1999, L. Friedman, on *Anagyris foetida* (1♂, 1♀); Nahal Keziv, 10.iii.2000, L. Friedman, ex *Anagyris foetida* (57 ♂♀, teneral, not sexed); Bar'am Forest, 27.vi.1997, A. Freidberg (1♂); Har Addir, 23.ix.1997, A. Freidberg (2♀), L. Friedman (3♀); Har Meron, 8.viii.1972, D. Furth (1♂), 8.v.1973, D. Furth (1♂), 21.x.1996, L. Friedman, on *Quercus calliprinos* (3♂), on *Q. boissieri* (1♂, 2♀), V. Chikatunov, on *Q. calliprinos* (7♂, 3♀), A. Freidberg (3♀), N. Dorchin (1♀), 27.vi.1997, A. Freidberg (1♀), 23.ix.1997, L. Friedman (6♂, 6♀), A. Freidberg (1♂), 19.v.1998, L. Friedman (1♂), 22.v.1998, A. Freidberg (3♂, 6♀), 14.iv.1999, A. Freidberg (1♀), 5.v.1999, L. Friedman (1♀), 26.v.1999, V. Chikatunov (1♀); Parod, 21.v.1997, A. Freidberg (3♂, 1♀); 'En Zetim, 21.v.1997, L. Friedman (1♀); Nahal 'Ammud, nr. Huqoq, 2.iv.1998, A. Freidberg (2♂, 2♀); **Carmel Ridge:** Nahal Oren, 30.x.1996, V. Chikatunov and T. Pavliček (1♂), 30.v.1998, A. Freidberg (2♀); **Central Coastal Plain:** Tel Afeq, 11.ii.1984, Q. Argaman (1♂); **Judean Hills:** Yerushalayim, Qiryat 'Anavim, 21.v.1952, I. Harpaz (3♂, 2♀).

Distribution

France (Corse), Italy, Macedonia, Greece, Turkey, Cyprus, Syria, Lebanon (Giusto, 1997).

Host plants

Anagyris foetida Linnaeus (Fabaceae) in Israel (Halperin and Fremuth; 2003 and the present study) and in Europe (Schatzmayr, 1922; Hoffmann, 1930; Hustache, 1931; Hoffmann, 1958; Ehret, 1990). The larvae are leaf-miners.

Phenology

Hibernation: November - end of January; beginning of oviposition period: early February; emergence: mid-March; spring migration to trees: April-July; aestivation: July-August (part of the population aestivates on trees); autumn migration to trees: August-October.

Parasitoids

Triaspis sp. cf. *striola* (Thomson) (Braconidae) and *Spintherus leguminum* (Ratzeburg) (Pteromalidae) were reared from eggs and larvae; *Tetrastichus* sp. (Eulophidae) reported as hyperparasite (Harpaz, 1956).

Remarks

Reported as *Apion flavofemoratum* var. *croceifemoratum* with indication of host plant and description of the life cycle (Harpaz, 1956; Avidov and Harpaz, 1969).

Oryxolaemus scabiosus (Weise, 1889)

Material examined

ISRAEL: **Hermon:** 2000 m, 25.v.1999, L. Friedman (1♀), 1800 m, 27.v.1999, L. Friedman (1♂, 1♀); 1600 m, 26.vi.1997, V. Chikatunov (1♂), L. Friedman (1♀); Newe Ativ, 26.vii.1973, D. Furth (1♂), **Golan Heights:** Panyas, 24.ix.1997, A. Freidberg (1♂, 2♀), 23.v.1998, A. Freidberg (1♂); Mezudat Nimrod, 27.v.1999, L. Friedman (2♂, 3♀), A. Freidberg (1♂); **Upper Galilee:** Bar'am Forest, 27.vi.1997, A. Freidberg (1♀); Har Addir, 23.ix.1997, L. Friedman (9♂, 4♀), A. Freidberg (5♂, 6♀); Sasa - Nahal Ziv'on, 27.xi.1997, L. Friedman (1♀), A. Freidberg (2♀); Ziv'on, 26.v.1999, L. Friedman (1♂, ♀); Har Meron, 1100 m, 18.xi.1973, D. Furth (1♀), 21.x.1996, on *Quercus calliprinos* (6♂, 7♀), on *Q. boissieri* (1♂, 1♀), on *Pistacia palaestina* (3♂, 2♀), on *Arbutus andrachne* (1♂, 9♀), all L. Friedman, V. Chikatunov, on *Q. calliprinos* (9♂, 9♀), N. Dorchin, on *Quercus* sp. (1♂, 2♀), A. Freidberg (2♂, 1♀), 23.ix.1997, L. Friedman (18♂, 18♀), A. Freidberg (6♂, 6♀), 19.v.1998, L. Friedman (1♂, 3♀), 22.v.1998, A. Freidberg (6♂, 6♀), 26.v.1999, V. Chikatunov (1♀); Parod, 21.v.1997, L. Friedman (3♂, 1♀), A. Freidberg (3♂, 3♀); Nahal 'Ammud, nr. Huqoq, 2.iv.1998, A. Freidberg (1♀); **Carmel Ridge:** Nahal Oren, 5.xi.1977, D. Furth (1♀), 30.v.1995, A. Freidberg (1♀), 23.ii.1998, L. Friedman (1♂, 1♀), 27.iii.1996 (2♀), 27.v.1996 (2♀), 13.xi.1996 (1♀), 1.iv.1997 (1♀), 3.vii.1997 (1♀), 24.ii.1998 (1♂, ♀), 9.iii.1998 (3♀), 10.iii.1998 (1♀), 6.iv.1998 (1♂, ♀), 18.v.1998 (3♀), 2.vi.1998 (1♀), 5.xii.1998 (1♀), all V. Chikatunov and T. Pavliček, 23.iv.1998 (1♂), 30.v.1998 (1♂, 4♀), 26.iv.1999 (1♀), 6.v.1999 (1♂, 2♀), all A. Freidberg; Zikhron Ya'aqov, 1.iv.1998, A. Freidberg (3♂, 2♀); **Northern Coastal Plain:** Nahal Keziv, 10.iii.2000, L. Friedman, ex *Calicotome villosa* (1 teneral); 'Akko, 21.x.1996, V. Chikatunov (1♂); Sedot Yam, 4.v.1998, M. Fine (1♂); Nahsholim, 14.v.1959, on *Trifolium* (2♂), on alfalfa (1♀); **Central Coastal Plain:** Tel Afeq, 11.ii.1984, Q. Argaman (1♂).

Distribution

Algeria, Morocco, Portugal, Spain, France, Czech Republic, Slovakia, Austria, Italy, Croatia, Greece, Israel (Giusto, 1997).

Host plants

Calicotome villosa (Poiret) Link (Fabaceae). In Europe reared from *Calicotome infesta* (C. Presl) Guss. (Schatzmayr, 1933), *C. spinosa* (L.) Link. (Hustache, 1931; Hoffman, 1958; Dieckmann, 1977; Ehret, 1990) and *C. villosa* (Péricart, 1956; Hoffman, 1958; Dieckmann, 1977). The larvae are leaf-miners.

Phenology

Hibernation: December-January; beginning of oviposition period: February: emergence: middle March; spring migration to trees: end of March – July; autumn migration to trees: September - early December.

Remarks

Both *O. croceifemoratus* and *O. scabiosus* were misidentified as *Apion* (*Kalcapion*) *flavifemoratum* (Melamed-Madjar, 1969b).

The separation of *O. croceifemoratus* from *O. scabiosus* is very difficult. Both species are variable in body size and coloration, and are overlapping in these characters. The differences in male genitalia suggested by Giusto (1997) are indicative of species, but subtle and difficult to observe.

Oxystoma Duméril, 1806

This genus contains about 13 species in the Palaearctic Region. Host plants: Fabaceae, tribe Viceae (*Vicia*, *Lens*, *Lathyrus*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999).

Oxystoma ochropus (Germar, 1817)

(Figs. 104, 105)

Material examined

ISRAEL: **Hermon:** Har Dov, karst, 16.vi.1999, A. Freidberg (1♀); 2100 m, Mizpe Shlagim, 11.vi.2003, L. Friedman (1♀), 1600 m, 28.v.2000, L. Friedman (3♂, 1♀), 1500–1600 m, 6.vi.2002, L. Friedman (1♂, 1♀), A. Freidberg (1♂, 1♀), 1450 m, Nahal 'Ar'ar, 1 km NNE Birket Man, E. Orbach (2♂, 1♀) (ORB); **Golan Heights:** Mezudat Nimrod, 27.v.1999, L. Friedman (1♂, 1♀); Panyas, 23.v.1998, A. Freidberg (1♂); **Upper Galilee:** Ziv'on, 26.v.1999, L. Friedman (53♂, 18♀); Har Meron, 5.vi.1974, D. Furth (1♀), 30.ix.1976, A. Freidberg (2♂), 7.v.1979, D. Furth (1♂), 18.v.1994, L. Friedman (1♂), 1100 m, 21.x.1996 (1♂, 1♀), 22.v.1998 (1♂), 14.iv.1999 (1♀), 26.v.1999 (5♂, 3♀), all A. Freidberg, 26.v.1999, L. Friedman (1♂, 3♀); Har Meron Field School, 5.v.1999, L. Friedman, ex *Vicia* sp., 15.v.1999 (3♂, 3♀); Nahal 'Ammud, 23.ii.1978, D. Furth (2♂), 10.vi.1987, A. Shlagman (1♂); Parod, 21.v.1997, A. Freidberg (2♂); Rihaniya, 22.v.1998, A. Freidberg (1♀); **Carmel Ridge:** Nahal Oren, 30.v.1998, A. Freidberg (1♀), 26.v.2004, A. Freidberg (1♀).

Distribution

Europe (except UK and Fennoscandia), North Africa, south-western Asia and the Caucasus (Wagner, 1932; Gønget, 1997), former soviet Middle Asia. Record from Central Asia in Gønget (1997) is doubtful (B. Korotyaev, personal communications). This species is considered to be rare in Europe (Gønget, 1997); it is one of the most abundant species in Cyprus according to our unpublished observations.

Host plants

We reared this species from *Vicia hybrida* Linnaeus (Fabaceae). The larvae develop in the pods and feed on seeds. Also recorded from *Lathyrus* spp. and *Vicia* sp. in Israel (Halperin and Fremuth, 2003), Europe (Scherf, 1964; Hoffmann, 1958; Dieckmann, 1977; Ehret, 1990) and the Caucasus (Ter-Minassian, 1972a).

Phenology

Hibernation: November-February; oviposition period: mid-April; one mature larva and one pupa were found in a pod in early May; emergence: mid-May; spring migration to trees: end of May - beginning of June; aestivation: mid-June - end of September; autumn migration to trees (based on a single specimen): October.

Remarks

This species was misidentified as *Apion cerdo* var. *dimidiatum* Desbrochers (Bodenheimer, 1937).

Subtribe Synapiina Alonso-Zarazaga, 1990

**Ischnopterapion* Bokor, 1923

This genus contains eight to 15 Palaearctic species, of which one is an invasive pest in the USA (Hoebeke *et al*., 2000). Host plants: Fabaceae: tribes Loteae (*Lotus*, *Dorycnium*, *Tetragonolobus*) (subgenus *Ischnopterapion* s. str.) and Trifoleae (*Trifolium*) (subgenus *Chlorapion*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). Two species occur in the study area.

Key to species of *Ischnopterapion* in Israel

1. Body matte or weakly metallic-shining; rostrum flattened at base, slightly different between male and female; elytral interstriae with 2 rows of scales; striae 5 and 6 joined; tarsal claw dentate..... ***I. cognatum***
-. Body with strong green glint; rostrum depressed at base, distinctly longer and more slender in female; elytral interstriae with 1 row of scales; striae 5 and 6 not joined; claw simple..... .....***I. virens***

**Ischnopterapion* (*Chlorapion*) *cognatum* (Hochhuth, 1851)

Material examined

ISRAEL: **Hermon:** 2000 m, 28.x.1968, G. Tsabar (1♂, 1♀), 1800 m, 24.x.1977, D. Furth (1♀), 25.v.1998, V. Chikatunov (1♂, 1♀); Majdal Shams, 12.v.1998, V. Chikatunov (1♂); Senir river, 12.v.1998, V. Chikatunov (1♂); **Golan Heights:** Mas'ada, 920 m, 28.x.1987, G. Coulon (1♀); Panyas, 27.v.1999, A. Freidberg (1♂); **Upper Galilee:** Hawat Mattityahu, 4.v.1998, D. Oppenheim, on apple and pear [trees] (1♂, 1♀); Har Meron, 1100 m, 22.v.1998, A. Freidberg (3♀); Har Kefir, 850 m, 24.iv.1998, E. Orbach (1♂, ORB); **Northern Coastal Plain:** Sedot Yam, 4.v.1998, M. Fine (19♂, 47♀); **Central Coastal Plain:** Migdal Afeq [Migdal Zedeq], 13.iv.1999, L. Friedman (1♂); **Southern Coastal Plain:** Nir-Yizhaq, 28.xii.1982, Q. Argaman (1♂); **Foothills of Judea:** 'Adullam, 15.xi.2003, U. Columbus, T. Levanony (1♀).

Distribution

Mediterranean region, Crimea, the Caucasus, Syria, Turkmenistan (Wagner, 1932, Voss, 1959b; Ter-Minassina, 1972a).

Host plants

Not reared in the study area. Ehret (1990) recorded it from *Astragalus depressus* L. and *A. hamosus* L.

Remarks

A rarely collected species (only 17 specimens collected between 1968 and 2007. Not collected on trees. Surprisingly, 66 specimens of *I. cognatum* were found on May 4, 1998 dumped on the beach near Sedot Yam.

**Ischnopterapion* (*Chlorapion*) *virens* (Herbst, 1797)

Material examined

ISRAEL: **Upper Galilee:** Bar'am Forest, 670 m, 22.xi.2006, A. Freidberg (2♀), L. Friedman (2♂, 1♀); Sasa-Nahal Ziv'on, 27.xi.1997, L. Friedman (3♂, 6♀), V. Chikatunov (1♂, 1♀); **Golan Heights:** Qusbīye, 9.i.1978, D. Furth (1♀).

Distribution

Canary Islands, Europe, Russia (European part and Siberia (although not recorded by Krivets and Legalov (2002) or Legalov and Opanasenko (2000)), Syria, USA (Hoebeke *et al*., 2000), Turkey, Israel.

Host plants

Not reared in the study area. In Europe and USA known as an important pest of legume crops, especially *Trifolium* spp. (Hoebeke *et al*., 2000).

Remarks

This species is comparatively rare in Israel and has not been recorded either as a pest, or on trees. A considerable number of the European specimens of *I. virens* have reduced mesothoracic wings and thus are unable to fly (Stein, 1973). We did not check this character in the Israeli population, but it could explain the absence of *I. virens* from trees.

Stenopterapion **Bokor, 1923**

This genus contains nine Palaearctic species. Host plants: Fabaceae: subgenus *Stenopterapion* s. str. on tribe Hedysareae (*Onobrychis*), tribe Loteae (*Dorycnium*), tribe Trifoleae (*Melilotus*, *Medicago*, *Ononis*, *Trifolium*); subgenus *Cobosiotherium* on tribe Genisteae (*Ulex*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). Three species were recorded from the study area.

Key to species of *Stenopterapion* in Israel

1. Eye in dorsal view 1.3−1.7 times as long as wide, strongly prominent; frons concave, particularly between eyes ..... ***S. tenue***
-. Eye in dorsal view 2.1−3.2 times as long as wide, slightly prominent; frons convex (Figs. 119−122) **2**
2. Funicular segments conical; pubescence dense; pronotal punctures subcontiguous..... ..... ***S. intermedium***
-. Funicular segments spherical; pubescence sparse; interpunctural spaces wider than punctures..... ***S. argamani*** **n. sp.**

Stenopterapion **(*Stenopterapion*)** ***argamani*** **Friedman and Freidberg, n. sp.**

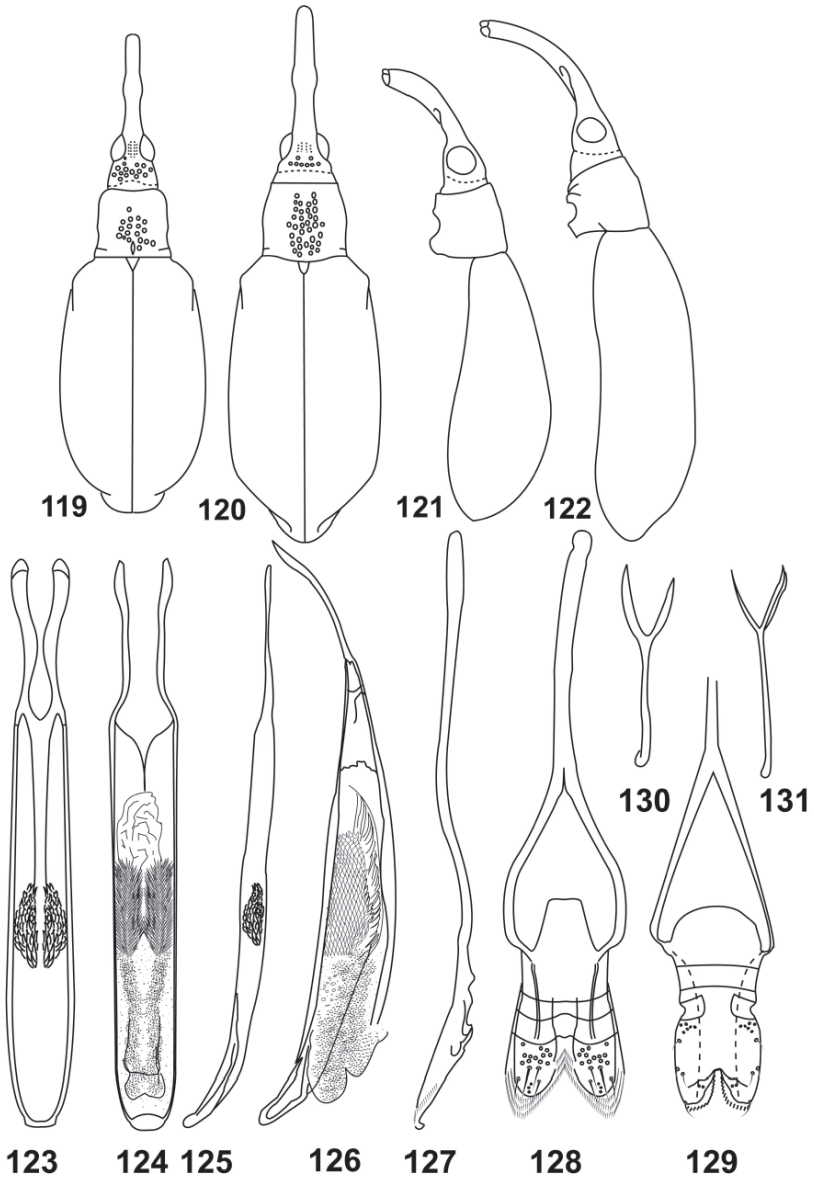
(Figs. 119−123, 125, 127, 128, 130)

Diagnosis

S. argamani is close to *S. intermedium* (Figs. 124, 126, 129, 131), from which it differs in the spherical funicular segments 2−7 (conical in *S. intermedium*), short and sparse vestiture (long and dense in *S. intermedium*), distance between pronotal punctures greater than their diameter (punctures subcontiguous in *S. intermedium*), endophallus with denticulation much weaker, lacking two rows of smaller denticles between the two groups of larger denticles and aedeagus apex, and thick macrotrichia on tegminal lobes.

Description

Male (Figs. 119, 121). **Body**. Oblong pear-shaped. Length: 2.3−2.4 mm, maximum elytral width: 0.86−0.96 mm. Body, elytra, legs and antennae black or dark brown. Vestiture moderately dense, uniform, comprised of white, thin, short, recumbent and semirecumbent, piliform scales, arranged in one more or less regular row on elytral intervals. Interstrial scale apices not or barely extending to bases of forestanding scales, strial scale apices not extending to bases of forestanding scale.



Figs. 119–131: *Stenopterapion* spp.: 119–123, 125, 127, 128, 130. *S. argamani* n. sp. 124, 126, 129, 131. *S. intermedium* (specimen from Poland). 119. Male, dorsal view: 120. Female, dorsal view. 121. Male, lateral view. 122. Female, lateral view. 123. Aedeagus, dorsal view. 124 Aedeagus, dorsal view. 125. Aedeagus, lateral view. 126. Aedeagus, lateral view. 127. Tegmen, lateral view. 128. Tegmen, dorsal view. 129. Tegmen, dorsal view. 130. Spiculum gastrale. 131. Spiculum gastrale.

Rostrum. Cylindrical, curved, not tapering at apex, pubescent to apex. Length: 0.60−0.62 mm. Prorostral and metarostral sides straight in male in dorsal view. Surface punctate, interpunctural spaces rough, only very apex of prorostrum shiny. Mesorostrum scarcely and roundly dilated at antennal insertion. Metarostrum shallowly punctate, punctures often merging into shallow longitudinal striolae. Antennae inserted at middle of rostrum, length of antennal segments: scapus: 0.16 mm, 1st funicular segment: 0.08 mm, 2nd–7th segments: 0.04 mm; club 0.2 mm long, lanceolate, with segments distinctly separated. Antennal pubescence long, whitish. Antennal scrobes lateroventral, oblong.
Head. Subrectangular. Eye round, slightly prominent. Frons slightly convex, sparsely pubescent, striolate, posterior part of frons and vertex with round punctures; width: 0.1 mm. Occiput not depressed.
Pronotum. As long as wide or slightly longer, length: 0.42−0.46 mm, width at apex: 0.38−0.40 mm, width at base: 0.44−0.46 mm, not constricted at apices, sides slightly arched at middle, base slightly bisinuate. Disc sparsely and unevenly punctate, punctures larger than single ommatidium, round, shallow, with bottom flat, interspaces often wider than puncture, flat, granulate. Prescutellar fovea deep, round to oblong.
Scutellum. Subquadrate to oblong, convex, rounded at apex, bare.
Elytra. With disc slightly flattened, sides subparallel and straight in basal 0.66, broadest at base of apical third; humeral callus scarcely prominent; interstriae twice as wide as striae, flat, wrinkled; striae deep, specialized setae not observed. Strial formula: 1, 2+9, (3+4) + (7+8), 5+6. Length 1.6 mm.
Abdomen. Abdominal sternites shiny, covered with thin sparse whitish scales; two first sternites transversely wrinkled, rest coarsely punctate.
Legs. Not sexually dimorphic. Distance between mesocoxae about 0.33 times coxa width. Claws dentate.
Male genitalia. ***Tegmen*** (Figs. 127, 128): Tegminal plate concave, oblong, 3 times as long as wide; tegminal apodeme slightly longer than tegminal plate, slightly roundly dilated apicad; basal piece fused to prostegium; prostegium prominent; fenestrae oblong, transverse; apical lobes rounded, separated by moderately deep triangular notch not reaching fenestrae; suprafenestral sector bearing sensilla, few short basal macrochaetae at base and 4 longer subapical macrochaetae; membranous lobes microsetose. ***Aedeagus*** (Figs. 123, 125): Flat, wide, slightly curved, apex wide, scarcely tapering, rounded, slightly recurved in profile, aedeagal apodeme 0.4 times as long as tube; endophallus with two symmetrical clusters of dense denticles medially. ***Sternite 9*** (spiculum gastrale) (Fig. 130): Y-shaped, moderately thin, manubrium 1.3 times as long as arms, arms pointed.

Female (Figs. 120, 122). **Body**. length: 2.4–2.5 mm, maximum elytral width: 0.70–0.80 mm.
Rostrum. Pubescent posteriad to antennal insertion only, shiny in apical third of prorostrum, length 0.78–0.84 mm; prorostral and metarostral sides slightly concave in dorsal view; mesorostrum less dilated at antennal insertion than in male. Antennae inserted slightly behind middle of rostrum, length of antennal segments: scapus: 0.2 mm, 1st funicular segment 0.08 mm, 2nd–7th segments: 0.04 mm, club 0.22 mm.

Head. Subconical, clearly wider posteriorly. Eye more prominent than in male.
Pronotum. Length: 0.44 mm, width at apex: 0.40−0.46 mm, width at base: 0.46−0.50 mm.
Elytra. Length: 1.74−1.82 mm.

Etymology

This species is named in honor of the late senior entomologist of the Ministry of Agriculture, Dr Qabir Argaman (formerly Karol Nagy), who collected the first series of the species.

Material examined

Holotype 1♂, ISRAEL: Pelugot, 28.xii.1982, Q. Argaman, glued to white card, genitalia dissected and kept attached to the specimen in a plastic vial (TAUI). Paratypes: ISRAEL: same as holotype (1♀; TAUI), Kokhav haYarden, 26.iii.2001, V. Chikatunov (1♂; TAUI), Kokhav haYarden, 27.iii.2001, L. Friedman, on Fabaceae (1♂, 2♀; TAUI), ‘Adullam, 17.v.2002, Y. Mandelik, V. Chikatunov (1♀; TAUI). SYRIA: Syria occ., distr. Tartus, Şafita env., 400 m. a. s. l. (30 km SE of Tartus), 1.v.2000, steppe, S. Benedikt leg. (1♂, 2♀; private collection of S. Benedikt; 1♀; TAUI); Syria occ., Şafita env., 60 km W of Homs, 2.v.2000 lgt. F.+ L. Kantner (2♂, 4♀; SCHO).

Distribution

Syria, Israel.

Host plants

Unknown. A few specimens were collected in Kokhav haYarden on various annual Fabaceae.

Stenopterapion (*Stenopterapion*) *intermedium* (Eppelsheim, 1875)

(Figs. 124, 126, 129, 131)

Material examined

Recorded from Israel (Melamed-Madjar, 1969b), but no specimens were available for study in Israeli collections.

Distribution

Central and southern Europe, the Caucasus (Armenia) (Wagner, 1932; Ter-Minassian, 1972a).

Host plants

In Europe recorded from *Onobrychis* spp. (Dieckmann, 1977; Gønget, 1997).

Remarks

The specimens recorded from Israel under this name (Melamed-Madjar, 1969b) were probably misidentified *Stenopterapion argamani*.

Stenopterapion (*Stenopterapion*) *tenue* (Kirby, 1808)

Material examined

ISRAEL: **Hermon:** 4 km N Neve Ativ, 1.v.1998, E. Orbach (1♂, ORB); **Carmel Ridge:** Hefa [Kaifa], E. Reitter (1♀); Horeshat haArba'im, 27.iv.1998, L. Friedman (1♂); Nahal Oren, 28.i.1997 (1♀), 6.iv.1998 (1♂), all T. Pavliček and V. Chikatunov, 15.xii.1997 (1♀), 23.ii.1998 (1♀), 15.iv.2002 (1♀), 16.iv.2003 (1♂), all L. Friedman, 2.v.2002, A. Freidberg (1♂); Zikhron Ya'aqov, 23.ii.1932 (1♀; PPIS); **Samaria:** Qedumim, 30.iv.2004, L. Friedman (1♂), Shoham, 2.iii.2004, L. Friedman (1♀); **Northern Coastal Plain:** Ga'aton, 6.ii.2000, L. Friedman (1♀), Sedot Yam, 4.v.1998, M. Fine (6♂, 1♀); **Yizre'el Valley:** 'En Gev, 2.iv.1998, A. Freidberg (1♂); **Central Coastal Plain:** Dor [Tentura], 13.iv.1957, on *Medicago sativa* (5♂, 10 ♀; TAUI, PPIS); Migdal Afeq [Migdal Zedeq], 13.iv.1999, L. Friedman (1♂); Nahshon junction, 30.xi.1987, G. Coulon (1♀); **Southern Coastal Plain:** Be`er Tuviyya, 12.i.1958, on alfalfa (1♀); **Foothills of Judea:** 'Emeq haEla, 20.iv.2005, L. Friedman (1♀); **Judean Hills:** 'Adullam, 13.xi.2003, U. Columbus and T. Levanony, pitfalls (2♂; 2♀),15.xi.2003, U. Columbus and T. Levanony, pitfalls (2♂; 2♀), 17.xi.2003, U. Columbus and T. Levanony, pitfalls (22♂); **Northern Negev:** Devira, 21.iv.2005, L. Friedman (1♀).

Distribution

Europe, North Africa, the Caucasus, south-western Asia, Middle Asia, western Siberia (Ter-Minassian, 1972a; Gønget, 1997; Legalov and Opanasenko, 2000).

Host plants

We reared this species from stems of *Medicago orbicularis* (L.) Bartal., *M. rugosa* Desr. and *M. polymorpha* Linnaeus (Fabaceae). It is probably associated also with alfalfa (*Medicago sativa* Linnaeus) (collected, but not reared) (Melamed-Madjar, 1969b).

Phenology

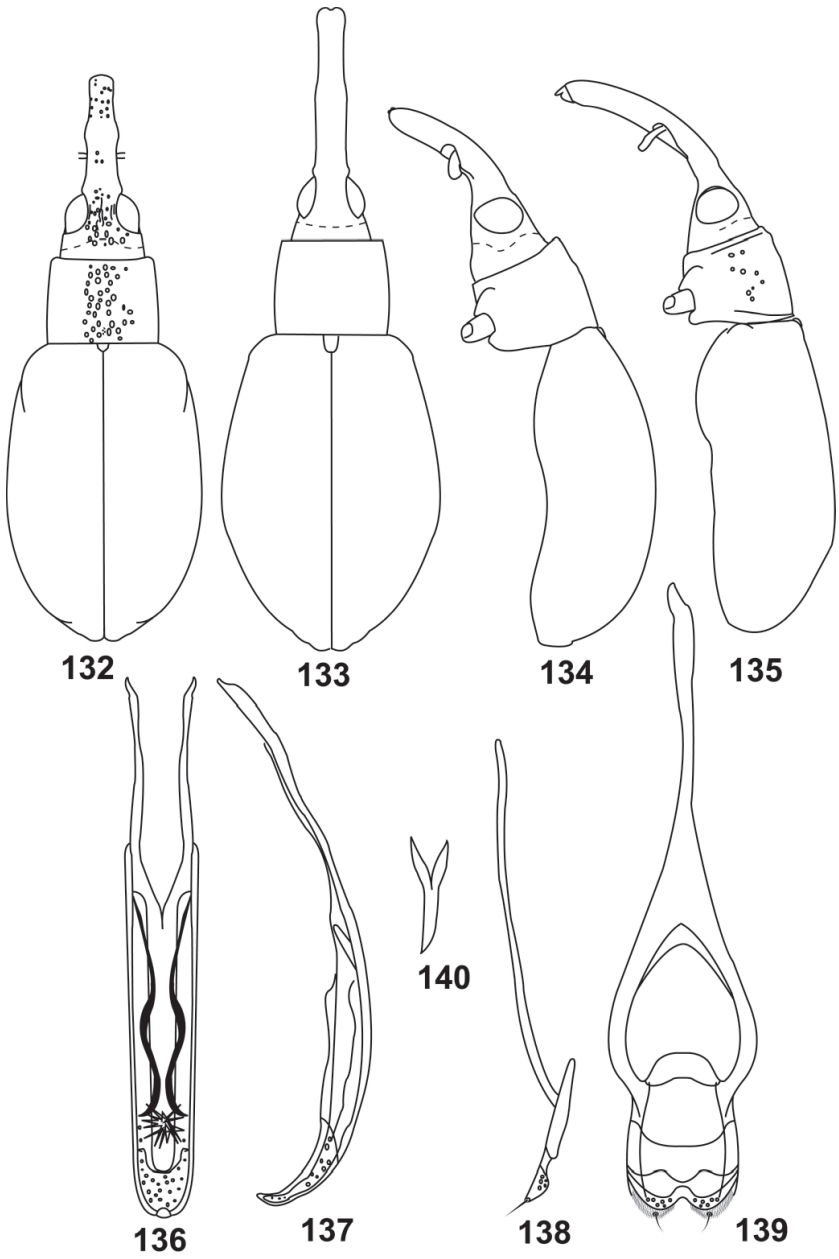
Hibernation (in soil): October-January; mating: January–May; emergence: May (probably begins in April); aestivation: June-October. A few specimens were collected in December.

Parasitoids

Foersterella sp. (Tetracampidae).

Synapion Schilsky, 1902

This genus contains about 15 Palaearctic species, mostly in Central and eastern Asia. Host plants: Fabaceae, tribes Galegeae (*Astragalus*), Hedysareae (*Onobrychis*), Loteae



Figs. 132–140. *Synapion splendidulum*: 132. Male, lateral view. 133. Female, lateral view. 134. Male, dorsal view. 135. Female, dorsal view. 136. Aedeagus, dorsal view. 137. Aedeagus, lateral view. 138. Tegmen, dorsal view. 139. Tegmen, lateral view. 140. Spiculum gastrale.

(*Lotus*), Trifoleae (*Trifolium*), Vicieae (*Lathyrus*, *Vicia*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). One species occurs in the study area.

Synapion splendidulum (Desbrochers, 1874−1875)

(Figs. 132−140)

Material examined

ISRAEL: **Upper Galilee:** Har Meron Reserve, ‘En Zeved, 24.iv.2002, L. Friedman (1♀); **Lower Galilee:** Nazerat, 30.ix.1982, Q. Argaman (2♀); **Southern Coastal Plain:** Bet Dagan, 26.iv.1961, on clover (1♂); **Judean Hills:** Zur Hadassa, 31.iii.2001, Y. Mandelik, pit-fall (1♂); Yerushalayim [Jerusalem], 26.iv.1932, Rh. Jolles (1♂); ‘Adullam, 18.i.2002, Y. Mandelik (1♂), 23.i.2003, T. Levanony (2♂), 3.iv.2003, U. Columbus, T. Levanony (5♀), 23.iv.2003, U. Columbus, T. Levanony (1♀), 15.i.2004, U. Columbus, T. Levanony (8♂, 1♀); Zekharya, 18.i.2002, Y. Mandelik (1♂), 22.iii.2002, Y. Mandelik (1♀); Sedot Mikha, 18.i.2002, Y. Mandelik (1♂); **Northern Negev:** Gilat, 5.i.1957, on alfalfa (1♂; PPIS), 21.i.1957, on *Medicago sativa* (1♀), 8.ii.1957, on *Medicago sativa* (3♀), 13.iv.1959, on clover (1♀), 4.xii.1960, on alfalfa (1♀; PPIS); Mishmar haNegev, 26.iii.1962, on sugar beet (1♂); Lehavim, 7.iv.1998, L. Friedman (1♀); **Dead Sea Area:** Deir Hajla, wadi, 31°49’N 35°31’E, 16.iii.2004, L. Friedman (1♂).

Host plants

Collected on *Medicago sativa* Linnaeus and *Trifolium* spp. (Fabaceae), but not reared. Never found on trees, although found on plants that are unlikely to be hosts: *Limonium* sp. and *Psylliostachys spicata* (Willd.) Nevski (Plumbaginaceae) in a desert biotope near the northern coast of the Dead Sea.

Distribution

Syria, Jordan, Israel (Voss, 1964; Wagner, 1932).

Phenology

Hibernation: October-January; mating period: probably late January to late April; aestivation: May-September. Not collected on trees.

Remarks

Described in the same paper under the names *Apion splendidulum* (from Syria) and *A. damascenum* (from Israel) (Desbrochers, 1874−1875). The correct generic assignment of this species poses difficulties. Alonso-Zarazaga (1990b) questioned the assignment of *S. splendidulum* in *Synapion*, but he has not seen any specimens. M. Wanat (personal communication) considers this species to represent a separate genus, close to *Holotrichapion*, or as a part of the subgenus *Apiops* of *Holotrichapion*. Indeed, the male genitalia of *S. splendidulum* are similar to those of *Apiops sensu* Alonso-Zarazaga (1990b): “transverse tegmen with median notch not surpassing the apical margin, prostegium fused to basal piece, not prominent and only slightly sinuate, fenestrae narrow and continuous, membranous lobes densely microsetose”. However,

the tegmen lacks median keels, the aedeagus is strongly tapered, narrow and pointed at the apex, whereas in *Apiops* the aedeagus is only slightly tapered, rounded or truncate at the apex. A more detailed study of the external features of *S. splendidulum* shows that it belongs neither to *Holotrichapion* (*Apiops*), nor to the subtribe Oxystomatina. The members of Oxystomatina have extremely globose body and elytra, whereas the body of *S. splendidulum* is flattened, which is characteristic of Synapiina. The European *Holotrichapion* (*Apiops*) *pisi*, the type species, has globose body, very convex elytra with coarse deep and wide striae, interstrial spaces convex, body bluish black, matte, and the claws dentate. *S. splendidulum* has oblong body, flattened oblong elytra with shallow and narrow striae, flat interstriae, body opalescent black, claws simple. However, *S. splendidulum* differs from other species of *Synapion sensu* Alonso-Zarazaga (1990b) in a few important features: in *S. splendidulum* the scutellum is comparatively large, rounded, not fused to elytral base; wings present, well developed; 1st protarsal segment longer than wide; prostegium fused to basal piece, and membranous lobes much shorter than basal sclerotized area. In most other species of *Synapion sensu* Alonso-Zarazaga (1990b) the scutellum is apparently absent, when present then minute, triangular, scarcely visible, isodiametric, sunk and fused to the elytral bases; wings reduced or absent; 1st protarsal segment short, 0.9 times as long as wide; prostegium articulated with free ring, and membranous lobes much longer than sclerotized area. Alonso-Zarazaga (1990b) studied three species, which he included in *Synapion*, and hypothesized on 10–12 additional species that could belong to this genus. It is difficult to state whether *S. splendidulum* belongs to *Synapion* or to another genus without revising *Synapion sensu lato*, so we prefer to leave it in *Synapion*.

About half of the examined specimens were collected in pitfall traps, which generally give low recovery of Apionidae.

Tribe Piezotrachelini Voss, 1959a

Protapion Schilsky, 1908

This genus contains about 35 species in the Palaearctic Region. Host plants: Fabaceae, tribe Trifoleae (*Ononis*, *Trifolium*) (Alonso-Zarazaga, 1990b; Alonso-Zarazaga and Lyal, 1999). One genus occurs in the study area. Nine species were recorded from the study area.

Key to species of *Protapion* in Israel

1. All tibiae unicolorous, red or testaceous; pronotum impunctate; rostrum less than 0.33 times as long as body, male prorostrum testaceous; body length less than 1.7 mm ..... ***P. fulvipes***
-. At least one pair of tibiae bicolored, red or testaceous with black or brown, if all tibiae unicolored, then black or brown; rostrum at least 0.33 times as long as body, rostrum entirely black in both sexes; body length more than 2 mm **2**
2. Pronotum finely punctate, distance between punctures greater than their diameter; body and elytra glabrous, bare, shiny ..... ***P. politum***
-. Pronotum coarsely punctate, distance between punctures smaller than their diameter; body and elytra microreticulate, matte, bare or covered with minute translucent scales **3**
3. Scapus red, bulbose at apex, funicle black; 1st metatarsomere long, wide and flat (Fig. 152) **4**

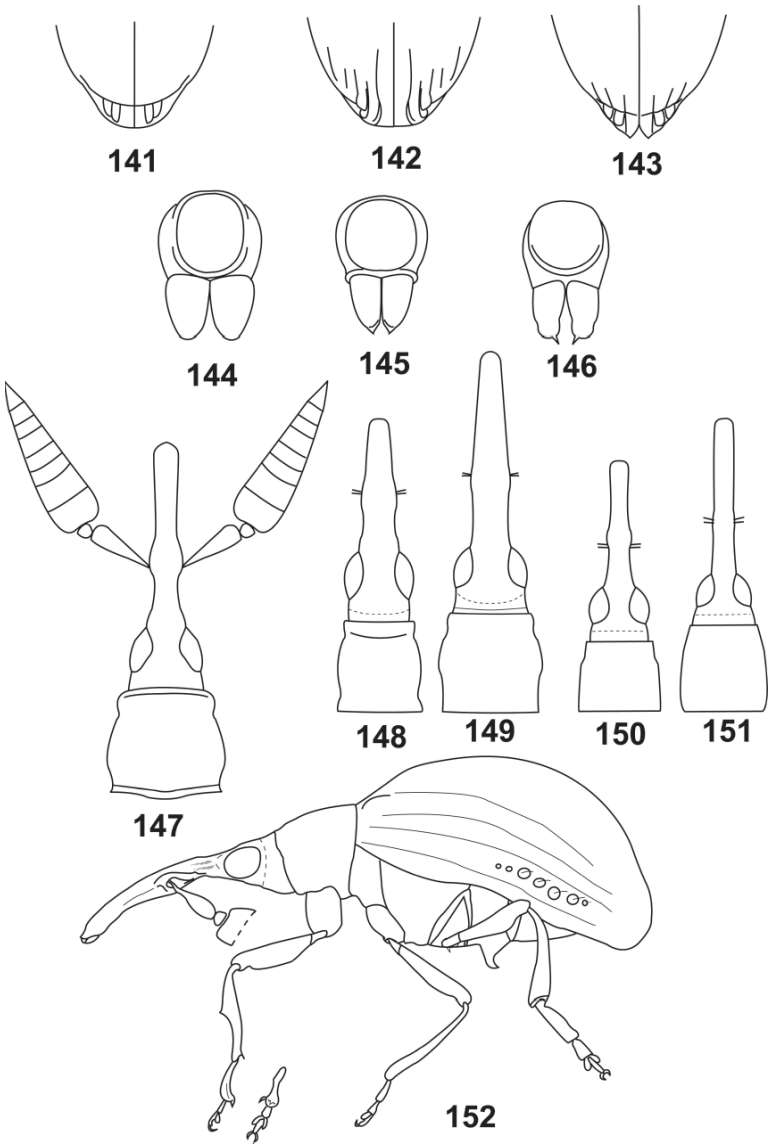
-. Antennae and legs different **5**
4. 1st funicular segment globular, remaining segments flat, transverse, together with club forming flat triangle with 2nd funicular segment at base (Figs. 147, 152); protibia curved, dilated and truncate at apex, with outwardly bent hook at middle, 1st protarsomere long and curved, with inwardly bent flat spine (Fig. 152)..... ***P. truquii*** **(males)**
-. 1st–4th funicular segments globular, as long combined as 5th segment, 5th and 6th segments oblong, cylindrical, 7th segment trapezoidal, flattened, dilated apically, indistinctly separated from club; club not flattened; protibia not as in *P. truquii*, without hook, 1st protarsomere subbasally with straight inward-pointed spine, 2nd protarsomere with longer at apex and shorter at base inward-pointed spines..... ***P. dissimile*** **(males)**
5. Body slender, nearly parallel-sided; elytral length 1.8 times body width **6**
-. Body rounded in dorsal view; elytral length no more than 1.6 times body width..... **9**
6. Apices of elytra pointed, diverging (Fig. 143); frons with or without recumbent pili over eye; scapus 2.5 times as long as 1st funicular segment; 1st protarsomere nearly twice as long as 2nd; punctures on pronotum round..... ***P. truquii*** **(females)**
-. Apices of elytra obtuse, rounded, not diverging (Fig. 141); frons with erect pili over eye; scapus 1.4 times as long as 1st funicular segment; 1st protarsomere nearly as long as 2nd; punctures on pronotum oblong; male pro- and mesocoxae pointed (Fig. 145)..... **7**
7. Body length 1.56 mm ..... ***Protapion*** **sp.**
-. Body length 2.00–2.30 mm **8**
8. Apex of aedeagus in lateral view tapered to tip..... ***P. angusticolle***
-. Apex of aedeagus in lateral view tapered slightly and broadened at tip ..... ***P. assimile***
9. Rostrum tapered; 7th funicular segment slightly flattened, dilated apically, wider than any of remaining funicular segments..... ***P. dissimile*** **(females)**
-. Rostrum tapered or cylindrical; 7th funicular segment globular, not wider than any of rest funicular segments; males and females **10**
10. Rostrum tapered (Figs. 143, 144); at least most of antennae red; all funicular segments with erect setae longer than segment; frons and base of metarostrum with distinct carinae; scapus 1.8 times as long as 1st funicular segment; male pro- and mesocoxae armed with spine (Fig. 146)..... ***P. ononidis***
-. Rostrum cylindrical or slightly tapered at apex (females) (Figs. 150, 151); antennae red at base only, all funicular segments with recumbent setae shorter than segment; frons punctate or striolated, or both; base of metarostrum without punctures and striolae; scapus 1.25 times as long as 1st funicular segment; male pro- and mesocoxae not armed ..... ***P. trifolii***

Protapion angusticolle (Gyllenhal, 1833)

(Figs. 141, 145)

Material examined

ISRAEL: **Hermon:** Majdal Shams, 17.v.1999, L. Friedman (1♂); **Golan Heights:** Meshushim pool, 22.v.2000, E. Orbach (1♀, ORB); Reservoir [Ma`agar] Bental, 33°08'N 35°47'E, 1.vi.2004, A. Freidberg (1♀); Qazrin, 20.v.1997, L. Friedman (1♀), V. Chikatunov (1♀), 12.v.1998, V. Chikatunov (2♂, 1♀), 4.v.1999, L. Friedman (2♀); Panyas, 23.iv.1998, A. Freidberg (4♂, 10♀); Qusbīye, 18.iii.1973, M. Kaplan (1♂, 2♀), D. Furth (1♀); **Upper Galilee:** 18.v.1963 (5♂, 8♀); Tel Dan, 11.V, H. Bytinski-Salz (1♀); Dan, 30.v.1949, H. Bytinski-Salz (1♀); Nahal Senir, 12.v.1998, L. Friedman (2♂, 1♀), V. Chikatunov (3♂), 24.v.1999, L. Friedman (3♂); 'En Te`o, 21.ii.1973, D. Furth (1♂, ♀); Ramot Naftali, 13.v.1998, L. Friedman (1♂, 1♀), V. Chikatunov (3♂), Har



Figs. 141–152. *Protapion* spp.: 141. *P. angusticolle*, female, tip of elytra, dorsal view. 142. *P. trifolii*, female, tip of elytra, dorsal view. 143. *P. truquii*, female, tip of elytra, dorsal view. 144. *P. truquii*, male, procoxae, rostral view. 145. *P. angusticolle*, male, procoxae, rostral view. 146. *P. ononidis*, male, procoxae, rostral view. 147. *P. ononidis*, male, head and pronotum, dorsal view. 148. *P. ononidis*, female, head and pronotum, dorsal view. 149. *P. trifolii*, male, head and pronotum, dorsal view. 150. *P. trifolii*, female, head and pronotum, dorsal view. 151. *P. truquii*, male, head with antenna and pronotum, dorsal view. 152. *P. truquii*, male, lateral view.

Meron, 19.v.1998, L. Friedman (1♂), ex *Trifolium* sp. (1♀); **Northern Coastal Plain:** Kabri, 16.iv.1981, Q. Argaman (1♂); **Samaria:** Nahal ‘Iron [Wadi ‘Ara], 21.iv.1973, D. Furth (teneral); **Jordan Valley:** ‘En Gev, 8.v.1997, L. Friedman (1♂); Park haYarden, 7.v.1997, A. Freidberg (4♂, 1♀), 8.v.1997, L. Friedman (22♂, 13♀), V. Chikatunov (16♂, 9♀), 24.ix.1997, L. Friedman (2♀), 3.ii.1999, L. Friedman, on *Tamarix* sp. (32♂, 36♀).

Distribution

Southern Europe and Syria (Angelov, 1976).

Host plants

Trifolium purpureum Loisel., *T. pilulare* Boissier, *T. nigrescens* Viv., and *T. spumosum* L. (Fabaceae). Larval development occurs in flowers. In Europe associated with *T. stellatum* (Ehret, 1990).

Phenology

Hibernation: October–January; beginning of mating season: early February (observed mating in Park haYarden on tamarisk); emergence: April–May; spring migration to trees: May; aestivation: end of May – end of September; autumn migration to trees: September–October.

Remarks

Desbrochers (1896) described *Protapion tereticolle* from the study area, although Wanat (in litt.) suggested that this might be a synonym of *P. angusticolle* or of *P. spinicoxale* Wagner (the latter species is known from Iran). The body length of *P. tereticolle* appears to be slightly larger and the female rostrum slightly longer than in *P. angusticolle*. None of our specimens of *Protapion* seems to belong to *P. tereticolle*.

Protapion assimile (Kirby, 1808)

Material examined

Recorded from Israel (Bodenheimer, 1937), but no specimens were available in Israeli collections.

Distribution

Recorded as widely distributed in the Palaearctic Region (Wagner, 1932; Dieckmann, 1977), but not recorded even from western Siberia (Krivets and Legalov, 2002), absent from Tajikistan (Nasreddinov, 1975b), Mongolia (Ter-Minassian, 1972b) and the Russian Far East (Egorov, 1976).

Host plants

Not reared in the study area. In Europe oligophagous on *Trifolium* (Hoffmann, 1958; Dieckmann, 1977; Ehret, 1990).

Remarks

Bodenheimer's record (1937) is probably a misidentification of *P. angusticolle*. Schön (1981) states, that the two species are difficult to separate, although there are clear differences in the form of the aedeagus. The closest to Israel record of *P. assimile* is north-east Turkey (Hayat *et al*., 2002).

Protapion dissimile (Germar, 1817)

Material examined

Recorded from Israel (Har Hermon, Golan Heights: Panyas) (Festa, 1894) and (Bodenheimer, 1937) but no specimens were available in Israeli collections.

Distribution

Europe, Turkey, the Caucasus, Middle Asia (Gønget, 1997; Ter-Minassian, 1972a; Wagner, 1932).

Host plants

Not reared in the study area. In Europe monophagous on *Trifolium arvense* L. (Hoffmann, 1958; Dieckmann, 1977).

Remarks

Bodenheimer's record (1937) is probably a misidentification of *P. truquii* or *P. ononidis*.

Protapion fulvipes (Fourcroy, 1785)

Material examined

ISRAEL: **Golan Heights:** Panyas, 24.ix.1997, A. Freidberg (2♂, 1♀); **Upper Galilee:** Har Kefir, 850 m, 31.v.1998, E. Orbach (1♀, ORB); Har Meron, 900 m, 3.x.2001, L. Friedman (1♂); **Jordan Valley:** Deganya, 5.iii.1981, Q. Argaman (1♂, 1♀); **Carmel Ridge:** Nahal Yagur, 11.xi.1996, L. Friedman, on *Arbutus andrachne* (1♂), on *Viburnum tinus* (1♂), on *Styrax officinalis* (1♀), on *Laurus nobilis* (1 ♀), on *Quercus calliprinos* (3♀); Nahal Oren, 4.ii.1981, D. Furth (1♂), 23.ii.1998, L. Friedman (1♂).

Distribution

Widespread across the west Palaearctic (Wagner, 1932; Dieckmann, 1977; Gønget, 1997; Ehret, 1990), including the Caucasus (Ter-Minassian, 1972a) and Siberia (Legalov and Opanasenko, 2000; Krivets and Legalov, 2002), but not recorded from Tadzhikistan (Nasreddinov, 1975a, 1975b) and eastern Palaearctic.

Host plants

Not reared in the study area. In Europe reared from *Trifolium* spp. (Scherf, 1964;

Hoffmann, 1958; Dieckmann, 1977; Gønget, 1997).

Phenology

Hibernation: November-January; spring migration to trees: May; autumn migration to trees: September-November.

Remarks

This species was erroneously recorded as "*Apion flavipes* var. *ledereri* Kunch." (Bodenheimer, 1937), which is a lapsus of "*A. flavipes* Paykull a. *Lederi* Kirsch" in Wagner (1932). *Apion flavipes lederi* is a junior synonym of *P. fulvipes*.

***Protapion ononidis* (Gyllenhal, 1827)**

(Figs. 146, 148, 149)

Material examined

ISRAEL: **Golan Heights:** Nahal Nimrod, 4.x.2001, A. Freidberg (1♂, 1♀); Panyas, 27.v.1999, L. Friedman (1♂); Qazrin, 20.v.1997, V. Chikatunov (3♀), 4.v.1999, L. Friedman (1♀); **Yizre'èl Valley:** Newe Ya'ar, 19.v.1957, on *Trifolium* sp. (1♂); **Samaria:** Jatt, 9.ii.1973, D. Furth (1♀); Zur Natan, 24.iv.1981, Q. Argaman (2♀); Upper Nahal Tirza, 19.ii.1974, D. Furth (1♀); Nahal Tirza, 1.iii.1973, D. Furth (1♂); **Jordan Valley:** Mehola, 17.ii.1973, D. Furth (2♀); "149", 1.viii.1993, Y. Zvik (1♂); **Central Coastal Plain:** Giv'at Olga, 8.v.1981, Q. Argaman (2♀); Ilanot, 24.iv.1981, Q. Argaman (1♀); Bet haLewi, 9.ii.1973, D. Furth (1♀); Tel Aviv University, Zoo, 15.v.1998, L. Friedman (1♂); **Foothills of Judea:** Tarum, 25.vii.1972, D. Furth (1♂); 'En Hemed [Aqua Bella], 26.v.1961, U. Ritte (2♀), 5.viii.1972, M. Tintpulver (1♂); **Judean Hills:** Ben Shemen, 19.iii.2002, L. Friedman (1♂, 1♀); 'En Qibbliya [Wadi Kabala], 15.v.1923, P. A. Buxton, on *Epibolium* sp. (1♂, 1♀); Sattaf, 19.v.1998, L. Friedman (1♂); Yerushalayim [Jerusalem], 'En Kerem [Ein Karim], 21.v.1946, P. Jolles, on lettuce and eggplants (2♂, 4♀, TAUI; 2♂, 4♀; PPIS), 18.ii.1957 (1♀, TAUI; 6♀; PPIS), 8.iv.1957 (1♂), 8.ix.1957 (1♀), all on *Trifolium*; Yerushalayim [Jerusalem], 13.viii.1930 (1♂), 8.ix.1930 (1♂), 11.ix.1930 (1♀), 18.ix.1930 (1♂), all Y. Tapukhi; 'En Gazit ['Ein Hūsān], 7.v.1972 (1♂, 2♀); **Judean Desert:** 'En Qelet, 5.v.1973, M. Tintpulver (1♂); 'Ein 'Ouja, 25.viii.1973, M. Tintpulver (1♂); **Dead Sea Area:** Qalya, 13.ii.1975, A. Freidberg (1♀).

Distribution

Europe, the Middle East and North Africa (Gønget, 1997).

Host plants

In Israel recorded from *Ononis* spp. (Halperin and Fremuth, 2003). In Europe reared from *Ononis* spp. (Gønget, 1997).

Phenology

Hibernation: end of September-February; breeding season: May; migration to trees: May-mid-September. This species is unique among the Apionidae in the Mediterranean

zone of Israel in being active during the summer.

Remarks

Listed as *Apion ononicola* Bach (a junior synonym of *P. ononidis*) (Bodenheimer, 1937; Melamed-Madjar, 1969b).

Protapion politum (Desbrochers, 1874−1875)

Material examined

ISRAEL: 1900−1915, pater E. Schmitz (1♂); **Hermon:** 1900 m, 22.v.1973, D. Furth (1♂, 2♀), 1800 m, 25.v.1998, V. Chikatunov (1♂, 2♀), 1600 m, 14.v.1996, V. Chikatunov (1♂); **Golan Heights:** Panyas, 27.v.1999, L. Friedman (1♂); Qusbīya, 4.v.1999, D. Furth (1♂); Nahal Mezar, 10.iii.1995, E. Orbach (1♀) (ORB); **Upper Galilee:** Ramot Naftali, 13.v.1998, L. Friedman (1♀), A. Freidberg (2♂); Elqosh, 18.v.1981, Q. Argaman (2♂); Rihaniya, 22.v.1998, A. Freidberg (8♂, 2♀); Berekhat Sasa, 14.v.1999, A. Freidberg (2♀); Har Meron, 20.v.1959, J. Krystal (1♂), 800 m, 22.v.1998, A. Freidberg (1♂, 1♀); Har Kefir, 850 m, 29.iv.1998, E. Orbach (1♂) (ORB); **Lower Galilee:** Sha'ab, 19.v.1976, D. Gerling (1♂), Bet Alfa, 3.vi.1981, Q. Argaman (1♂); Basmat Tab'un, 14.iv.1999, L. Friedman (1♂); **Carmel Ridge:** Hefa [Kaifa], E. Reitter (1 destroyed); Nahal Oren, 17.v.1996 (1♂), 18.viii.1996 (1♀), 11.ii.1997 (1♂), 15.v.1997 (1♀), 16.v.1997 (1♀), 18.v.1998 (1♂), all V. Chikatunov and T. Pavliček; Muhraqa [place of sacrifice], 8.iv.1930 (1♂); 1.5 km NW Even Yizhaq [Gal'ed], 10.iv.1995, E. Orbach (1♀) (ORB); **Northern Coastal Plain:** Park Caesarea, 23.ii.1998, V. Kravchenko (1♀); Sedot Yam, 4.v.1998, M. Fine (2♂); **Samaria:** Har 'Eval, 4.iv.1999, L. Friedman (1♂); 'Ez Efrayim, 13.iii.1998, L. Friedman (1♂); **Jordan Valley:** Reshafim, 17.ii.1973, D. Furth (3♀); Newe Ya'ar, iv.1957, on clover (1♂); **Central Coastal Plain:** 'Emeq Hefer, 22.iv.1940, on cabbage (1♂, 2♀); Kefar Vitkin, 18.iii.1940 (1♂); Avihayil, 8.iii.1939 (1♂); Netanya, 8.iii.1939 (1♂, 1♀); Migdal Afeq [Migdal Zedeq], 13.iv.1999, L. Friedman, ex *Trifolium resupinatum*, 15−17.v.1999 (16♂, 21♀); **Southern Coastal Plain:** Bet Dagan, 21.ii.1957, on *Vicia sativa* (1♀); Rishon leZiyyon, Dunes, 11.ii.1947, H. Bytinski-Salz (2♂); **Judean Hills:** Yerushalayim, xi.1929, F. S. Bodenheimer (1♂), 3.v.1932, Ph. Jolles (1♂), 23.xi.1981, Y. Zvik (1♂), 'En Kerem, 18.ii.1957, on *Trifolium* sp. (1♀), Qiryat 'Anavim, v.1931, F. S. Bodenheimer (1♂), Talpiyyot, 10.v.1954, Pener (1♂).

Distribution

Syria, Jordan, Israel (Voss, 1964; Wagner, 1932).

Host plants

Trifolium resupinatum Linnaeus (Fabaceae). The larvae develop in the inflorescence, 1−4 larvae together, and pupation takes place in the seed or in the calyx.

Phenology

Hibernation: November-January; oviposition period: April: emergence mid-May; spring migration to trees: May; aestivation: June-October; autumn migration to trees: November.

Remarks

Misidentified as *Apion laevicolle* Kirby by Melamed-Madjar (1969b).

Protapion trifolii (Linnaeus, 1768)

(Figs. 142, 150, 151)

Material examined

ISRAEL: 9.iv.1930, F. S. Bodenheimer (1♀); **Golan Heights:** Panyas, 17.vi.1971, H. Bytinski-Salz (15♂, 10♀), 26.iv.1984 (1♂, 2♀), 23.v.1998 (2♂, 2♀), all A. Freidberg, 27.v.1999, L. Friedman (31♂, 20♀), A. Freidberg (3♂, 1♀); 4 km S Mas'ade, 4.v.1972 M. Tintpulver (1♀); Meshushim pool, 22.v.2000, E. Orbach (1♂, 1♀) (ORB); Qazrin, 12.v.1998, V. Chikatunov (3♂); Qusbīya, 4.v.1979, D. Furth (2♀); Hammat Gadér, 8.v.1997, V. Chikatunov (1♀); **Upper Galilee:** 28.iii.1960 (1 ♀; PPIS), 20.ii.1963 (1 ♀), 17.iv.1963 (3♂; PPIS), 8.v.1963 (9♂, 5♀; PPIS), all on clover; Nahal 'Iyyon Reserve [HaTanur] , 17.iii.1973, D. Furth (1♀); Nahal Senir, 12.v.1998 (1♂), 24.v.1999 (9♂, 1♀), all L. Friedman; Tel Dan, 6.v.1979, D. Furth (1♀), 8.xi.1984, A. Freidberg (1♂), 25.v.1988, G. Coulon (1♀); Dan, 30.v.1949, H. Bytinski-Salz, on plum (6♂); 'En Te`o, 21.ii.1973, D. Furth (1♂); Gonén, 14.iii.1975, A. Freidberg (2♂); Ramot Naftali, 13.v.1998, A. Freidberg (1♀); Biriyya, 1.iii.1981, Q. Argaman (1♂); Har Meron, 14.v.1973, D. Furth (1♂), 19.v.1998, L. Friedman, ex *Trifolium* sp. (1♂), 26.v.1999, V. Chikatunov (1♀); **Lower Galilee:** Nazerat, 30.ix.1982, Q. Argaman (1♂, ♀); **Carmel Ridge:** Hefa [Kaifa], E. Reitter (1♂, 1♀); Hof haCarmel, 25.iv.1963, on clover (1♂), 27.v.1963, on clover (4♂; PPIS); Nahal Tut, 4.v.1978 (1♀), 9.v.1979 (1♀), all D. Furth, 18.iii.1993, A. Bear (2♀); Ramot Menashe, 14.vi.1982, Q. Argaman (1♂); Zikhron Ya'aqov, 10.v.1933, on grape blossom (1♂), 1.iv.1998, A. Freidberg (1♀); **Northern Coastal Plain:** Kabri, 8.vi.1971, D. Gerling (1♂), 16.x.1981, Q. Argaman (1♂); Carmel beach, 25.iv.1963 (2♂, 3♀), 12.v.1963 (1♀), 27.v.1963 (1♂, 1♀; PPIS); Nahsholim, 14.v.1959, on *Trifolium* (1♀); Hedera, 4.v.1932, F. S. Bodenheimer (1♂; PPIS); **Yizre'el Valley:** Newé Ya'ar, iv.1957, on clover (1♂, 2♀; PPIS); Ya'el, 19.ii.1973, D. Furth (1♀); **Samaria:** Nahal Tirza, 1.iii.1973 (1♀), 21.iv.1973 (1♀), all D. Furth; **Jordan Valley:** Park haYarden, 8.v.1997, V. Chikatunov (2♀), L. Friedman (1♂), 24.ix.1997, L. Friedman (1♀); 'En Gev, 23.v.1949, H. Bytinski-Salz, on *Carthamus* sp. (1♂, 2♀); **Central Coastal Plain:** Mikhmoret, 20–22.vi.1981, Q. Argaman (1♀); Avihayil, 8.iii.1939 (1♀); Netanya, 3.iv.1981, Q. Argaman (1♂); Tel haShomer, 3.ix.1982, Q. Argaman (1♂); Tel Aviv Zoo, 9.iii.1998, L. Friedman (1♂); Yafo, 24.ii.1925 (1♂), 24.ix.1925 (2♀; PPIS), all G. F. Hucklesby; **Southern Coastal Plain:** Kefar Eliyyahu, 18.iv.1982, Q. Argaman (1♂, 1♀); Bet Dagan, 21.ii.1957, on *Vicia sativa* (1♀), 19.iv.1963 on clover (1♂); Be`er Tuvya, 6.v.1963, on clover (1♀); Palmahim [Rūbīn], iv.1930, I. Aharoni (1♂, 1♀); Palmahim, vi.1961, Katznelson (1♂); Talmé Yehi`el [Masmia], 18.iii.1957, on *Trifolium* sp. (1♂; PPIS); **Foothills of Judea:** Ben Shemen, 19.ix.1926 (1♀); **Judean Hills:** Yerushalayim [Jerusalem], 12.ix.1928, R. Jolles (1♀), Malha, 22.iv.1958, on *Trifolium* (1♂).

Distribution

Recorded as widely distributed across the Palaearctic Region (Wagner, 1932), but apparently limited to the western Palaearctic: not recorded from Tajikistan (Nasreddinov, 1975b), western Siberia (Krivets and Legalov, 2002), Mongolia (Ter-Minassian, 1972b), and south of the Russian Far East (Egorov, 1976).

Host plants

Trifolium sp. (Fabaceae). In Europe oligophagous on various *Trifolium* species (Hoffmann, 1958; Dieckmann, 1977; Gønget, 1997; Ehret, 1990).

Phenology

Hibernation: November-end of February; emergence and spring migration to trees: late April – May; aestivation: mid-June-September; autumn migration to trees: September-early November.

Remarks

Recorded as *Apion aestivum* Germar (a synonym of *P. trifolii*), *A. a.* var. *alepponum* Wagner, *A. caiffense* Desbrochers, and *A. brenskei* Desbrochers by Bodenheimer (1937), and as *A. apricans* Herbst and *A. aestivum* by Melamed-Madjar (1969b).

***Protapion truquii* (Reiche and De Saulcy, 1858)**

(Figs. 143, 147, 152)

Material examined

ISRAEL: **Hermon:** 1900 m, 22.v.1973, D. Furth (1♀), 1600 m, 23.v.1998, A. Freidberg (1♂), 4.v.1999, L. Friedman (1♀), 14500 m, Nahal 'Ar'ar, 1 km NNE Birket Man, 18.v.2001, E. Orbach (1♂) (ORB), 800 m, 1.ii.1978, D. Furth (1♀), Majdal Shams, 12.v.1998, L. Friedman (1♂); **Golan Heights:** Panyas, 17.vi.1971, H. Bytinski-Salz (4♀), 26.iv.1984, A. Freidberg (1♂), 23.v.1998, A. Freidberg (1♂, 2♀), 27.v.1999, L. Friedman (1♂, 2♀); Meshushim pool, 22.v.2000, E. Orbach (1♂) (ORB); Qazrin, 14.v.1996, V. Chikatunov (1♀), 12.v.1998, V. Chikatunov (2♀), 4.v.1999, L. Friedman (4♀); Qusbīya, 6.v.1973 (1♀), 4.v.1979 (1♂), 3.v.1980 (1♂), all D. Furth; Gamla, 6.v.1975, A. Freidberg (1♂, 1♀), F. Kaplan (2♂, 1♀); Nahal El-'Al, 3.ii.1984, Nussbaum (2♂, 2♀); **Upper Galilee:** 10.v.1959, on lucerne (1♂; PPIS), 17.iv.1963, on clover (3♀); Kefar Gil'adi, 9.iv.1937, Y. Rivnay (1♂, 1♀); Nahal 'Iyyon, 1.v.2006, L. Friedman (6♂, 9♀); Nahal Senir, 12.v.1998, L. Friedman (1♂, 3♀); Tel Dan, H. Bytinski-Salz (1♀), 6.v.1979, D. Furth (1♂, 1♀); Dan, 20.iii.1947, H. Bytinski-Salz (10♂), 30.v.1949, H. Bytinski-Salz, on plum (1♂); Hawat Mattityahu, 4.v.1998, D. Oppenheim, on apple and pear [trees] (1♀); **Carmel Ridge:** Hefa [Kaifa], E. Reitter (1♀), 28.iii.1942, H. Bytinski-Salz; Nahal Oren, 14.x.1997, V. Chikatunov (1♀), 15.v.1997 (2♀), 10.vii.1997 (1♀), 18.v.1998 (1♂), all V. Chikatunov and T. Pavliček; 1.5 km NW Even Yizhaq [Gal'ed], 8.iv.2001(2♀), 10.iv.2001 (2♂), all E. Orbach (ORB); Nahal Tut, 18.iii.1983, A. Bear (2♂); Zikhron Ya'aqov, 14.xi.1931, on citrus (1♂, 2♀), on *Rubus* sp. (2♂, 7♀), 21.iv.1932 (1♂), 21.iv.1974, D. Furth (1♂); Binyamina, 12.iv.1947, H. Bytinski-Salz (1♂, 1♀); **Northern Coastal Plain:** Nahal Keziv, 5.v.1978, D. Furth (1♀); Montfort, 1.v.1973, D. Furth (1♀); Carmel beach, 1.iv.1963 (1♀), 27.v.1963 (1♀), all on clover; Nahsholim, 2.iv.1959, on clover (1♀; PPIS), 14.v.1959, on clover (1♂, 1♀; PPIS); Hadera, 21.x.1961, on grapefruit tree (10♂, 12♀; PPIS); **Yizre'el Valley:** Mé 'Ammi, 2.iv.1985, I. Susman, on cotton (1♂); **Jordan Valley:** Park haYarden, 7.v.1997, A. Freidberg (2♂, 1♀), 8.v.1997, L. Friedman (5♂, 4♀), V. Chikatunov (4♀), 2.iv.1998, A. Freidberg (3♂), 3.ii.1999, L. Friedman, on *Tamarix* sp. (3♀), 14.iv.1999, A. Freidberg (1♀); Ginosar, 29.v.1978, D. Furth (1♀); HaOn, 8.v.1997, L. Friedman (2♀); **Central Coastal Plain:** Ilanot, 24.iv.1981, Q. Argaman (1♂); Nahal Poleg, 12.i.1958, J. Kugler (2♀); Tel Aviv, 6.v.1926, F. S. Bodenheimer (1♀); Petah Tiqwa, 15.v.1982, Nussbaum

(1♀); **Southern Coastal Plain:** Bet Dagan, 26.i.1959, on clover (1♀; PPIS), 6.v.1959, on clover (1♀; PPIS), 7.v.1959, on clover (1♂; PPIS); Be`er Toviyya, 27.iii.1963, on clover (1♀); Rishon leZiyyon, 26.i.1957, H. Ginzburg (1♀); Palmahim, vi.1961, Katzenelson (1♂); **Foothills of Judea:** Ben Shemen, iii.1925, F. S. Bodenheimer (1♀).

Distribution

Balkan Peninsula, Turkey, Syria, Jordan, Israel (Angelov, 1976; Voss, 1964).

Host plants

We have not reared this species in Israel, but have reared it from a red-flowered *Trifolium* sp. that we collected near Adana, Turkey

Phenology

Hibernation: November-December; spring migration to trees: April – mid-May; aestivation: June-September; autumn migration to trees: October-November.

Remarks

Described from Israel.

Protapion sp.

Material examined

ISRAEL: **Dead Sea Area:** ‘Enot Zuqim, 18.v.1996, L. Friedman (1♂).

Distribution

Israel.

Host plants

Unknown.

Remarks

The specimen recorded above greatly resembles *Protapion angusticolle*, but its body length is only 1.56 mm, whereas the body length of the smallest *P. angusticolle* is 2.0 mm. Otherwise, it has no observable morphological differences from *P. angusticolle* except the aedeagus, which differs in the presence of a median group of spicules in the basal half of the aedeagus (*P. angusticolle* does not have such a group of spicules, but has an oblong longitudinal structure), and in being slightly less curved, with two parallel stripes of spicules in the apical third, which contain larger spicules than in *P. angusticolle* (the last two characters might be the result of allometry). Although *P. angusticolle* has been collected almost exclusively in the northern, Mediterranean, part of Israel, this specimen was collected in an oasis in an extremely arid region in the south

that is a very atypical habitat for *P. angusticolle*. Additional specimens of both sexes are required in order to clarify the taxonomic status of this specimen.

Incertae sedis

Necatapion Friedman and Freidberg, n. gen.

(Figs. 153−161)

Type species: *Apion bruleriei* Desbrochers, 1874, by present designation and monotypy.

Diagnosis

Necatapion generally resembles *Malvapion* Hoffmann in the stout habitus, massive rostrum and brown coloration of elytra and legs. However, based on the pygidium type *Necatapion* belongs to the Apionitae, and *Malvapion* belongs to the Aspidapiitae. *Necatapion* differs from *Catapion* in numerous characters, as shown in Table 1. The differences in the structure of the tegmen are especially important as all *Catapion* species have a uniform type of tegmen, which is narrow, fully enveloping the aedeagus, and nearly without interspecific variability. The genitalia of *N. bruleriei* are unique among the tribes of Palaerctic Apionidae known to us, making difficult the assignment of *N. bruleriei* to one of the existing tribes. A discussion of additional difficulties in assigning this taxon to a tribe follows in the Remarks section below.

Description

Body. (Figs. 153−156) short, pear-shaped, rounded posteriorly, dark brown or piceus, head and pronotum darker than elytra; sutural margin of elytra, prescutellar area, abdominal sternites, coxae, trochanters and tips of femora, tibiae and and tarsi dark brown to black. Head and pronotum coarsely densely microreticulate, matte; elytra with inconspicuous microsculpture, moderately lustrous. Length: 1.35−1.67 mm. Vestiture sparse but very conspicuous, comprised of white, shallowly arcuate scales touching integument with their apices.

Rostrum. Wider in basal half, in females base of rostrum twice as wide as apex, weakly roundly dilated at antennal insertion, curved, in male moderately, in female rather strongly tapered at apex, prorostrum slightly incrassate in lateral view; pubescent to middle of prorostrum in male and to base of prorostrum in female. Rostrum, except short apical part, matte, coarsely, densely microreticulate, with sparse indistinct small oblong punctures partly merging into short striae.

Head. Subconical, coarsely punctate. Temples rounded in male, straight in female. Antennae inserted close to base of rostrum at distance 0.6 times as long as scapus; funicle thick, resembling funicle of *Ceratapion*, funicular segments cylindrical, or wide spherical; length of antennal segments: scapus: 0.11 mm, 1st funicular segment 0.9 mm. other funicular segments0.05 mm; club lanceolate, with sutures indistinct, length: 0.16 mm. Antennal pubescence thin, erect, whitish. Club with moderately dense long, very fine setosity. Antennal scrobes lateroventral, oblong. Eye eye broad-oval with

Table 1
Taxonomic differences between *Necatapion* and *Catapion*

Character	***Necatapion***	***Catapion***
Coloration	brown, body matte, elytra matte or slightly lustrous	black, body and elytra with weak leaden luster
Eye	oval dorsoventrally, with ventral margin slightly produced downwards	round
Funicular segments	Thick-cylindrical or wide and spherical, articulating areas wide	spherical, narrowly jointed
Vestiture	sparse, comprised of thick, piliform arcuate non-recumbent scales	usually dense, comprised of thin, recumbent scales
Tegminal plate	concave, enveloping aedeagus only laterally	fully enveloping aedeagus
Membranous part of apical lobes	lacking	present
Sclerotized part of apical lobes	carrying subapically three long and thick macrochaetae, not microtrichose	carrying subapically short, narrow macrochaetae, usually microtrichose
Prostegium	with triangular projection, wide, short, not enveloping basal piece	not protruding and enveloping basal piece
Aedeagus	nearly straight with wide apex	arched, narrow, tapered at apex
Aedeagal apodeme	as long as tube	0.25 times as long as tube

straightened posteroventral margine, 0.7 times as long as wide and slightly prominent. Frons flat or slightly convex, punctate, with or without 1 or 2 fine striolae, pubescent, width 0.1 mm. Head ventrally with deep separation between subocular region and gula, subocular region prominent, punctate.

Pronotum. Weakly transverse, moderately rounded, constricted apically and basally, base slightly arcuate. Disc weakly convex, sparsely and unevenly punctate, punctures

coarse, round, deep, with bottom flat, interspaces slightly convex, granulate. Prescutellar fovea deep, lanceolate.

Scutellum. Trapezoidal, more or less convex, not pubescent, apex rounded.

Elytra. With disc flattened along suture, slightly convex apically; sides rounded; broadest at humeral region in male and in beginning of apical third in female; humeral callus noticeable; interstriae 1.5−3 times as wide as striae, weakly convex smooth, shiny, with sparse fine squamiferous punctures; striae shallow, strial punctures deep, darker than interstriae; 1st stria somewhat wider and noticeably deeper than rest. Specialized setae not observed. Strial formula: 1, 2+9, 3+4, 5+6, 7+8. First stria not reaching the apex of scutellum.

Abdomen. Abdominal sternites submatte, sparsely covered with straight whitish scales, first two sternites less coarsely punctate than pronotum, remaining sternites microgranulate, with sparse indistinct punctures more conspicuous on anal sternite. Pygidium of non-thymapiine type, concealed under elytra.

Legs. Not sexually dimorphic. Mesocoxae separated by width of antennal scape or slightly more. Onychium as long as 3rd tarsomere, or slightly less. Claws not dentated.

Male genitalia. ***Tegmen*** (Figs. 159, 160): Tegminal plate concave, laterally slightly enveloping aedeagus; tegminal apodeme 1.5 as long as tegminal plate, tapering apicad; basal piece fused to prostegium; prostegium prominent, triangular, not enveloping basal piece; fenestrae continuous, transverse; apical lobes rounded, with three very long and thick macrochaetae subapically, separated by shallow notch, not reaching fenestrae; apical part of tegmen sclerotized, without microtrichia. ***Aedeagus*** (Figs. 157, 158): wide, short, nearly straight, with produced, wide, recurved, rounded apex; aedeagal apodeme as long as tube; endophallus not armed. ***Sternite 9*** (spiculum gastrale) (Fig. 161): with manubrium 2.5 times as long as arms.

Etymology

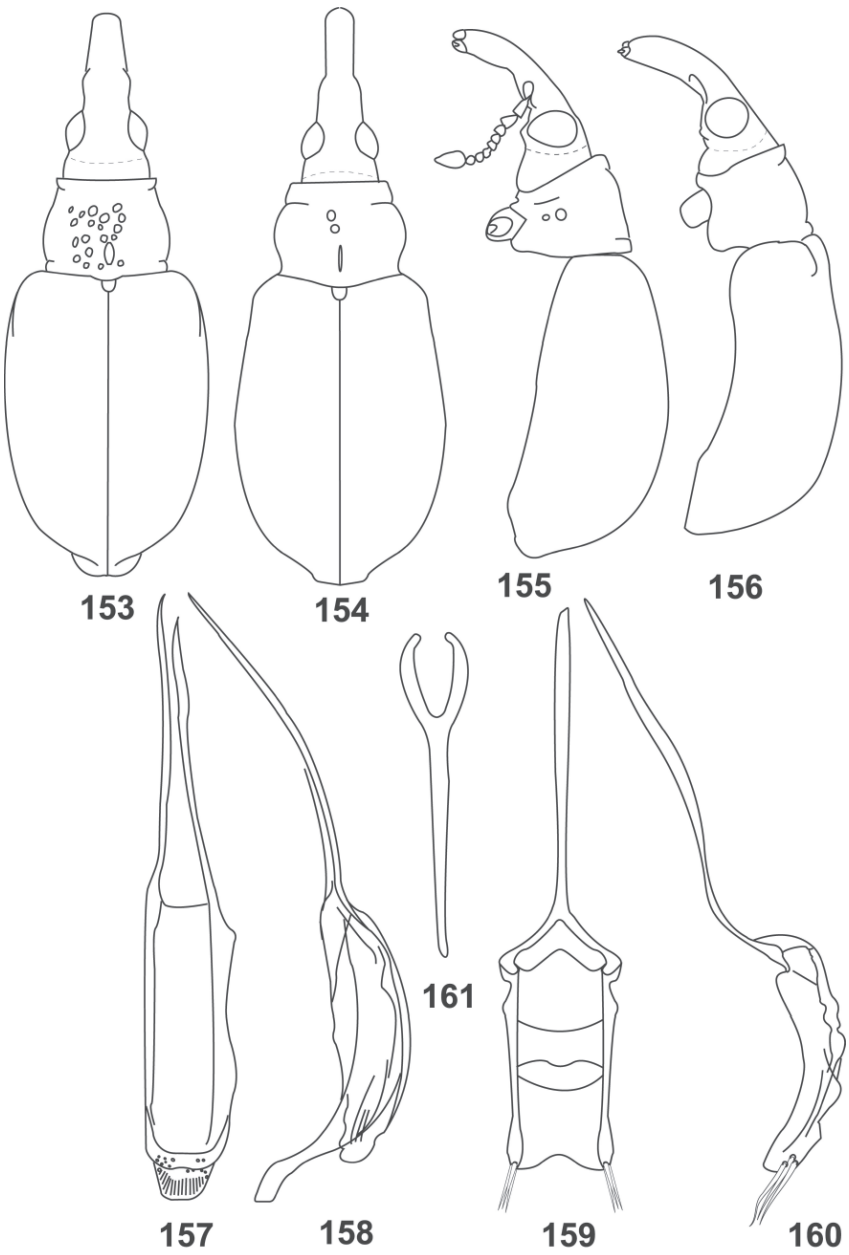
The name of the new genus is formed by adding the prefix "ne" (=no) to "*Catapion*" in order to emphasize the difference from *Catapion*. The gender is masculine.

Distribution

Eastern Mediterranean (see details under the following species).

Remarks

Necatapion bruleriei does not belong to *Catapion*, although in the original description it was compared to *Catapion curtisii*, probably because of the small size and dark appearance of these two species. Wagner (1932) assigned it to *Pseudocatapion*, probably based on the same characters, and also included *burdigalense* Wencker. Kissinger (1968) wrote: "*Pseudocatapion* Wagner, 1930: 1392, erected as subgenus of *Apion*. Type species not designated" which, if correct, makes *Pseudocatapion* an invalid genus. Voss (1959b) proposed a new genus, *Malvapion* (nec *Malvapion* Hoffmann, 1958), for *Apion malvae* L., based on the basal insertion of the antenna, incrassate base of male rostrum, dense



Figs. 153−161. *Necatapion bruleriei*. 153. Male habitus, dorsal view. 154. Female, dorsal view. 155. Male, lateral view. 156. Female, lateral view. 157. Aedeagus, dorsal view. 158. Aedeagus, lateral view. 159. Tegmen, dorsal view. 160. Tegmen, lateral view. 161. Spiculum gastrale.

pubescence and testaceous color of elytra. Later he gave a new definition to *Malvapion*, characterizing this genus by the widely separated mesocoxae (0.3−0.4 of their diameter) and short massive rostrum (Voss, 1965). On the basis of these characters Voss (1965) assigned *Pseudocatapion* as a subgenus of his *Malvapion*. Voss left *bruleriei* and *burdigalense* in *Pseudocatapion* on the basis of the non-dentated claws. However, the widely separated mesocoxae is a plesiomorphic character, found in most Apionidae. The male genitalia were not included in the study by Voss (1959b, 1965). *Malvapion* Voss was recognized by Dieckmann (1977) as a junior synonym of *Malvapion* Hoffmann. Alonso-Zarazaga (1990b) synonimized *Pseudocatapion* with *Catapion* Schilsky.

We were facing a dilemma in establishing a new tribe for *N. bruleriei*. Dr M. Wanat wrote to us that he considered *N. bruleriei* to be intermediate between the Palaearctic *Catapion* and the *ceutorrhynchidium* species-group of an undescribed genus from eastern and southern Africa, and belonging to Catapiina. He kindly sent us a pair of *Apion* (*sensu lato*) *graminis* Balfour-Browne. Externally, this species looks like a swollen *Catapion*, with thick antennal funicle and tarsomeres and pubescence comprised of sparse, thick piliform scales of the *bruleriei* type. However, the male genitalia of *A. graminis* greatly resemble those of *Catapion* spp.: long, narrow, curved aedeagus with short aedeagal apodeme and short enveloping tegminal plate with microtrichose membranous lobes. We presume that *N. bruleriei* does not belong to Catapiina, Oxystomatini, and probably represents an undescribed tribe. However, establishment of this new tribe is beyond the scope of the present work.

Necatapion bruleriei (Desbrochers, 1874−1875), n. comb.

(Figs. 153−161)

Material examined

ISRAEL: **Golan Heights:** Nahal Qazrin, 25.v.2005, L. Friedman, on *Pistacia palaestina* (1♀); **Upper Galilee:** Hermon Field School, 25.v.1999, L. Friedman, on *Convolvulus arvensis* (1♂); Judeida, 8 km E ‘Akko, 9.iii.1971 (1♀), 17.iii.1971 (2♀), 24.iv.1971 (1♀), all on *Convolvulus arvensis*, D. Gerling; Majd-el-Kurum, 17 km E ‘Akko, 24.iv.1971, on *Convolvulus arvensis*, D. Gerling, (1♂); Kafr Yasīf [Kfar Yassif], 16.viii.1959, J. Halperin, on *Pinus halepensis* (3♀); **Carmel Ridge:** Yoqne’am, Menashe Hills, nr. Hefa, 25.viii.1989, J. Halperin, on *Pinus halepensis* (1♀); **Samaria:** Tulkarm [Tulkarem], 200 m, 26.v.1956, J. Klapperich (2♂; HNHM); ‘Askar, East to Shekhem [Ascar b. Nablus], 600 m, 3.vi.1958, J. Klapperich (1♀; HNHM); **Southern Coastal Plain:** Ashdod, 8.vi.1991, J. Halperin [on/ex?] *Convolvulus* (1♂; 3♀); **Judean Hills:** Park Canada [Kubebeh bei Jerusalem], 600 m, 7.ix.1959, J. Klapperich (1♀; HNHM); **Northern Negev:** Pura Reserve, 8.iv.2002, L. Friedman (1♀).

Distribution

Eastern Mediterranean: Lebanon (Desbrochers, 1874−1875), Syria (Wagner, 1932), Turkey, Jordan (Voss, 1964), Israel (Gerling and Kugler, 1972), Cyprus (a new record, Famagusta, 1 specimen, Plant Protection Services, Ministry of Agriculture, Cyprus).

Host plants

Collected rather frequently on *Convolvulus arvensis* L. (Convolvulaceae). The specimens collected by Halperin and labeled "*Convolvulus*" might have been reared from this plant.

Phenology

Unclear. Rarely collected on trees.

Remarks

N. bruleriei was described from Lebanon (Desbrochers, 1874−1875). It was first reported from Israel in the course of a survey of insects herbivorous on weeds, among them the *Convolvulus arvensis* feeders (Gerling and Kugler, 1972). The species was collected (or reared?) again from *C. arvensis* by J. Halperin in 1991. The labels of four specimens read: "Ashdod, 8.vi.1991, J. Halperin *Convolvulus*" without any indication as to whether they had been collected or reared, although we know that J. Halperin reared many species from their host plants, which was his main method of collecting. We collected *N. bruleriei* on *Convolvulus arvensis* in 1999. This strong association indicates that *C. arvensis* may be the host plant of *N. bruleriei*, although no material is known unambiguously to have been reared from the host so far.

DISCUSSION

The most pertinent topics for discussion in conjunction with the taxonomy, faunistics and biology of the Apionidae of Israel are their zoogeography, phenology and migration habits, and these are treated below in some detail.

Zoogeography

The Apionidae occur in every biogeographical region except Antarctica, and are of Gondwanian origin (Wanat, 2001). Wanat (2001) assumed that they appeared during the Cretaceous period on the African continent, presumably in southern Africa. The phylogenetic relations of the Apionidae are insufficiently understood, but the taxonomy of the Palaearctic species is relatively well established. According to Wanat (2001) the origin of most of the Palaearctic Apionidae is in the Palaeotropic Region. However, as our knowledge of the Palaeotropical fauna of Apionidae is still very fragmentary, the study of the zoogeography of the Palaearctic Apionidae is seriously hampered. None of the recently recognized tribes could be considered strictly Palaearctic, except perhaps the Metapiini. Most of the tribes known from the Palaearctic Region are represented in Israel (except the Ixapiini and Trichapiini), and the Apionidae fauna of Israel is also clearly Palaearctic on both the generic and the species level.

Among the 30 genera reported from Israel, two have Holarctic-Palaeotropic distribution (*Ceratapion* and *Perapion*), two are Holarctic (*Alocentron* and *Eutrichapion*), and the rest

are endemic to the Palaearctic, of which 12 are widespread throughout the entire Region, eight are found only in the West Palaearctic and six have a more restricted distribution. *Metapion* is found in the warmer and xeric parts of the West Palaearctic (Mediterranean, the Caucasus, and Middle Asia, as far east as eastern Siberia). *Lepidapion*, *Oryxolaemus* and *Phrissotrichum* primarily have circummediterannean range, but the distribution of *Lepidapion* also extends to Macaronesia, and that of *Oryxolaemus* to central Europe. The newly-described genus *Necatapion* is restricted to the eastern Mediterranean area. *Onychapion* has a Saharo-Sindian distribution.

Only one species recorded from Israel has a Holarctic distribution (*Eutrichapion viciae*). However the presence of this species in Israel is doubtful. Twenty-six species have a broad west Palaearctic distribution; 2–3 species occur in Europe, the Mediterranean region and the Caucasus; and 10 species occur in central and southern Europe and the Mediterranean region.

Mediterranean elements: *Phrissotrichum tubiferum* has an essentially circum-mediterranean distribution (although not recorded from Libya or Egypt). Fifteen species are East Mediterranean.

Eremic elements: four species (*Onychapion dumonti*, *Onychapion poupillieri*, *Metapion normandi*, *Perapion marseuli* have a similar distributional pattern, primarily along the southern Mediterranean coast. These species are associated with desert plants, such as *Tamarix* spp., *Calligonum comosum* and *Haplophyllum buxbaumii*, and are restricted in Israel to the desert areas of the Negev, ʻArava valley and the Dead Sea area. There are two additional eremic species with much narrower distribution: *Lepidapion alfierii* and *Onychapion vincenti*. The habitat of *Lepidapion alfierii* is restricted to the coastal and inland dunes, and it is endemic to Israel and Sinai (and probably other parts of Egypt). The distributional pattern of *Onychapion vincenti* is insufficiently known and additional collecting data are required.

Unlike many other groups of insects, no Irano-Turanian elements and no Afrotropical elements were found among the Israeli Apionidae fauna. However, *N. bruleriei*, whose relationships with other Apionidae are unclear, may represent a link with the Afrotropical fauna.

Endemics: Eight species are endemic to the Levant, of which four species (*Perapion eretzisrael, Squamapion terrasanctae*, *Catapion halperini* and *Ceratapion ramoni*) are newly described in the present publication and are known only from Israel; and *Stenopterapion argamani* is newly described from Israel and Syria. Nevertheless, we assume that *P. eretzisrael* and *S. terrasanctae* also occur in Lebanon, Syria and Jordan, and that *C. halperini* and *C. ramoni* also occur in the Sinai Peninsula. The distributional range of three species (*Catapion* sp., *Holotrichapion* ?*antennale* and *Protapion* sp.) is unclear.

Phenology

The winter in Israel, even in the northern part of the country, is much warmer than in Europe, which affects the phenology of the local fauna. Some of the apionid species do not hibernate in Israel at all, so that at least a small part of the population is active

throughout all or most of the year (for example, *Aspidapion radiolus*, *Ceratapion onopordi parviclava*, *Kalcapion semivittatum*, *Taeniapion rufescens*, *Malvapion malvae*, *Apion frumentarium*, *Catapion* sp. nr. *seniculus*, *Eutrichapion vorax*, *Stenopterapion tenue*, *Exapion cannescens* and *Lepidapion alfierii*). The hibernation period of the remaining species begins in October, November, or even the beginning of December and ends in January to mid-February. We have no data on the hibernation sites of the Israeli apionids other than trees, but we believe that some may also hibernate in the soil. Indirect evidence for this is produced by the collecting of long series of *Stenopterapion tenue* and *Synapion splendidulum* in pitfall traps in November-January.

When hibernation ends the weevils fly to the host plants and begin feeding, mating and ovipositing (as observed in *Alocentron curvirostre* and *Rhopalapion longirostre*). In some species, hibernation is terminated before the appearance of their host plants. We observed mass appearance and intensive matings of *Protapion angusticolle* (whose host plant is *Trifolium* spp.) on *Tamarix* sp. in Park haYarden (northern Jordan Valley) in early February. Mating continued even after adults were brought to the lab in glass vials.

Most host plants are in the appropriate physiological position available for the beetles in Israel for a relatively short period from March to May in the northern part of the country, and from February to April in the southern part. Thus, oviposition and immature development are limited to this period. Immature development usually lasts 20−30 days. Emergence of adults is restricted to a short period of time, due to the drying of host plants, and it variously occurs among the different species in April, May or early June. The newly-emerged adults developing on annual hosts probably leave their host plants without feeding on them, as the annual plants are already fairly dry at this stage. We did not observe any serious damage caused to the hosts, or to any other plants, by the newly-emerged apionids, as adults of species developing on annuals migrate to trees almost immediately upon emergence. Adults of species developing on perennials do not leave their hosts. The migration habits of the Apionidae are discussed in the following section.

In Israel, migration usually has two peaks: at the beginning of summer (May - early June) and in autumn (around October). Between these two peaks, during the hot and dry Israeli summer, the numbers of apionids remaining on trees decrease sharply, although they are still abundant in the shaded parts of woods. In some species aestivation merges with hibernation and continues the next spring. Melamed-Madjar (1969a) reported that *Eutrichapion arrogans* aestivates in Israel from the end of May to the second half of December without autumn reappearance, which is in accordance with our data. Therefore, in this species the diapause is not interrupted. We assume that the Israeli apionids aestivate in the soil. We found a few specimens of *Mesotrichapion subglabrum* (breeding in late spring) in mid-May in Merom Golan (Golan Heights) in the soil and under stones, and concluded that these adults were newly-emerged aestivating individuals. The second mass appearance in autumn lasts from the end of September until the beginning of the winter rains and the drop in air temperature. Some species do not exhibit this second appearance, or appear only occasionally and in small numbers.

This general life pattern mostly refers to the Apionidae of the Mediterranean zone of Israel, whereas the bionomics of most of the desert species is still unclear. For example, the adult activity of *Metapion normandi* is restricted to June-July, which corresponds to the vegetative and generative development of its host, *Haplophyllum buxbaumi*. Adults of this species emerge at the beginning of July, aggregate for a short time on their host, and then disappear.

Migration habits

Certain groups of Apionidae (especially Apionini, Oxystomatini, Piezotrachelini, Ceratapiini, Kalcapiini, Aspidapiini and Malvapiini) are known for their habit of mass migration to trees that are not their hosts, a habit termed "Aufbäumen" by Wagner (1941). No feeding on the trees has been observed, and no injury to the foliage is inflicted. This habit is unique to this family among the Curculionoidea throughout the world (Wagner, 1941; Gønget, 1997; our personal observations). Of 66 species collected recently in Israel, 44 were found to migrate to trees, 39 of which do so commonly. The remaining species are generally found only on their host plants. The migrating species prefer high trees with ample, dense foliage, although if those are unavailable they may inhabit smaller trees or even shrubs. We assume that the reason for migration is the search for a suitable environment with a stable microclimate (with regard to temperature, moisture, solar radiation etc.). Most of the migrating species develop on annual host plants. Conversely, most of the non-migrating species develop on perennials or evergreen plants and are found on these plants throughout most of the year. We hypothesize that the trigger for the onset of migration is the withering and eventual disappearance of the annual hosts at the end of spring, before the beginning of aestivation. Species developing on perennial plants, on the other hand, do not face this problem and can remain on their host plants.

There are a few exceptions to this rule. Some species developing on annual plants, such as *Ischnopterapion virens*, *Synapion splendidulum* and *Rhopalapion longirostre*, do not migrate in Israel. *R. longirostre* develops in fruits of *Alcea* spp. (Malvaceae). Adults of this species remain on the dry host for several weeks (before hibernation), as the plant seems to provide them with suitable shelter among the dry sepals. In contrast, *Oryxolaemus croceifemoratus* and *O. scabiosus*, both among the most common migrating species, develop in leaves of perennial plants (large bushes, *Anagyris foetida* and *Calicotome villosa* respectively, both Fabaceae). We assume that, at least in the case of *O. croceifemoratus*, this occurs because *A. foetida* sheds its leaves very early in the season (from the beginning of April) and does not provide the adult apionids with sufficient shade.

A few migrating species occur on trees throughout the year or at least throughout the entire warmer season (from the end of February to November). However, the occurrence of most species on trees is more seasonal. We observed two peaks of mass migration: from April to June - between the emergence and aestivation periods (all migrating species), and from mid-September to the beginning of November - between aestivation and hibernation (part of the migrating species). While scores of individuals occur on trees during these periods, only a few individuals can be found on trees at other times of

the year. We assume that the same species can either aestivate in the ground or remain on a tree during the summer. In cooler biotopes, such as at high altitudes and in the deep shade of the Mediterranean maquis, numerous individuals of about fifteen species can also be found in the middle of summer. The sensitivity of the adult apionids to high temperatures has been mentioned before. Shtchogolev (1941) reported that after the temperature rises to 29−31°C, *Protapion apricans* individuals tend to become inactive and hide in the shade of the host plant. Apionidae aggregate on the lower parts of leaves in shaded parts of the tree, preferably on the most shaded trees. This behavior has been observed by us in Europe, the Middle East, East Africa and Mexico.

Apionids prefer large trees with dense foliage. The favorite target tree for migrating species in Israel is the common oak, *Quercus calliprinos*, while other oaks, such as *Q. ithaburensis*, *Q. boisseri* and *Q. cerris*, are less attractive. When the habitat contains oaks, other species of trees are usually ignored. Nevertheless, small numbers of apionids occasionally occur on various trees of the Mediterranean maquis, such as *Pistacia* spp., *Ceratonia siliqua*, *Styrax officinalis*, *Arbutus andrachne*, *Laurus nobilis*, *Platanus orientalis*, *Prunus ursinus*, *Amygdalus* spp., and *Crataegus* spp. If oaks are absent, migrating species can be found in considerable numbers on the above-mentioned trees, as well as on other trees, or even on shrubs. For example, mass occurrence of *Ceratapion decolor* on *Amygdalus* sp. was observed in July 1998 in the Sinai, and numerous individuals of *Catapion curtisii* and *C. seniculus* together with several individuals of the rare *Ceratapion basicorne*, were collected on *Juniperus drupacea* at an altitude of 2000 m on one of the peaks of Har (Mount) Hermon, an altitudinal zone nearly devoid of trees. Similarly, a few individuals of *Diplapion squamans* were collected on *Rhamnus disperma* and on *Artemisia herba-alba* in the central Negev.

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Appendix 1
Host plants of Apionidae species of Israel

Plant	Affected part	Apionidae species	References
Asteraceae			
Carduus argentatus	stem	*Ceratapion onopordi parviclava*	F
Carduus spp.	stem	*Ceratapion onopordi parviclava*	H
Carthamus glaucus	lower part of stem	*Ceratapion scalptum caviceps*	H
Centaurea cyanoides	rootstalk	*Ceratapion decolor*	F
Centaurea solstitialis		**Ceratapion basicorne*	F
Centaurea triumfettii		*Ceratapion basicorne*	H
Centaurea spp.		*Ceratapion onopordi parviclava*	H
Cnicus benedictus		*Ceratapion onopordi parviclava*	H
Onopordum spp.		*Ceratapion onopordi parviclava*	H
Silybium marianum		*Ceratapion onopordi parviclava*	F
Cistaceae			
Cistus creticus	fruit	*Phrissotrichum tubiferum*	H, F
Hypericaceae			
Hypericum triquetrifolium		**Pseudoperapion brevirostre*	F
Convolvulaceae			
Convolvulus arvensis		**Necatapion bruleriei*	G, F
Euphorbiaceae			
Mercurialis annua	stem-knot galls	*Kalcapion semivittatum*	H, F
Fabaceae			
Anagyris foetida	leaf	*Oryxolaemus croceifemoratus*	H, F
Astragalus spinosus		**Catapion halperini*	F
Callicotome villosa	seed	*Exapion cannescens*	F
	leaf	*Oryxolaemus scabiosus*	F
Lathyrus spp.		*Oxystoma ochropus*	H
Medicago orbicularis	stem	*Stenopterapion tenue*	F
Medicago polymorpha	stem	*Stenopterapion tenue*	F
Medicago rugosa	stem	*Stenopterapion tenue*	F
Medicago sativa		**Stenopterapion tenue*	M, F

Plant	Affected part	Apionidae species	References
		**Eutrichapion arrogans*	M
		**Synapion splendidulum*	M
Ononis spinosa		**Holotrichapion ononis*	F
		**Catapion jaffense*	F
Ononis spp.		*Protapion ononidis*	H
Retama raetam		**Lepidapion alfierii*	H, F
Trifolium campestre	rootstalk	*Catapion* sp. nr. *seniculis*	M, F
Trifolium clypeatum	rootstalk	*Catapion* sp. nr. *seniculis*	F
	rootstalk	*Ischnopterapion virens*	F
Trifolium nigrescens	inflorescence	*Protapion angusticolle*	F
Trifolium pilulare	inflorescence	*Protapion angusticolle*	F
Trifolium purpureum	rootstalk	*Catapion* sp. nr. *seniculis*	F
	inflorescence	*Protapion angusticolle*	F
Trifolium resupinatum	rootstalk	*Catapion* sp. nr. *seniculis*	F
	inflorescence	*Protapion politum*	F
		**Synapion splendidulum*	F
Trifolium spumosum	inflorescence	*Protapion angusticolle*	F
Trifolium spp.		*Catapion pubescens*	H, F
		Catapion sp. nr. *seniculis*	H
		**Ischnopterapion virens*	F
	inflorescence	*Protapion trifolii*	F
		**Protapion truquii*	F
Vicia atropurpurea		**Eutrichapion arrogans*	F
Vicia faba		**Eutrichapion arrogans*	F
Vicia hybrida	seed	*Oxystoma ochropus*	F
Vicia sativa	head of branch	*Eutrichapion arrogans*	M
Vicia sp.		*Oxystoma ochropus*	H
		Eutrichapion vorax	H
Lamiaceae			
Majorana syriaca		**Squamapion terrasanctae*	F
Mentha longifolia		**Squamapion delagrangei*	F
Salvia fruticosa		**Squamapion phocopus*	F
Satureja thymbra		*Squamapion terrasanctae*	F
Malvaceae			
Alcea dissecta	stem	*Alocentron curvirostre*	F
	seed	*Rhopalapion longirostre*	F
Alcea setosa	stem	*Alocentron curvirostre*	F
	seed	*Rhopalapion longirostre*	F
Alcea rosea	stem	*Alocentron curvirostre*	H

Plant	Affected part	Apionidae species	References
Althaea spp.	stem	*Aspidapion aeneum*	H
	stem	*Aspidapion radiolus*	H
Lavatera cretica	seed	*Malvapion malvae*	F
Lavatera spp.	stem	*Aspidapion radiolus*	H
	seed	*Malvapion malvae*	H, F
Malva parviflora	stem	*Aspidapion radiolus*	F
Malva spp.		**Alocentron curvirostre*	F
	stem	*Aspidapion aeneum*	H
	stem	*Aspidapion radiolus*	H
	seed	*Malvapion malvae*	F
Rutaceae			
Halophyllum buxbaumi	flower? fruit?	*Metapion normandi*	F
Polygonaceae			
Calligonum comosum		**Onychapion dumonti*	H, F
		**Perapion marseuli*	H, F
Emex spinosa	stem, rootstalk	*Apion frumentarium*	F
Rumex spp.		*Apion frumentarium*	H
Polygonum arenastrum	?stem	*Perapion eretzisrael*	F
Tamaricaceae			
Tamarix nilotica		*Onychapion poupillieri*	F
Tamarix spp.		**Onychapion poupillieri*	H, F
		**Onychapion vincenti*	H, F
Urticaceae			
Urtica pilulifera	stem	*Taeniapion rufescens*	F
Urtica urens	stem	*Taeniapion rufescens*	F

* - indicates a strongly suspected association. References: M = Melamed-Madjar (1969 a, b); H = Halperin and Fremuth (2003); G = Gerling and Kugler (1973); F = current study

Appendix 2
Parasitoids reared from Apionidae in Israel

Parasitoid	Host	References
Ichneumonoidea		
Braconidae		
Triaspis floricola Wesmael	*Eutrichapion arrogans*	MM
Triaspis sp. cf. *striola* Thomson	*Oryxolaemus croceifemoratum*	AH
Triaspis sp.	*Exapion cannescens*	F
Chalcidoidea		
Eulophidae		
Entedon (?) longulus Erdös.	*Eutrichapion arrogans*	MM
Necremnus tidius Walker	*Eutrichapion arrogans*	MM
Spintherus leguminum Ratzeburg	*Oryxolaemus croceifemoratus*	AH
(?)*Tetrastichus* sp.	*Exapion cannescens*	F
Tetrastichus sp.	*Oryxolaemus croceifemoratum*	AH
Eupelmidae		
Eupelmella sp.	*Exapion cannescens*	F
Pteromalidae		
Trichomalus campestris Walker	*Eutrichapion arrogans*	MM
T. operosus Foerster	*Eutrichapion arrogans*	MM
Gen. sp.	*Alocentron curvirostre*	F
Tetracampidae		
(?)*Foersterella* sp.	*Stenopterapion tenue*	F
Torymidae		
Pseudotorymus sp.	*Rhopalapion longirostre*	F

References: AH = Avidov & Harpaz (1969b); MM = Melamed-Madjar (1970); F = current study

Appendix 3
Checklist of the Apionidae of Israel and Sinai

(* - denotes genera or species reported for the first time; # - denotes species recorded from Israel but not studied by us)

Supertribe Aspidapiitae Alonso-Zarazaga, 1990

Aspidapiini Alonso-Zarazaga, 1990
ALOCENTRON Schilsky, 1901
Alocentron curvirostre (Gyllenhal, 1833)
ASPIDAPION Schilsky, 1901
Aspidapion (*Aspidapion*) *radiolus* (Marsham, 1802)
Aspidapion (*Koestlinia*) *aeneum* (Fabricius, 1775)

Ceratapiini Alonso-Zarazaga, 1990
CERATAPION Schilsky, 1901
Ceratapion (*Acanephodus*) *onopordi parviclava* (Desbrochers, 1897)
**Ceratapion* (s. str.) *damryi* (Desbrochers, 1894)
**Ceratapion* (s. str.) *gibbirostre* (Gyllenhal, 1813)
**Ceratapion* (s. str.) *klapperichi* Wanat, 1995
Ceratapion (*Echinostroma*) *basicorne* (Illiger, 1807)
Ceratapion (*Echinostroma*) *scalptum caviceps* (Desbrochers, 1870)
**Ceratapion* (*Angustapion*) *beckeri* (Desbrochers, 1874–1875)
Ceratapion (*Angustapion*) *decolor* (Desbrochers, 1874–1875)
**Ceratapion* (*Angustapion*) *sejugum* (Desbrochers, 1893)
**Ceratapion* (*Angustapion*) *ramoni* Friedman and Freidberg, n. sp.
DIPLAPION Reitter, 1916
Diplapion squamans (Desbrochers, 1906)
OMPHALAPION Schilsky, 1901
Omphalapion concinnum (Schilsky, 1906)
#*Omphalapion pseudodispar* (Wanat, 1995)

Kalcapiini Alonso-Zarazaga, 1990
KALCAPION Schilsky, 1906
Kalcapion semivittatum (Gyllenhal, 1833)
SQUAMAPION Bokor, 1923
**Squamapion delagrangei* (Desbrochers, 1895)

**Squamapion phocopus* (Eppelsheim, 1888)
**Squamapion terrasanctae* Friedman and Freidberg, n. sp.
TAENIAPION Schilsky, 1906
Taeniapion rufescens (Gyllenhal, 1833)

Malvapiini Alonso-Zarazaga, 1990
MALVAPION Hoffmann, 1958
Malvapion malvae (Fabricius, 1775)
RHOPALAPION Schilsky, 1906
Rhopalapion longirostre (Olivier, 1807)

Metapiini Alonso-Zarazaga, 1990
METAPION Schilsky, 1906
**Metapion normandi* (Desbrochers, 1899)
#*Metapion oculare* (Gyllenhal, 1833)

Supertribe Apionitae Schoenherr, 1823

Apionini Schönherr, 1823
APION Herbst, 1797
Apion frumentarium (Linnaeus, 1758)

Aplemonini Kissinger, 1968
HELIANTHEMAPION Wagner, 1930
#*Helianthemapion velatum* (Gerstaecker, 1854)
ONYCHAPION Schilsky, 1901
Onychapion (*Aphoplopodapion*) *poupillieri* (Wencker, 1864)
Onychapion (*Hoplopodapion*) *dumonti* (Peyerimhoff, 1929)
Onychapion vincenti (Desbrochers, 1904)
Onychapion tamarisci (Gyllenhal, 1839)
PERAPION Wagner, 1907
#*Perapion affine* (Kirby, 1808)
**Perapion eretzisrael* Friedman and Freidberg, n. sp.
Perapion marseuli (Wencker, 1864)
Perapion violaceum (Kirby, 1808)
PHRISSOTRICHUM Schilsky, 1901

Phrissotrichum tubiferum (Gyllenhal, 1833)
**PSEUDOPERAPION* Wagner, 1930
**Pseudoperapion brevirostre* (Herbst, 1797)

Exapiini Alonso-Zarazaga, 1990
EXAPION Bedel, 1887
Exapion cannescens (Desbrochers, 1894)
**LEPIDAPION* Schilsky, 1906
**Lepidapion* (*Hidryocneme*) *alfierii* (Pic, 1915)

Oxystomatini Alonso-Zarazaga, 1990
Subtribe Catapiina Alonso-Zarazaga, 1990
CATAPION Schilsky, 1906
**Catapion burdigalense* (Wencker, 1858)
**Catapion curtisii* (Stephens, 1831)
**Catapion halperini* Friedman and Freidberg, n. sp.
Catapion jaffense (Desbrochers, 1896)
Catapion pubescens (Kirby, 1811)
Catapion sp. nr. *seniculus* (Kirby, 1808)
**Catapion* sp.
subtribe Oxystomatina Alonso-Zarazaga, 1990
EUTRICHAPION Reitter, 1916
Eutrichapion (*Cnemapion*) *vorax* (Herbst, 1797)
#*Eutrichapion* (*Eutrichapion*) *viciae* (Paykull, 1800)
Eutrichapion (*Psilocalymma*) *arrogans* (Wencker, 1858)
**Eutrichapion* (*Psilocalymma*) sp. nr. *punctigerum* (Paykull, 1792)
**HEMITRICHAPION* Voss, 1959b
**Hemitrichapion* (*Dimesomiops*) *pavidum* (Germar, 1817)
**Hemitrichapion* (*Tinocyba*) *filicorne* (Wencker, 1864)
HOLOTRICHAPION Györffy, 1956
Holotrichapion (*Holotrichapion*) *ononis* (Kirby, 1808)
**Holotrichapion* (*Schoenius*) sp. ?*antennale* Desbrochers, 1896
#*Holotrichapion* (*Shoenius*) *gracilicolle* (Gyllenhal, 1839)
**MESOTRICHAPION* Györffy, 1956
**Mesotrichapion* (*Mesotrichapion*) *subglabrum* (Desbrochers, 1870)
ORYXOLAEMUS Alonso-Zarazaga, 1990b
Oryxolaemus croceifemoratus (Gyllenhal, 1839)

Oryxolaemus scabiosus (Weise, 1889)
OXYSTOMA Duméril, 1806
Oxystoma ochropus (Germar, 1817)
Subtribe Synapiina Alonso-Zarazaga, 1990
**ISCHNOPTERAPION* Bokor, 1923
**Ischnopterapion* (*Chlorapion*) *cognatum* (Hochhuth, 1851)
**Ischnopterapion* (*Chlorapion*) *virens* (Herbst, 1797)
STENOPTERAPION Bokor, 1923
Stenopterapion tenue (Kirby, 1808)
**Stenopterapion argamani* Friedman and Freidberg, n. sp.
#*Stenopterapion intermedium* (Eppelsheim, 1875)
SYNAPION Schilsky, 1902
Synapion splendidulum (Desbrochers, 1874)

Piezotrachelini Voss, 1959a
PROTAPION Schilsky, 1908
Protapion angusticolle (Gyllenhal, 1833)
#*Protapion assimile* (Kirby, 1808)
#*Protapion dissimile* (Germar, 1817)
Protapion fulvipes (Fourcroy, 1785)
Protapion ononidis (Gyllenhal, 1827)
Protapion politum (Desbrochers, 1874−1875)
**Protapion* sp.
Protapion trifolii (Linnaeus, 1768)
Protapion truquii (Reiche & De Saulcy, 1858)

Incertae sedis
**NECATAPION* Friedman & Freidberg, n. gen.
Necatapion bruleriei (Desbrochers, 1874−1875), n. comb.