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The genus *Sharpia* Tournier in Israel (Coleoptera: Curculionidae, Curculioninae)

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ABSTRACT

Four species of the rare and scarcely known weevil genus *Sharpia* Tournier (Curculionidae: Curculioninae: Smicronychini) in Israel are recorded; two, *S. sabulicola* and *S. torretassoi*, for the first time, in addition to previously recorded *S. rubida* and *S. soluta*. The association of *S. rubida* with *Cressa cretica* is proved, and the association of *S. soluta* and *S. torretassoi* with *Convolvulus dorycnium* and *C. lanatus* respectively is recorded for the first time. The status of *S.* '*filirostris*' is discussed. A key and illustrations for all species are provided.

KEYWORDS: Smicronychini, *Sharpia*, weevils, Convolvulaceae, *Cressa*, *Convolvulus*, taxonomy, faunistics, zoogeography, identification key.

INTRODUCTION

The genus *Sharpia* was erected by Tournier (1873) for *Erirhinus rubidus* Rosenhauer, 1856 from the West Mediterranean and two new species, *S. heydeni* Tournier, 1873 from Egypt and *S. grandis* Tournier, 1873 from Iran, the latter later synonymized with *S. heydeni*. Since then, a few species from the Palaearctic, Afrotropical and Oriental regions were described and assigned to *Sharpia* (Faust 1891; Hustache *et al.* 1932; Klima 1934; Voß 1963; Hoffmann 1968; Alonso-Zarazaga & Lyal 1999; Caldara 2013). The Palaearctic members of *Sharpia* were revised by Zumpt (1936), who assigned them to seven species. To date *Sharpia* includes nine species in the Palaearctic, distributed mainly in the arid or semi-arid areas of the Mediterranean, Near East, Caucasus and Middle Asia (Alonso-Zarazaga *et al.* 2017; Haran 2017).

The genus *Sharpia* is characterized by large eyes located latero-ventrally and nearly contiguous below; a slender often moderately curved oblong rostrum that is 1.2–1.6 times as long as the pronotum and longer in females; elongate legs; a slender oblong body; and by the body vestiture composed by appressed, flat, round or rectangular to polygonic tightly contiguous or imbricate scales, and by uprised or semi-uprised narrow scales.

The species of *Sharpia*, whose plant association is known, are reported from the Convolvulaceae, namely *Convolvulus* spp. and *Cressa cretica*. The biology of *S. rubida* on *Cressa cretica* was studied in details by Gompel *et al.* (2009), for other species only association with the host plant is reported (Colonnelli 2009).

Bodenheimer (1937) was first to record two species of *Sharpia* from Israel, viz. the widely distributed throughout the Mediterranean *S. rubida* Rosenhauer

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and the enigmatic *S. filirostris* Tournier (discussed below). *Sharpia soluta* was recorded from Israel by Halperin and Fremuth (2003) upon two specimens. Only a few individuals were present in the National Collection of Insects, Steinhardt Museum of Natural History and National Research Center, Tel Aviv University, mostly occasionally collected since the 1920s until recently, giving the impression that these weevils are very rare, whereas they are, in fact, quite common on the expected host plants, as proved by intensive collecting over last years.

MATERIALS AND METHODS

Beating the host plants appear to be the best method for collecting *Sharpia* in the field, although individual specimens can be occasionally obtained by sweeping. A series of *S. rubida* and just one specimen of *S. sabulicola* were attracted to light, but these were rare events.

All studied material is deposited in the National Collection of Insects, the Steinhardt Museum of Natural History, National Research Center, Tel Aviv University, Israel (SMNHTAU).

Drawings and measurements were made using a drawing tube and a stereomicroscope Leica M125. Drawings were scanned and processed using Adobe Illustrator 9.0. Total body length in dorsal view was measured along a straight line from the base of the rostrum to the tip of the elytra. Images of the weevil habitus were captured with a Leica DFC295 digital camera mounted on a Leica M205C microscope, stacking images with Leica Application Suite 4.2.0 and Helicon Focus 5.3, and editing the final images when necessary with Adobe Photoshop CS5. Genitalia were extracted by soaking dry specimens in hot water, removing the posterior abdominal sternites and boiling them in the 10% water solution of potassium hydroxide. Extracted genitalia were preserved in glycerin in plastic tubes and pinned next to the specimens on the same pin.

Transliterated names of localities in Israel follow the *Israel Touring Map* and *List of settlements* published by the Survey of Israel (2009). Where names of localities have changed, the most recent transliterated Hebrew names are given followed by the old names in brackets, for example: Yeriho [Jericho]. Erroneous spellings are also included in brackets following the correct spelling. Plant names are given after Danin and Fragman-Sapir (2017). Maps of plant distribution are partially based on Danin and Fragman-Sapir (2017). Regional subdivision of Israel follows Theodor (1975).

TAXONOMY

Genus *Sharpia* Tournier, 1873

Key to species of *Sharpia* in Israel and adjacent countries

1 Pronotum wider than long, strongly constricted anteriorly and not constricted posteriorly, sides of pronotum nearly straight in basal and middle thirds in dorsal view. Size: 3–4 mm. Not found in Israel, but recorded from Egypt, Iran and Arabian Peninsula, its presence in Israel possible ..... *S. heydeni*

– Pronotum as wide as long, slightly constricted anteriorly and posteriorly, sides of pronotum rounded 2

2 Fringe of setae at apex of tibia yellow. Body vestiture dull, comprised of appressed round or square medially concave and sometimes slightly longitudinally striolate brown, grey, white and yellow scales, and by slightly arched upraised piliform white or yellowish scales; abdominal segments bearing upraised scales of same shape as on pronotum and elytra; elytra occasionally comprising vague pattern of oblong mediobasal fleck and/or short flecks or stripes of white scales at base and at middle of interstriae 2 and 3. Size: 2–3 mm. On *Cressa cretica* ..... *S. rubida*

– Fringe of setae at apex of tibia black. Body vestiture more or less shiny, comprised of appressed round or square flat to slightly convex glassy scales, and by slightly arched upraised fusiform white scales; abdominal segments bearing upraised setae shorter and wider than those on pronotum and elytra; elytra with or without pattern. Size: 3–4 mm. On *Convolvulus* spp. 3

3 Rostrum nearly straight in at least basal two-thirds; pronotum and elytra uniformly whitish grey. On *Convolvulus lanatus* ..... *S. torretassoi*

– Rostrum curved; pronotum and elytra whitish grey, medially with longitudinal wide brown stripe edged by thin white margin 4

4 Body more shiny; rostrum brown; onychium hardly longer than than the combined length of segments 2+3. On *Convolvulus dorycnium* ..... *S. soluta*

– Body less shiny; rostrum reddish; tarsal segment 4 distinctly longer than the combined length of segments 2+3 ..... *S. sabulicola*

Sharpia rubida (Rosenhauer, 1856)

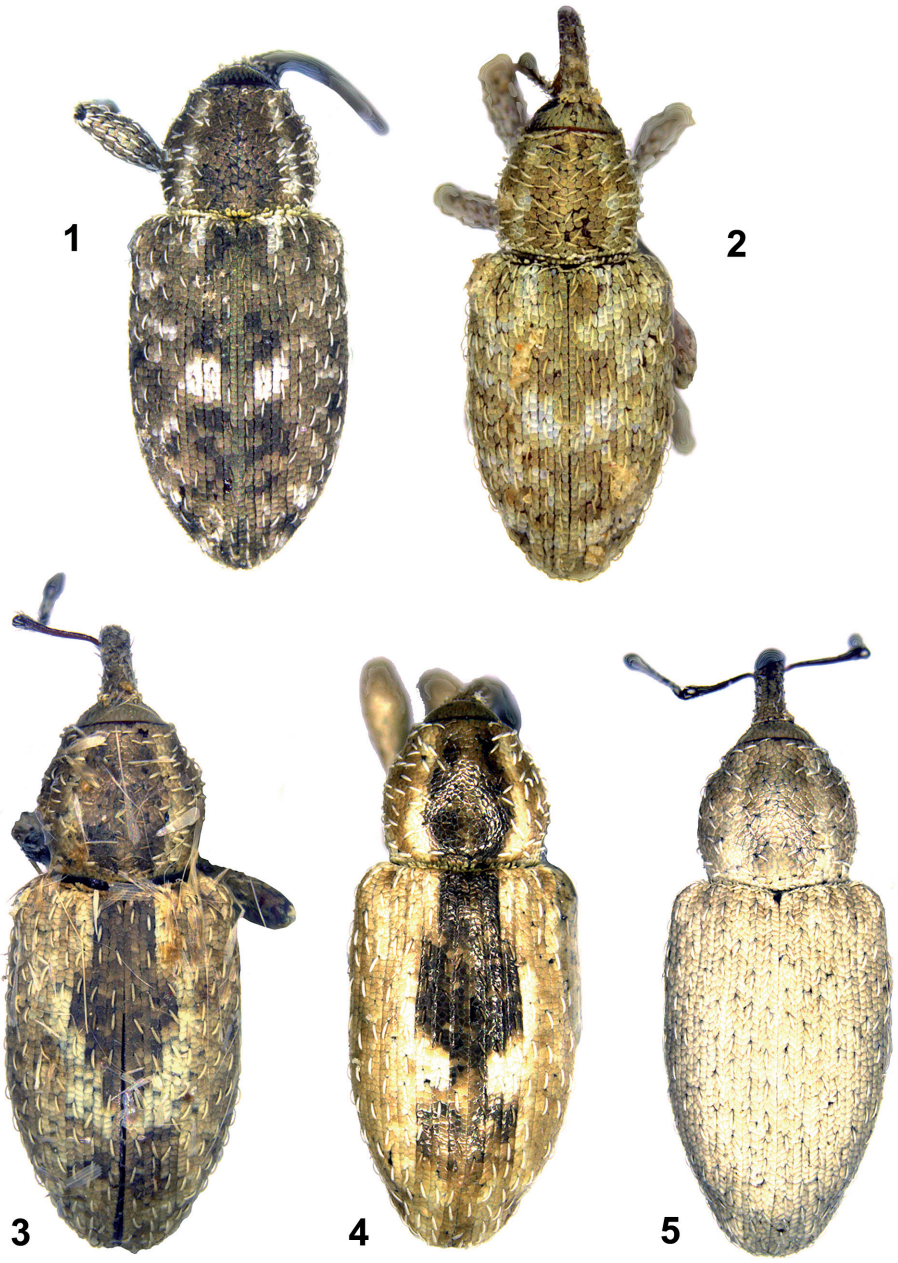
(Figs 1, 2, 6, 7, 13, 16, 19, 22–25)

Material examined: Israel: *Northern Coastal Plain*: 4♀ 'Atlit, "Melah haAretz" salt factories, salt pools, 1 m, 3.viii.2017, L. Friedman, on *Cressa cretica*. *Central Coastal Plain*: 12♂ 9♀ Nahal Daliyya Nature Reserve, South, side of fish pool, 32°34'20.9"N 34°55'02"E, 2 m, 3.viii.2017, L. Friedman, on *Cressa cretica*. *Jordan Valley*: 1♂ Bet Zayda Nature Reserve, Bet haBek, 3.vii.2003, E. Orbach; 1 ex. Ohalo, 20.xii.1945, Y. Palmoni; 1♀ Bet Alfa, 3.vi.1987, Q. Argaman. *Dead Sea Area*: 3♂ 5♀ Yeriho [Jericho], 11.vii.1929 (2♂ 2♀), 12.vii.1929 (2♀), 24.vii.1929 (1♂ 1♀), J. Tapukhi, attracted to light; 7♂ 7♀ Qasr el-Yahud, -385 m, 6.viii.2017, L. Friedman, on *Cressa cretica*; 1♀ Hame Zohar, 18.vi.1958, J. Wahrman.

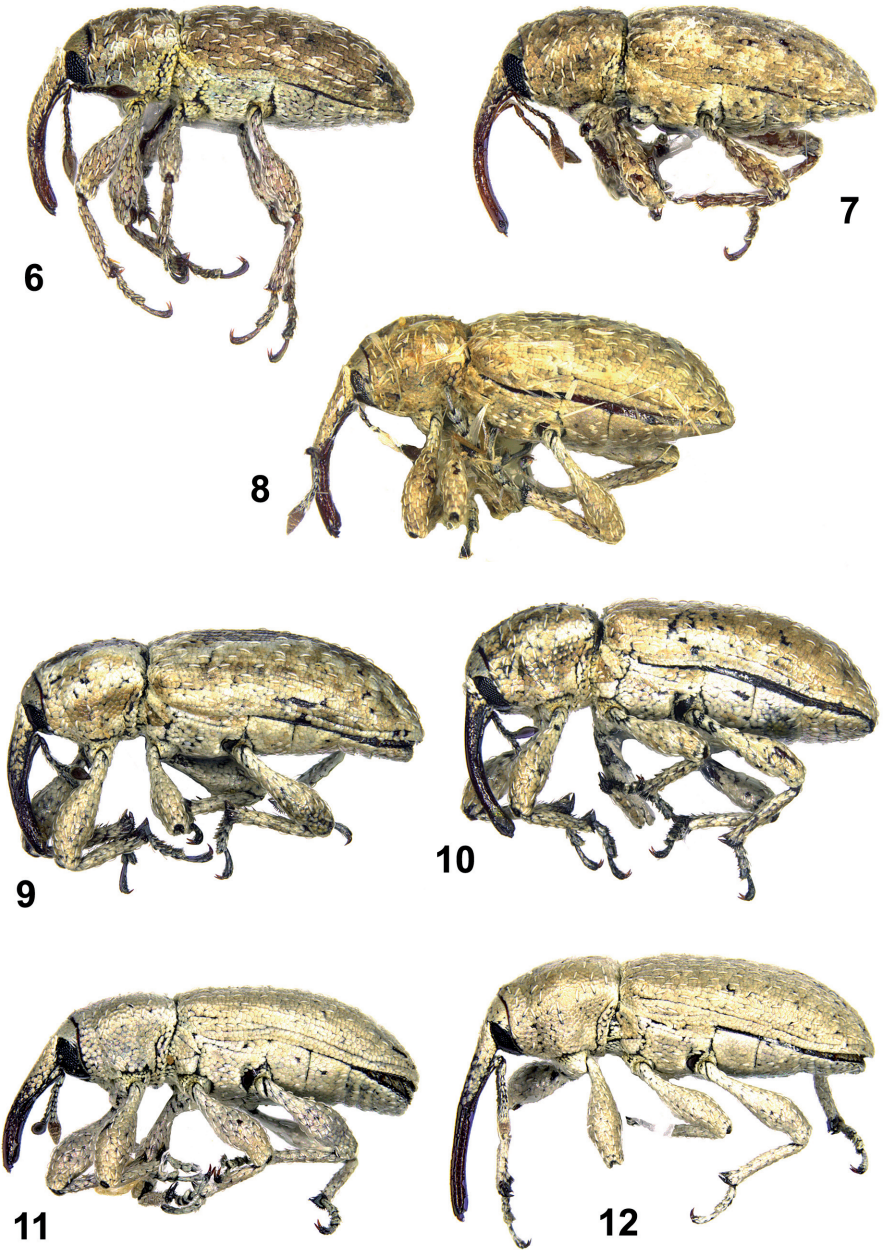
Distribution: Europe: Portugal, Spain, France, Italy, Greece, Malta (Alonso-Zarazaga *et al.* 2017), south of European Russia (Astrachan) (Zabaluev 2017). North Africa: Morocco, Algeria, Tunisia, Libya, Egypt (Alonso-Zarazaga *et al.* 2017). Asia: Azerbaijan, Armenia, Israel, United Arab Emirates, Iraq, Turkmenistan, Uzbekistan (Alonso-Zarazaga *et al.* 2017). Tropical Africa: Chad (Hoffmann 1968).

Distribution in Israel: Along the Mediterranean coast and the Jordan Valley, in salines, salt marshes, near springs and pools, corresponding to the distribution of *Cressa cretica* (Fig. 25).

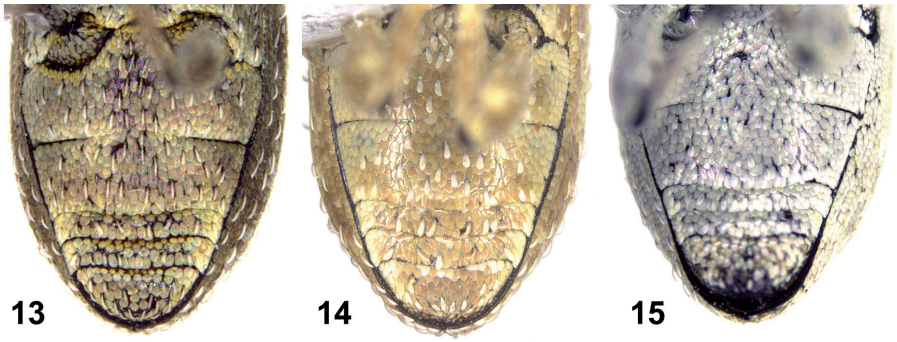
Host: *Cressa cretica* L. (Gompel *et al.* 2009).



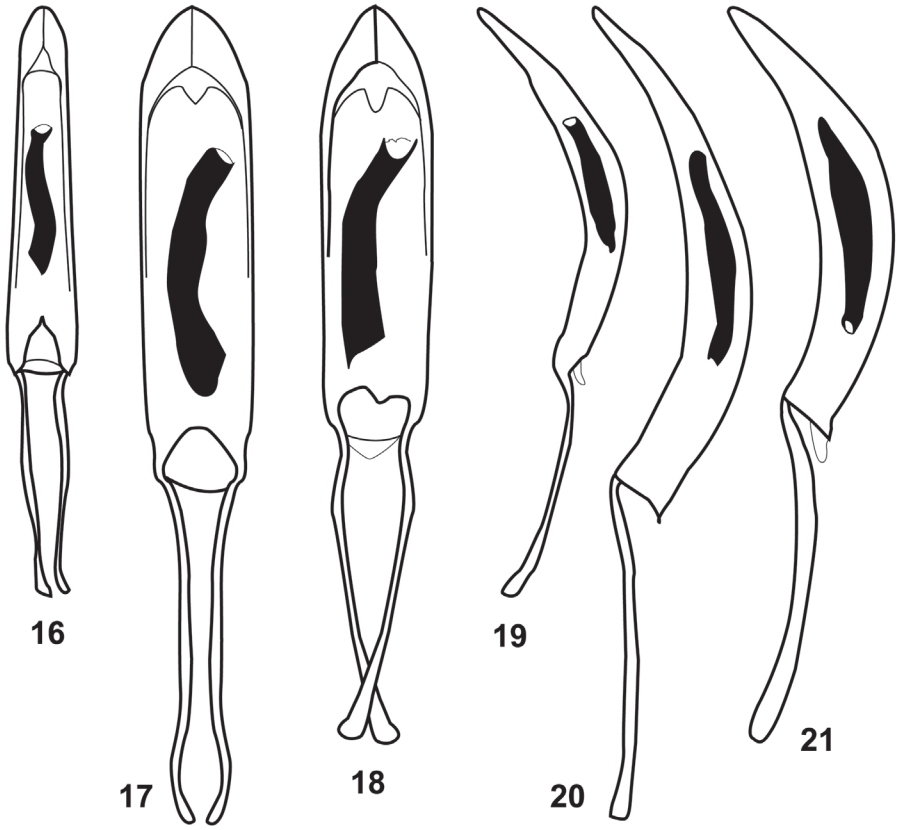
Figs 1–5: *Sharpia* spp., females, dorsal view: (1) *S. rubida*, dark variation; (2), *S. rubida*, pale variation; (3) *S. sabulicola*; (4) *S. soluta*; (5) *S. torretassoi*.



Figs 6–12: *Sharpia* spp., lateral view: (6) *S. rubida*, male; (7) *S. rubida*, female; (8), *S. sabulicola*, female; (9) *S. soluta*, male; (10) *S. soluta*, female; (11) *S. torretassoi*, male; (12) *S. torretassoi*, female.



Figs 13–15: *Sharpia* spp., abdominal ventrites: (13) *S. rubida*; (14) *S. soluta*; (15) *S. torretassoi*.



Figs 16–21: *Sharpia* spp., aedeagi: (16) *S. rubida*, dorsal view; (17) *S. soluta*, dorsal view; (18) *S. torretassoi*, dorsal view; (19) *S. rubida*, lateral view; (20) *S. soluta*, lateral view; (21) *S. torretassoi*, lateral view.

Phenology: June–August, corresponds to the blooming period of *C. cretica*.

Remarks: *S. rubida* is extremely variable in body coloration and colour pattern (Figs 1, 2).

Sharpia sabulicola Colonnelli, 2009

(Figs 3, 8, 28)

Material examined: Israel: *Dead Sea Area*: 1♀ 'En Gedi, 23.vii.2002, V. Kravchenko & V. Chikatunov, light trap.

Distribution: United Arab Emirates, Saudi Arabia (Alonso-Zarazaga *et al.* 2017). First record for Israel.

Distribution in Israel: The single specimen was collected in a light trap in 'En Gedi, which situates above the Dead Sea, under the eastern extremely steep slopes of the Judean Desert (Fig. 28). It is therefore unclear if it ascended from the Dead Sea coast or fell down from the Judean Desert.

Host: *Convolvulus prostratus* Forssk. (Colonnelli 2009). This plant was never found in Israel (Danin & Fragman-Sapir 2017), although a closely related species, *Convolvulus pilosellifolius*, with which it was previously confused and which was considered extinct, was recently rediscovered in Israel in the lower part of the Jordan Valley (Shemesh *et al.* 2016). In the past, this species was collected also in 'En Gedi (Shemesh *et al.* 2016). Other members of *Convolvulus* in this area are the common desert species *Convolvulus auricomus* (A. Rich.) Bhandari, and the three mainly Mediterranean *C. arvensis* L., *C. althaeoides* L., *C. siculus* L., which are unlikely to be hosts of *S. sabulicola*.

Phenology: The single specimen was collected in late July.

Sharpia soluta Faust, 1885

(Figs 4, 9, 10, 14, 17, 20, 26–28)

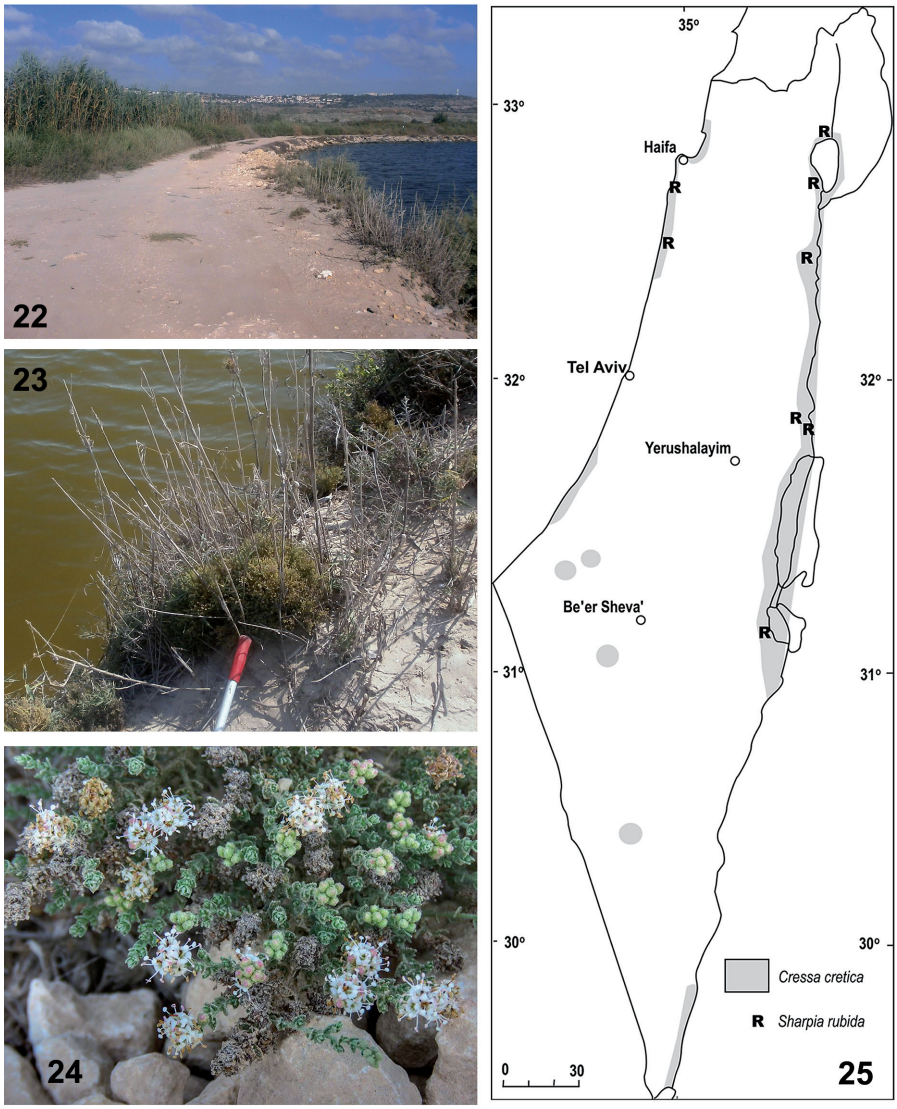
Material examined: Israel: *Upper Galilee*: 1♀ Hermon Field School, 25.v.1999, L. Friedman. *Jordan Valley*: 1♀ 'En Gev, 3.vi.1961, Katznelson. *Yizre'el Valley*: 1♀ 'Emeq Harod, 13.x.2016, I. Renan. *Samaria*: 5♂ 5♀ Ma'ale Shomeron, N gate, 200 m, 26.vi.2015, L. Friedman, on *Convolvulus dorycnium* (5♂ 4♀), 292 m, 2.vi.2017, L. Friedman, on *C. dorycnium* (1♀); 1♀ Mekhora, 12.vi.1992, J. Halperin, *C. dorycnium*. *Foothills of Judea*: 1♂ Modi'in, 24.v.1990, J. Halperin, *C. dorycnium*; 1♂ Tel Zor'a, 370 m, 30.v.2017, L. Friedman, on *C. dorycnium*.

Distribution: Europe: Greece, Romania. Asia: Cyprus, Azerbaijan, Saudi Arabia, United Arab Emirates, Turkmenistan, Uzbekistan (Alonso-Zarazaga *et al.* 2017), Israel (Halperin & Fremuth 2003).

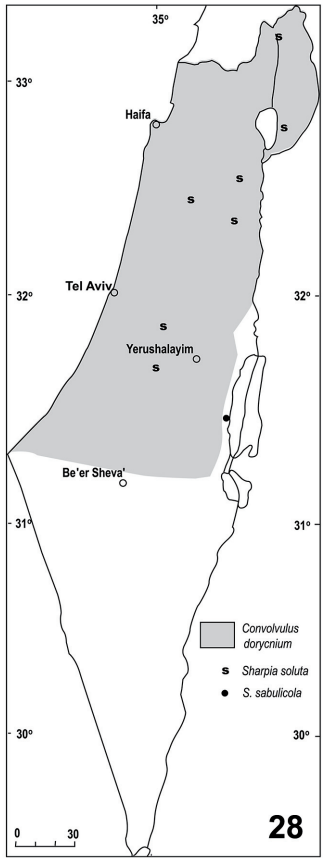
Distribution in Israel: Mediterranean zone, corresponding to the distributional range of *Convolvulus dorycnium* L. (Fig. 28).

Host: *Convolvulus dorycnium* L., first record.

Phenology: May–June, corresponding to the blooming period of *C. dorycnium*.



Figs 22–25: *Sharpia rubida*, host plant and distribution: (22) typical biotope of *Cressa cretica*, Central Coastal Plain, Nahal Daliyya Nature Reserve, swamp and fishing pools, 3.viii.2017; (23) a small shrub of *Cressa cretica* on the sides of the fish pool in Nahal Daliyya Nature Reserve, 3.viii.2017; (24) blooming *Cressa cretica*, Northern Coastal Plain, 'Atlit, 27.vii.2017 (photo courtesy Ayala Zaltzman); (25) map of distribution of *C. cretica* and *S. rubida* in Israel.



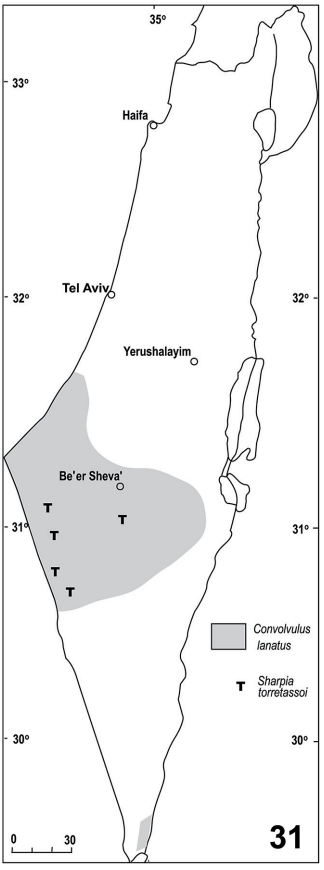
Figs 26–28: *Sharpia sabulicola* and *S. soluta*, host plant and distribution: (26) blooming *Convolvulus dorycnium*, Samaria, Ma'ale Shomeron, vi.2017; (27) typical biotope of *C. dorycnium*, Ma'ale Shomeron, vi.2017; (28) map of distribution of *C. dorycnium*, *Sharpia sabulicola* and *S. soluta* in Israel.

Sharpia torretassoi Zumpt, 1936
(Figs 5, 11, 12, 15, 18, 21, 29–31)

Material examined: Israel: *Northern Negev*: 1♂ Bor Mashash, 14.iv.2003, L. Friedman; 2♂ 2♀ Holot Haluza, 21.iv.2008, I. Renan (1♀), 14.iii.2009, I. Renan, on *Convolvulus lanatus* (2♂ 1♀); 4♂ 2♀ Holot 'Agur, 3 km East Rt. 10, 31°02.67'N 34°21.96'E, 180 m, 16.v.2007, A. Freidberg, on *Ipomoea*; 1♀ Sede Hallamish, 29.iii.1996, A. Freidberg; 38♂ 36♀ Be'er Milka, 30°56'N 34°24'E, 210 m, 30.iii.2017, L. Friedman, on *C. lanatus* (33♂ 33♀), A. Freidberg, on *C. lanatus* (5♂ 3♀).

Distribution: Egypt (Alonso-Zarazaga *et al.* 2017). First record for Israel.

Distribution in Israel: All specimens were collected in the sand dunes of Northern Negev, although the actual distribution may correspond to the distributional range of *C. lanatus* (sands of Southern Coastal Plain, Central Negev and Arava Valley).



Figs 29–31: *Sharpia torretassoi*: (29) typical biotope of *Convolvulus lanatus*, Western Negev, Be'er Milka, sands, 30.iii.2017, the author collecting *S. torretassoi*; (30) blooming *C. lanatus*, same place and date (Figs 29, 30 courtesy Netta Dorchin); (31) map of distribution of *C. lanatus* and *S. torretassoi* in Israel.

Host: *Convolvulus lanatus* Vahl., first record.

Phenology: March–May, corresponding to the blooming period of *C. lanatus*.

Remarks: The species was originally described from three females, collected in March–April 1933 in the Cairo vicinity. The male aedeagus is illustrated here for the first time.

DISCUSSION

The genus *Sharpia* is distributed mainly in the arid and semi-arid regions of the Western Palaearctic and is represented by four species in Israel, *S. soluta* in the Mediterranean zone, *S. rubida* in the areas with saline soil, and *S. sabulicola* and *S. torretassoi* in the desert. The last two species are new records for Israel.

As pointed out above, Bodenheimer (1937) recorded from Israel two species of *Sharpia*, i.e. *S. rubida* Rosenhauer and *S. filirostris* Tournier. The latter species is not mentioned in any catalogue and I have been unable to find Tournier's publication with its description. The SMNHTAU collection harbours eight specimens of *S. rubida* collected in 1929 in Yeriho [Jericho], part of them identified by G.A.K. Marshall as '*filirostris*'. In the collection of the Natural History Museum, London, UK, 24 specimens from southern Iraq (Amarah (2 exx.), Basra (22 exx.)) are deposited, all determined as *S. filirostris* Tournier by Marshall (M. Geiser, pers. comm.). Michael Geiser (pers. comm.) suggested that Marshall must have certainly visited the Paris museum, where the Tournier collection is deposited, and probably saw specimens labelled by Tournier with an unpublished manuscript name, which Marshall did not recognize as such. I did not have an opportunity to check the specimens in London and in Paris, but it appears reasonable that '*filirostris*' is *nomen nudum* that was mistakingly applied to some *S. rubida* individuals. In any case, all specimens from Israel belong to *S. rubida*.

Sharpia heydeni Tournier, 1874 has not been collected in Israel until now. However, this species has a rather wide distributional range—Caucasus, Egypt, Arabian Peninsula, Iran, Afghanistan and Western Siberia (Alonso-Zarazaga *et al.* 2017)—and Israel lies within its borders. Therefore, its presence in the country is possible; it will probably be found, when its host plant is detected. The only known host of *S. heydeni*, *Convolvulus prostratus* Forssk. (Colonnelli 2009), does not occur in Israel, but it is not unlikely that it feeds and develops on more than one species of *Convolvulus*. *Sharpia heydeni* was originally described from 'Syria' (Tournier 1873, 1874). This record was mentioned by some subsequent authors (Schilsky 1907; Klima 1934; Alonso-Zarazaga & Lyal 1999) and omitted by others (Zumpt 1936; Caldara 2013). As definition of 'Syria' was vague in the nineteenth century and could include Israel as well as other parts of the Levant, I searched for the type specimen in order to assess whether it bears more information about the type locality. The type of *S. heydeni* is deposited in Senckenberg Deutsches Entomologisches Institut and bears a handwritten label by Lucas von Heyden, reading: "Egyptus, nec Syria" [Egypt, not Syria] (L. Behne, pers. comm.) (Fig. 32). Zumpt (1936) studied the type and fixed the mistake, but did not emphasized this issue in his revision. Therefore, the record from Syria is incorrect, and the question of the occurrence of *S. heydeni* in the Levant remains open.

Members of *Sharpia* were rarely collected in Israel in the past. In fact, these species are quite common, but are difficult to collect because of their unusual hosts and unusual activity season. Monophagy is common in many groups of weevils, but even strict monophagous species can be often found not only on their hosts, but also on other plants, on the ground *etc*. In the case of *Sharpia*, adults remain constantly on the host plant, never leave it or leave it in extreme cases. The adult activity corresponds tightly to the blooming period of the host plants, and the adults hardly appear out of this period. The blooming period of part of the

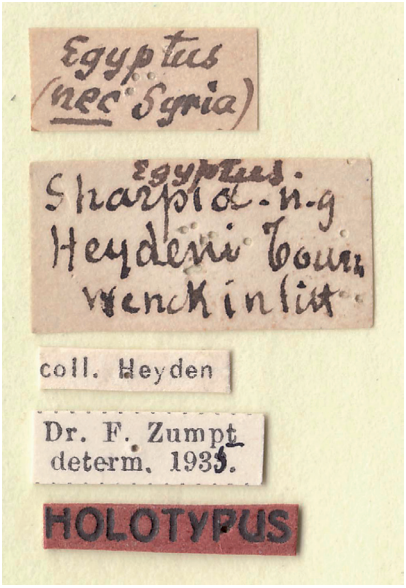


Fig. 32: *Sharpia heydeni*, labels of the holotype (courtesy Lutz Behne).

host plants (*Convolvulus dorycnium*, *Cressa cretica*) occurs in summer (May–June and June–August, correspondingly), which is out of the usual period of fieldwork in Israel. *Sharpia* can be only occasionally collected by sweeping, because the host plants are either small (*Cressa cretica*) or creeping (*Convolvulus* spp.), or the plant is a shrub with dense rigid branches (*Convolvulus dorycnium*). The weevils should be beaten down from the plant; this method was not or rarely used by Israeli entomologists until the latest years.

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