

**TROPINOTA VITTULA REICHE & SAULCY, 1856 IS A GOOD SPECIES  
(Coleoptera, Scarabaeidae, Cetoniinae)**

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**Abstract :** The status of *Tropinota vittula* Reiche & Sauley, 1856 is clarified using large material from Tel Aviv University Museum and private collections. *Tropinota vittula* has to be considered a good species well differentiated morphologically, ecologically and geographically from *T. squalida* Scopoli, 1763 and in particular from ssp. *pilosa* Brullé, 1832.

**Résumé :** Le statut de *Tropinota vittula* Reiche & Sauley, 1856 est précisé à partir d'un abondant matériel provenant du muséum de l'Université de Tel Aviv et de collections privées. *Tropinota vittula* doit être considérée comme une bonne espèce bien différenciée aux plans morphologique, écologique et géographique de *T. squalida* Scopoli, 1763 et plus particulièrement de sa sous-espèce *pilosa* Brullé, 1832.

**Key words :** Coleoptera, Scarabaeidae, Cetoniinae, *Tropinota vittula*, *T. squalida pilosa*, Israel.

### Introduction

*Tropinota vittula* was described by REICHE & SAULCY in 1856 on specimens from «Beirut». Both REITTER (1898) and SCHENKLING (1921) continued to consider *T. vittula* as a good species recorded generically as «from Syria» when Syria had a much larger geopolitical extension than now.

Doubts on the validity of the status of *T. vittula* started to be expressed by MEDVEDEV (1964) who, while treating *T. vittula* as a species, stated : «the validity of this specie is questionable and it may be an aberration of *T. squalida*» (translated from Russian). MIKŠIĆ (1982) followed Medvedev's opinion and degraded *vittula* to a subspecies of *T. squalida*.

This status was rejected by BARAUD (1984) who wrote : «It does not appear possible to admit that *T. vittula* Rche [sic] is considered as subspecies of *T. squalida* (Scop.) as Mikšić proposes (1982). This species indeed coexists in all its area of distribution with *T. squalida* ssp. *pilosa* (Brullé). *T. vittula* Rche [sic] must therefore be considered as a distinct species, in spite of similarity of the edeagus» (translated from French). He further confirmed his opinion in 1985 and 1992.

Surprisingly, in two recently catalogues (KRAJČÍK, 1998; SMETANA, 2006) the taxon *vittula* is again considered as a subspecies of *T. squalida* Scopoli, 1763 similar to *T. squalida* ssp. *canariensis* Lindberg, 1950 and *T. squalida* ssp. *pilosa* Brullé, 1832.

We found therefore of interest to clarify the status of *T. vittula* through a morphological, biological and geographical analysis using the large collection of the Tel Aviv University Museum and specimens gathered from private collections or collected by the Authors between 2006 and 2009.

### Material examined

*Tropinota vittula* Reiche & Sauley, 1856 (161 exx.)

Israël : **Upper Galilee** : Zefat, 10.iv.1976, leg. D. Simon (1 ex.). **Northern Coastal Plain** : Liman, 15.ii.1997, leg. R. Hoffman (1 ex.); Haifa Bay (near Haifa airport), 8.iii.2001, E. Orbach (1 ex.). **Central Coastal Plain** : Hadera 20.iii.1927, leg. O. T. H. (1 ex.), 2.iii.1946, leg. Bytinski-Salz (5 exx); Binyamina, 28.i.1976, leg. M. Kaplan (1 ex.); Coastal Plain, 2 km E. Mikhmoret, 4.iv.2009, leg. E. Orbach (1 ex.); Netanya, 16.iii.1952 (1 ex.); Nahal Poleg, 15.ii.1997, leg. R. Hoffman (1 ex.); Even Yehuda, 25.iii.1935, leg. Hecht (2 exx); Yaquim, 12.ii.1983, leg. E. Shney-Dor (1 ex.); Ramot

haShavim, (1 ex.); Zofit, 29.iii.1997, R. Hoffman (1 ex.). **Southern Coastal Plain** : Tel Aviv, Tel Barukh, 21.ii.1997, leg. Z. Cohen (1 ex.), 21.iii.1997 leg. Y. Nadler (1 ex.); Tel Aviv 3.iii.1981, leg. E. Shney-Dor (1 ex.), 27.ii.1946 Leg. Bytinski-Salz (2 ex.), 17.iii.1940 Leg. Bytinski-Salz (1 ex.), 11.iv.1997, 5.iii.1995, leg. Chikatunov (1 ex.), 22.ii.1997 Leg. R. Hoffman (2 ex). Tel Aviv, Abu Kabir, 2.iii.1954, leg. L. Fishelson (1 ex.); Bene Beraq 21.ii.1954 (1 ex.); Ramat Gan, ii.1956 (1 ex.); Kefar Azar, iii.1955, leg. R. Baruch (1 ex.); Bar-Ilan, 19.ii.1981 (1 ex.); Yafo, iii.1997, leg. L. Front (1 ex.); Yafo [Jaffa], coll. Alain Drumond (1 ex.); Bat Yam, 14.iii.1940, leg. Bytinski-Salz (1 ex.), 18.ii.1942, Leg. Bytinski-Salz (2 exx); Miqwe Israel, 20.iii.1934, F. S. Bodenheimer (1 ex.), 8.iv.1952, leg. Swirski (1 ex.), 14.ii.1958, leg. L. Fishelson (1 ex.); Holon, 16.iii.1959, leg. J. Krystal (1 ex.); 27.ii.1958, leg. Lewinsohn (1 ex.); Bet Dagan, ii.1986, E. Shney-Dor (1 ex.); Rishon leZiyyon, 8.ii.1942, leg. Bytinski-Salz (5 exx), 7.iii.2009, leg. G. Sabatinelli & O. Rittner (87 exx.); Netaim, 28.iii.1953, (1 ex.); Bet 'Oved, ii.1997, leg. R. Hoffman (1 ex.); Palmahim, 5 m, 31°56N 34°44E, 25.iii.2008, leg. G. Sabatinelli (8 exx.); Rehovot, 27.ii.1934, leg. Hecht (3 exx), 24.iii.1935 (1 ex.), 24.ii.1955, leg. Hecht (1 ex.); East of Rehovot, 10.iii.2009, leg. O. Rittner (4 exx.). Sitriyya, 28.iii.1938 (1 ex.); Kefar Bilu, 15.ii.1954, (1 ex.); Ramle, 13.iii.1940, leg. Bytinski-Salz (1 ex.), 17.iv.1955, leg. J. Halperin (2 exx.). **Foothills of Judea** : Hartuv, 3.iii.1954, leg. Ayelet (1 ex.), 26.ii.1955 (1 ex.), 27.ii.1955, leg. Melcer (1 ex.). **Judean Hills** : Yerushalayim, 11.iii.1955, leg. D. Gershon (1 ex.), 5.iii.1954 (1 ex.), 29.iii.1927 (1 ex.). **Northern Negev** : Gevulot, 14.iii.1987. leg. E. Shney-Dor (1 ex.).

*Tropinota squalida* ssp. *pilosa* Brullé, 1832 (205 exx)

Israël : **Hermon** : Har Hermon, 1600 m, 25.v.1971, (1 ex.). **Upper Galilee** : Hula [Huleh], 14.iii.1941 (1 ex.); Yesha', 3.iv.1978, leg. M. J. Berlinger (10 exx.). **Lower Galilee** : Nazeret [Nazareth] (5 exx.). **Carmel Ridge** : Haifa, 4.iv.1922, A. Buxton (1 ex.); Carmel, iv.1966, Y. Yefenof (1 ex.), 17.iii.1947, A. Shulov (1 ex.); Carmel, 17.iii.1947, leg. Shulov (1 ex.). **Northern Coastal Plain** : Liman, 15.ii.1997, leg. R. Hoffman (1 ex.); 'Akko [Acre], 27.iii.1988, leg. E. Orbach (1 ex.); Haifa Bay, 3.iv.1989, leg. E. Orbach (1 ex.). near Haifa airport, 8.iii.2001, leg. E. Orbach (1 ex.). **Southern Coastal Plain** : Bat Yam, 18.ii.1942, Bytinsky-Salz (1 ex.); Rafiah [Rafah], 8.iii.1942, leg. Bytinski-Salz (1 ex.); Bet-Shemen, 4.iii.1986, leg. E. Shney-Dor (1 ex.). **Jordan Valley** : Ginosar, 6.iii.1965, leg. Bytinski-Salz (1 ex.); Gilgal, 1.iii.1973, leg. M. Kaplan (7 exx), 2.iii.1973, leg. D. Furth (2 exx); Masu'a, 2.iii.1985, leg. A. Hefetz (2 exx), 11.iii.1985, A. Hefetz (1 ex.); Nahal Peza'el [V.Pazel], 14.ii.1984, leg. I. Nussbaum (1 ex.); 19.ii.1984, leg. I. Nussbaum (1 ex.); Allenby Bridge (Jordan Valley), 14.ii.1940, leg. Bytinski-Salz (3 exx.); Al-Maghtas (Jordan Valley), 25.ii.1946, leg. Bytinski-Salz (1 ex.). **Foothills of Judea** : Canada Park, 24.iv.1981, leg. I. Yarom (1 ex.); Hartuv, 20.iii.1954 (1 ex.); Hartuv, 26.iii.1958, leg. Shulov (1 ex.), 25.ii.1952, leg. Amitai (1 ex.). **Judean Hills** : Yerushalayim [Jerusalem], 15-30.iii.1939, leg. Bytinski-Salz (6 exx), 15-30.iii.1940, leg. Bytinski-Salz (1 ex.); 18.iv.1940, leg. Bytinski-Salz (4 exx); 15-30.iii.1948, leg. Bytinski-Salz (1 ex.); 20.iii.1958 leg. J. Halperin (1 ex.). **Judean Desert** : W. Fara, 16.iii.1985, leg. E. Shney-Dor (1 ex.). **Dead Sea Area** : Yeriho [Jeriho] 4.iii.1943, leg. Bytinski-Salz (1 ex.), 19.iii.1968, P. Amitai (1 ex.); Qalya [Kalia], 16.iii.1970 (1 ex.), 12.iv.1975, M. Kaplan (1 ex.); Nahal Qumeran, 24.iii.1986, leg. G. Eldar (1 ex.); 9.iv.1986, G. Eldar (1 ex.); 'Enot Zuqim [Ein Feshka], 7.iii.1978, leg. M. Kaplan (1 ex.); 'Enot Qane [Tureibe], 14.iv.1952, (3 exx), 12.iii.1959, leg. J. Wahrman (1 ex.), 12.iii.1959, J. Wahrman (1 ex.); Mezada [Messadah], 18.iii.1960, leg. Lewinsohn (1 ex.); 'En Gedi [Ein Gedi], 26.iii.1957, leg. Shulov (12 exx), 9.iv.1972, leg. Gerling (3 exx), 8.iv.1951, leg. J. Wahrman (2 exx); Sedom, 24.iii.1957, leg. Shulov (1 ex.), 26.iii.1957, leg. Shulov (3 exx); Rosh Zohar [Ras Zuweira], 5.iv.1953 (1 ex.); Wadi Halil, 4.iv.1953, leg. Swirski (2 exx). **Northern Negev** : Bitronot Ruhama, 5.iv.2005, leg. L. Friedman (1 ex.); Gevulot, 7.iii.1981, (2 ex.), 4.iv.1982, (2 ex), 15.iii.1986, E. Shney-Dor (2 ex); Nir Yizhaq, 2.iii.1973 leg. D. Furth (1 ex.); Nahal Besor, 30.iii.1969 (1 ex.); Nahal Ze'elim [W.Seyal], 4.iv.1959 (3 exx.), 10.iv.1953 (1 ex.), 25.ii.1984 (1 ex.), E. Shney-Dor; Be'er Sheva' [Beer-Sheba], 14.iii.1946, leg. Bytinski-Salz (3 exx.); Hazerim, 6.iii.1988, leg. E. Orbach (2 exx.); Haluza [El Khalasa], 2.iii.1946, leg. Bytinski-Salz (1 ex.); Bor Mashash, 15.iii.1970, M. Kaplan (1 ex.), 18.iii.1971 leg. Kugler (1 ex.), 29.iii.1967 leg. Levi (1 ex.), 27.iii.1991, leg. N. Shemesh (1 ex.).

**Central Negev** : 'Arad, 17.iv.1963, leg. M. P. Pener (1 ex.), 1.v.1997, V. Chikatunov, (2 ex.); Dimona, 19.iv.1986, leg. E. Shney-Dor (1 ex.), 3.iii.1979, leg. Kugler (1 ex.); Kurnup (=Kurnub), 17.iii.1947 (1 ex.); 'Avedat, 1.iii.1954, leg. J. Halperin (1 ex.), 14.iv.1975, leg. A. Freidberg (3 exx.), 2.iv.1975 leg. A. Friedberg (1 ex.); Mishor Rotem, 29.iii.1965, Weichselfish (2 exx), 6.ii.1964, leg. Weichselfish (1 ex.), 2.iii.1965, leg. Weichselfish (1 ex.), 11.ii.1965, leg. Weichselfish (1 ex.), 29.iii.1964, leg. Weichselfish (1 ex.), 11.iii.1965, leg. Weichselfish (1 ex.), 25.iii.1991, leg. E. Orbach (4 exx.); Mash'abe Sade [Mashabei Sade], 9.iv.1962; iii.1977 (11 exx) , 9.iv.1992 (1 ex.); Yeroham [Bir Rekhme], 18.iv.1952 (1 ex.), [Tel Yeruham], 4.iv.1953, (1 ex.), 12.iv.1962 (3 exx), 30.1.1962 (1 ex.), 14.iii.1941 (1 ex.), leg. P. Amitai; Nahal Nizzana [W.Nizana], 28.iii.1986, E. Shney-Dor (1 ex.); 'Ezuz [Bearotaim], 26.ii.1968, leg. Gerling (1 ex.); Sede Boqer [Sde-Boker], 28.iii.1978, leg. D. Furth (3 exx), 5.iii.1996, R. Hoffman (1 ex.); Nahal Nafeh [W. Nafkh], 17.iv.1953 (1 ex.), 11.iv.1935, leg. Ch. Lewinsohn (1 ex.), 30.iii.1945, leg. Wahrman (2 exx); Makhtesh Gadol, 10.iv.1967 (1 ex.); Mizpe Ramon, 10.iv.1999, leg. E. Ivanicka (4 exx); Mt. Harif [Har Harif], 28.iii.1986, E. Shney-Dor (1 ex.). **Southern Negev** : Ne'ot Semadar [Shizzaphon], 15.iii.2003, V. Chikatunov (1 ex.). **Arava Valley** : Hazeva, 7.iii.1998, leg. E. Ashkenazi (1 ex.); Nahal Shahaq, Shezaf Nat. Res., 2.iii.1997, O. Niehuis (1 ex.); Nahal Shahaq, 4.iii.1997, leg. O. Niehuis (1 ex.); 'En Yahav [Ein-Yahav], 1.iv.1974, leg. D. Furth (1 ex.); Nahal Zin, 2.iii.1998 leg. S.Alfi (2 exx); Gerofit, 15.ii.2003, leg. V. Chikatunov (2 ex.); Samar, 20.iii.2007, leg. W. Kuslitzky (1 ex.); 'En Yotvata, 24.ii.2001, leg. V. Chikatunov (3 ex).

Egypt : **Sinai**, Feiran, 23.iii.1969, leg. Kugler (8 exx), 9.iv.1973, leg. Bytinski-Salz (11 exx), 10.iv.1973, leg. M. Kaplan (1 ex.), 9.iv.1973, leg. Furth (2 exx), 16.iii.1985, leg. E. Shney-Dor (1 ex.); Sinai, W. Garahdal, 25.iii.1969, leg. Kugler (1 ex.); Sinai, Jabel Mara, 3.iii.1978, leg. D. Furth (3 exx); Sinai, St. Katherina, 8.iv.1973, leg. D. Furth (1 ex.).

### Morphology

REICHE & SAULCY (1856) and REITTER (1898) indicated the following characters to discriminate *T. vittula* from *T. squalida* both belonging to the subgenus *Tropinota* s.str. :

- Elytra dorsally with one oblique-longitudinal row of narrow-spaced, small whitish spots which are not stretched transversally toward the suture..... *Tropinota vittula* Reiche & Saulcy
- Elytra with several yellow or white spots which mostly are stretched transversally toward the suture..... *Tropinota squalida* Scopoli

Since then, all specialists who dealt with this group did not indicate any additional characters to differentiate the two taxa. On the contrary MEDVEDEV (1964) mentioned the great similarity of the edeagus paramera while raising doubts on the validity of *T. vittula* as species.

Using the 366 specimens of *T. vittula* and of *T. squalida* ssp. *pilosa* from Israel gathered we conducted a comparative morphological analysis. The Table 1 shows the main diagnostic characters identified.

**TABLE 1**  
**discriminating characters between *Tropinota vittula* and *T. squalida* ssp. *pilosa***

A part for the pattern of the elytral white spots already described by previous Authors, other characters clearly discriminate specimens of *T. vittula* and *T. squalida* ssp. *pilosa*. However the similar morphology of the edeagi is striking : in *T. vittula* the apex is only slightly narrower than in *T. squalida* and the endophallus does not present any chitinous structure useful for discrimination.

Specimens with white spots that merge along the 2<sup>nd</sup> interstria forming a white longitudinal line are present only in Lebanon and Syria; this is the typical pattern described by REICHE & SAULCY (1856) and figured in plate 12 of the original description.

Character	<i>Tropinota vittula</i>	<i>Tropinota squalida</i> ssp. <i>pilosa</i>
Head	With dense and long hair.	With sparse and short hair.
Scutellum	Sparse setigerous punctures are present at the base but often up the middle (fig. 11).	The surface is smooth without or with very few setigerous punctures at the base (fig. 10).
Elytra	Discus with 10-12 small white spots, most of which in a longitudinal row of along the 1 <sup>st</sup> -3 <sup>rd</sup> interstriae, particularly the 2 <sup>nd</sup> (fig. 4). In some specimens of Lebanon and Syria the 2 <sup>nd</sup> interstria with a longitudinal white line of merged spots (fig. 13).	Discus with few white large spots W-shaped stretched horizontally between the 2 <sup>nd</sup> and 4 <sup>th</sup> interstriae (fig. 5).
	External declivous part of the elytra with a series of white spots along the epipleura and in the middle with a bigger transverse spot S-shaped (fig. 9).	External part of the elytra with few transverse large spots W-shaped (fig. 8).
	Hair dense with long setae uniformly distributed not grouped around the white spots, this is particularly evident on the external declivous part of the elytra (fig. 9).	Hair less dense and unequally distributed grouped around the white spots this is particularly evident on the external declivous part of the elytra fig. 8).
Metasternum	Anterior margin narrow (fig. 7).	Anterior margin broad (fig. 6).
Abdominal sternites	Sides with long hairs, central part with setigerous punctures and long setae.	Sides with short hairs, central part glabrous and smooth.
Pubescence	Generally yellow-whitish/grey (fig. 16).	Generally yellow-orange (fig. 1).

### Geographical distribution

According to SMETANA (2006) the four taxa related to the subgenus *Tropinota* s.str are distributed as follow from West to East and North to South :

- *T. squalida* ssp. *squalida* Scopoli, 1763 : Spain, France, Switzerland, Malta, Italy (including the islands), Croatia, Poland, Bosnia Herzegovina, Slovenia, Yugoslavia (Serbia & Montenegro), Albania, Macedonia, Bulgaria, Greece and Turkey;
- *T. squalida* ssp. *canariensis* Lindberg, 1950 : Canary Island and Madeira Archipelago;
- *T. squalida* ssp. *pilosa* Brullé, 1832 : Morocco, Algeria, Tunisia, Libya, Egypt, Israel, Jordan, Lebanon, Syria, Iraq, Iran. According to Baraud (1992) also : Greece (locus typicus), Bulgaria, and European Turkey.
- *T. squalida* ssp. *vittula* Reiche & Saulcy, 1856 : Israel, Lebanon (locus typicus : Beirut) and Syria.

More precisely KRAJČÍK (1998) indicated *T. vittula* in Israel, Lebanon and dubitatively in Syria. Actually the old generic record of Syria (Reitter, 1898 and



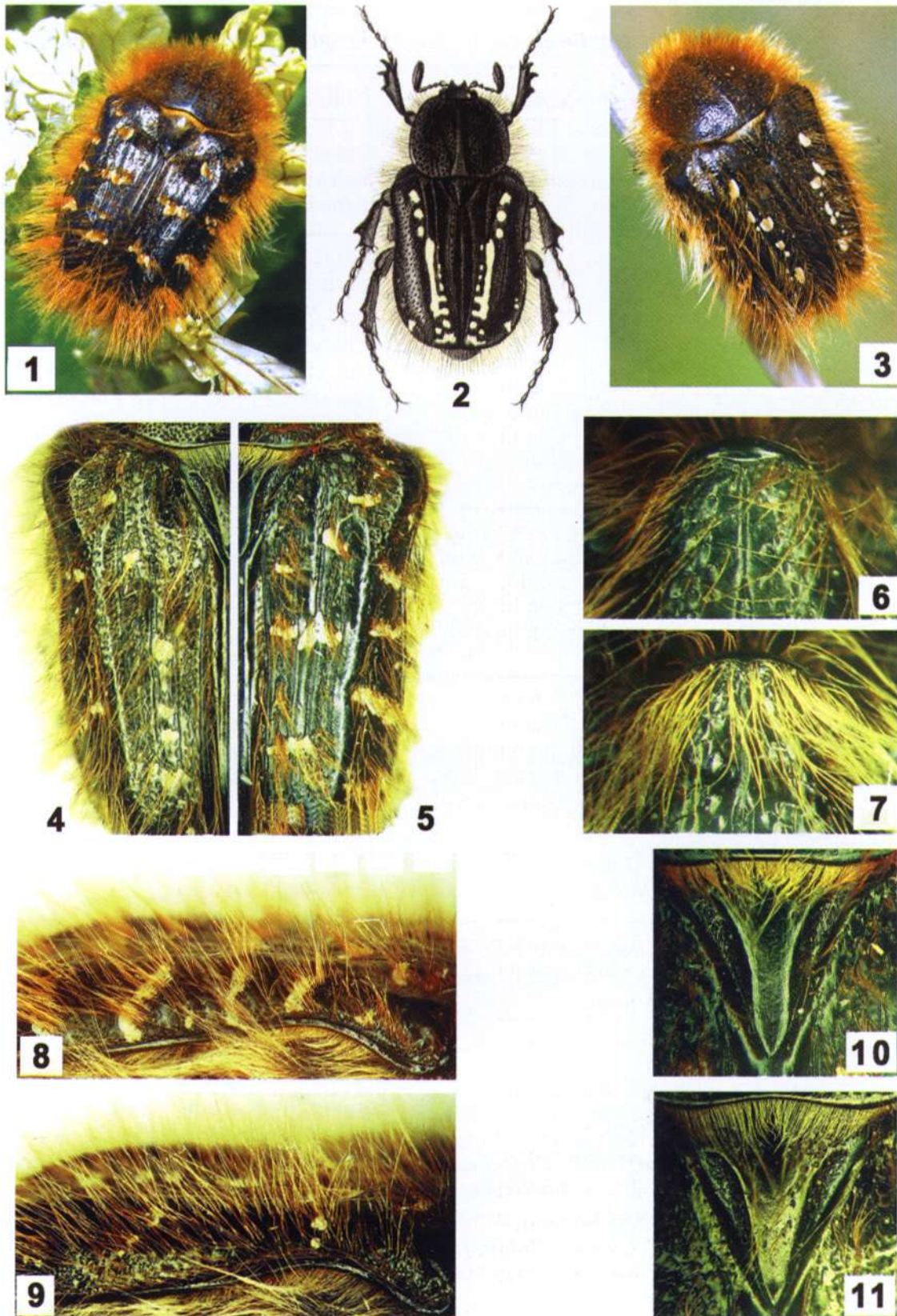


Fig. 1-11 : *Tropinota squalida* ssp. *pilosa* Brullé : specimen from Jordan Valley, Al Arida, (Jordan), 207 meters below the sea level, 14.ii.2008 (photo G. SABATINELLI) fig. 1; right elytron dorsal view fig. 5; mesosternum fig. 6; right elytron lateral view fig. 8; scutellum fig. 10.

*Tropinota vittula* Reiche & Saulcy : drawing from the description (1856 : pl. XII, fig. 2) fig. 2; specimen from Rishon leZiyyon (Israel), 70 m, 30.iii.2009 (photo O. RITTNER) fig. 3; left elytron dorsal view fig 4; mesosternum fig. 7; right elytron lateral view fig. 9; scutellum fig. 11.

Schenkling, 1921) might be referred to the «Greater Syria» that, until 1943, incorporated areas now belonging to Israel, Palestine, Jordan, Lebanon and Turkey (up to the Taurus Mountains in the South).

*T. vittula* is quite common in Israel along the coast (CHIKATUNOV & PAVLICEK, 1997). Out of Israel its presence is sporadic and apart from the old generic records of «Syria», only a few specimens are known from Lebanon [Beirut (MEDVEDEV, 1964; Mikšić, 1982); Beirut, Choueifat, 4.iii.2005, coll. Sabatinelli; Caza A'akkar, A'arida, sea level, iv.2007, leg. & coll. A. Kairouz] and one from Syria (West coast, Bāniyās, 11.iv.1982, leg. M. Tingaud, coll. Tauzin).

The collection records of specimens examined resulted in 64 different localities mapped in fig. 12. In Israel, *T. vittula* is mainly present along the Central Coastal Plain. Only a few specimens result collected near Jerusalem (Judea), in the Northern Negev and in the Upper Galilee and these records need to be confirmed as they are the result of field trips carried out by University students. The altitude of the collection sites ranges between zero and 100 meters above the sea level (m a.s.l.) with only 4 records in localities at 650-750 m a.s.l.

The distribution of *T. squalida* ssp. *pilosa* in Israel and West Bank is much wider and includes almost all the Regions : Mt. Hermon and Golan Heights, Upper Galilee, Carmel Ridge, Jordan Valley, Foothills of Judea and Judean Hills, Dead Sea, Arava Valley, Negev. The altitude of the collection sites ranges between 300 m below the sea level (Jordan Valley and Dead Sea) and 1600 m a.s.l. (Mt Hermon).

According to the available data, *T. vittula* and *T. squalida* are overlapping in Central Northern Coastal Plain, North Negev and Judean Hills. However, specimens of the two species were collected simultaneously in very few localities when *T. vittula* populations are fading and *T. squalida* is appearing.

### Phenology

The phenology of the two taxa is slightly different. The earliest record available for *T. vittula* in Israel is in the 3<sup>rd</sup> decade of January and the last is in the 2<sup>nd</sup> of April; 70 % of captures occurs between the 2<sup>nd</sup> decade of February and the 2<sup>nd</sup> of March. Conversely the presence of *T. squalida* ssp. *pilosa* spans from the 3<sup>rd</sup> decade of January to the last decade of May (only one record at 1600 m); 70 % of captures occurs between the 1<sup>st</sup> and 3<sup>rd</sup> decade of March.

In Israel *T. vittula* is found mainly on *Chrysanthemum coronarium* flowers (fig. 14, 16) often in a large number of specimens but also in *Papaver* sp. (fig. 15). *T. squalida* is found in several Asteraceae, Brassicaceae (fig. 1) and Ranunculaceae, species that are abundant in spring.

### Conclusions

From the analysis of the material we examined, it appears that *Tropinota vittula* Reiche & Saulcy has constant morphological characters that allow an easy differentiation from *T. squalida* Scopoli of which it was considered an aberration and from its subspecies *pilosa* Brullé. The presence of *T. vittula* is documented mainly along the Eastern Mediterranean coast between Ashdod (Israel) and Bāniyās (Syria) but is abundant only in the Central Coast Plain of Israel, when between February and March is largely dominant over *T. squalida* ssp. *pilosa*. The two species are syntopic only in few localities where *T. vittula* shows generally and earlier phenology than *T. squalida* ssp. *pilosa*. *T. vittula* is also more stenotopic than *T. squalida* and adult specimens feed mainly on *Chrysanthemum coronarium*, abundant along sandy coasts from February to March.

*Tropinota vittula* Reiche & Saulcy has therefore to be considered as a good species.

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### References

- BARAUD J. 1984. *Tropinota (Epicometis) villiersi* nouvelle espèce du Moyen-Orient (Coleoptera, Scarabaeoidea, Cetoniidae). *Revue Française d'Entomologie (N.S.)*, 6 : 61-63.
- BARAUD J. 1985. Coléoptères Scarabaeoidea, Faune du Nord de l'Afrique du Maroc au Sinaï. *Encyclopédie Entomologique* 46. Paris : Lechevalier, 651 + 1 pp.
- BARAUD J. 1992. Coléoptères Scarabaeoidea d'Europe. *Faune de France* 78. Lyon : Fédération française des Sociétés de Sciences naturelles & Société linnéenne de Lyon, ix + 856 pp., xi pls.
- BRULLÉ A. 1832. *Expédition scientifique de Morée*. Section des Sciences physiques. 1<sup>ère</sup> partie : Zoologie 2<sup>e</sup> section : Des Animaux articulés. F.G. Levrault. Paris 3 : 165-187.
- CHIKATUNOV, V. and PAVLICEK, T. 1997. *Catalogue of the Beetles (Coleoptera) in Israel and adjacent areas : 1. Scarabaeoidea*. *Klapalekiana*, 33 : 37-65, p. 59-60.
- KRAJČÍK M. 1998. *Cetoniidae of the World, Catalogue – Part I*. (Coleoptera : Cetoniidae). Typos Studio Most, 96 pp.
- MEDVEDEV S.I. 1964. *Plastinchatousye (Scarabaeidae), posdem. Cetoniidae, Valginae*, Fauna SSSR, zhestkokrylye, tom 10, vyp. 5. Moskva, Leningrad : Isdatel'stvo Akademii Nauk SSSR, 375 pp.
- MIKŠIĆ R., 1982. *Monographie der Cetoniinae der paläarktischen und orientalischen Region*. Coleoptera Lamellicornia. Band 3 Systematischer Teil : Cetoniini I. Teil. Sarajevo, 530 pp., 14 pls.
- REICHE L.J. & SAULCY F. 1856. Espèces nouvelles ou peu connues de Coléoptères recueillis par M.F. de Saulcy, membre de l'Institut, dans son voyage en Orient et décrites par M.M. L. REICHE et Félicien de SAULCY (suite) (1). *Annales de la Société Entomologique de France* (3) 4 : 353-422.
- REITTER E. 1899. Bestimmungs-Tabelle der Melolonthinae aus des europäischen Fauna und den angrenzenden Ländern, enthaltend die Gruppen der Dynastini, Euchirini, Pachypodini, Cetonini, Valgini und Trichini. *Verhandlungen des Naturforschenden Vereins in Brünn* 37 [1898] : 21-111.
- SCHENKLING S. 1921. *Coleopterorum Catalogus, 72 : Scarabaeidae Cetoniinae*. Junk, Berlin, 431 pp.
- SMETANA A. (2006). Cetoniinae, pp. 283-313. In: Löbl I., Smetana A. (ed.), *Catalogue of Palaearctic Coleoptera, Vol. 3*. Apollo Books, Stenstrup, 690 pp.

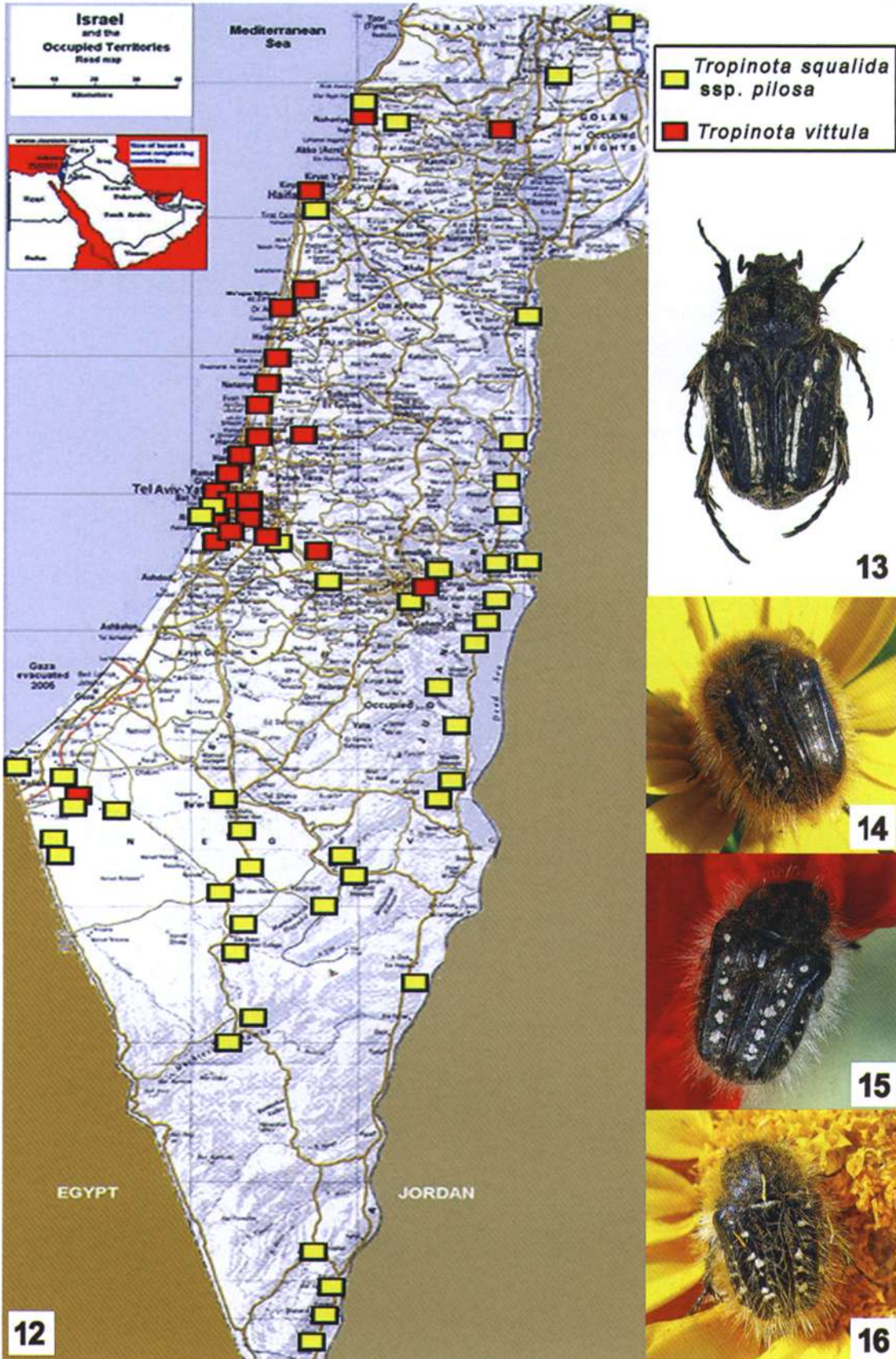


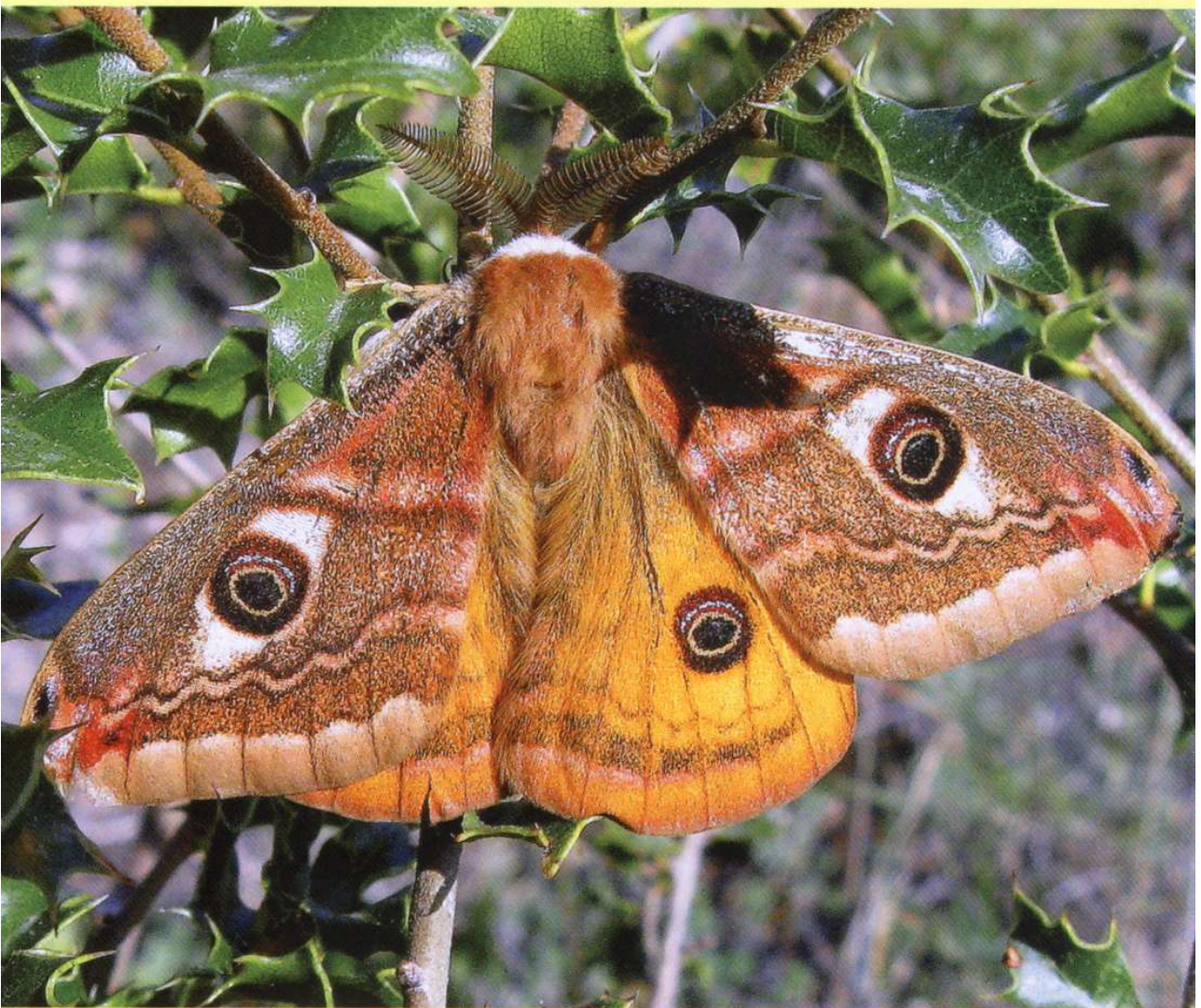
Fig. 12-16 : Geographical distribution in Israel of *Tropinota squalida* ssp. *pilosa* Brullé [yellow] and *Tropinota vittula* Reiche & Saulcy [red] fig. 12; *T. vittula*, typical elytral pattern, from Bāniyās (Syria) 11.iv.1982, leg. Tingaud, coll. P. H. Tausin, (photo D. PRUNIER) fig. 13; *T. vittula* from Palmachim (Israel) 25.iii.2008 (photo G. SABATINELLI) fig. 14; *T. VITTULA* from Rishon leZiyyon (Israel) 28.ii.2008 (photo O. RITTNER) fig. 15; *T. vittula* from Rishon leZiyyon (Israel), 8.ii.2009 (photo G. SABATINELLI) fig. 16.



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