

A new *Amata* species from Israel (Arctiidae, Syntominiæ)

THOMAS J. WITT¹, VASILIIY D. KRAVCHENKO², WOLFGANG SPEIDEL³,
JOSEF MOOSER⁴, AMY JUNNILA⁵ & GÜNTER C. MÜLLER⁶

¹ Museum Witt, Tengstr. 33, D-80796 Munich, Germany; e-mail: thomas@witt-thomas.com

² Department of Zoology, Tel Aviv University, Tel Aviv, Israel; e-mail: vasiliiy@post.tau.ac.il

³ Museum Witt, Tengstr. 33, D-80796 Munich, Germany; e-mail: speidel-wolfgang@web.de

⁴ Seilerbruecklstr. 23, D-85354 Freising, Germany; e-mail: jomooser@aol.com

⁵ Department of Parasitology, McGill University, Macdonald Campus, Ste-Anne-de-Bellevue, Québec H9X 3V9, Canada; e-mail: amyj@sympatico.ca

⁶ Department of Parasitology, Kuvim Centre for the Study of Infectious and Tropical Diseases, The Hebrew University – Hadassah-Medical School, Jerusalem, Israel; e-mail: guntercmuller@hotmail.com

Abstract. A new *Amata* species, *Amata gil* sp. n., is described from Mount Hermon, Israel. It is related to *Amata libanotica* (Bang-Haas, 1906) and *A. mestratii* (Bugnion, 1837), but can be easily discriminated from these species by its considerably smaller size and its lack of the yellow ring on the first abdominal segment which is normally present in the two other species, though it can be reduced in *A. mestratii*. Here, the distribution, ecology, and phenology of the new species are reported and the habitats are pictured in colour.

Zusammenfassung. Eine neue *Amata*-Art, *Amata gil* sp. n., wird vom Berg Hermon, Israel, beschrieben. Sie steht *Amata libanotica* (Bang-Haas, 1906) und *A. mestratii* (Bugnion, 1837) nahe, aber kann von diesen Arten leicht unterschieden werden durch beträchtlich kleinere Größe und durch das Fehlen des gelben Ringes am ersten Abdominalsegment, der bei den beiden anderen Arten normalerweise vorhanden ist, obgleich er bei einigen Individuen von *A. mestratii* auch reduziert sein kann. Die Verbreitung, Ökologie und Phänologie werden dargestellt und Habitate werden auf einer Farbtabelle abgebildet.

Introduction

Until recently, the name *Amata* Fabricius, 1807 has been widely used as the generic descriptor of this group and the name *Syntomis* Ochseneimer, 1808 treated as a junior synonym (e. g. Obratzov 1966; Holloway 1988; Edwards 1996; Nielsen 1996). However, a separate genus *Syntomis* has been accepted by Schneider et al. (1999). The monophyly of the genus *Syntomis* sensu Schneider et al. is very well supported by the presence of androconial hairbrushes on the foreleg coxa and by molecular genetic data (Schneider et al. 1999). However, the monophyly of *Amata*, which lacks hairbrushes on the forecoxa, is not supported by the three published phylogenetic trees based on partial sequences of the mitochondrial 16S rRNA gene. These trees show *Amata* to be polyphyletic, if *Syntomis* and *Hydrusa* are accepted as separate genera (Schneider et al. 1999). Therefore, at present, it seems best to retain *Amata* in the wide sense as defined by Holloway (1988), but to recognize a monophyletic *Syntomis* section within that genus to which the new species belongs. A generic separation of *Syntomis* from *Amata* would also necessitate the splitting of *Amata* s. str. in several genera and make the group rather unpractical, especially in the Oriental tropics. The new taxon can be further attributed to the *phegea* species group in the sense of Obratzov (1966) because of the dark front of the adults.

Material and methods

Besides the specimens mentioned in the description of the new species, the following material (all from Museum Witt) of related species was examined:

Amata sintenisi (Standfuss, 1892): 36♂, 9♀ from Asia Minor (Turkey),

Amata sintenisi aurivala (Schawerda, 1923): 9♂ (including 3 paratypes) from Iraq and Asia Minor (Turkey),

Amata tanina (de Freina, 1982): 70♂ (including holotype and 6 paratypes), 72♀ (including 5 paratypes) from Asia Minor (Turkey),

Amata libanotica (Bang-Haas, 1906): 3♂ from Lebanon,

Amata taurica (Turati, 1917): 1♂ from Asia Minor (Turkey), 20♂ from Syria,

Amata antiochena (Lederer, 1861): 9♂ from Asia Minor (Turkey),

Amata mestrallii mestrallii (Bugnion, 1837): 18♂, 43♀ from Lebanon and Syria,

Amata mestrallii antilibanotica Obratzsov, 1966: 2♂, 1♀ (paratypes) from Antilibanon (mountain ridge separating Lebanon and Syria, exact locality (Zebdani) in Syria),

¹ *Amata mestrallii palaestinae* (Bang-Haas, 1906): 54♂, 5♀ from Israel.

The present paper is based on the revision of Obratzsov (1966) and follows his terminology, including the wing pattern elements. In that monograph, the full synonymy of all mentioned species is indicated and the male genitalia are figured.

Amata gil sp. n.

(Figs 1–5, 9)

Material. Holotype: ♂, 'Israel | Hermon | 2200 m | 21. 6. 1969 | leg. Bytinski-Salz', 'coll. | Daniel', '*Amata* sp. n. | nahe *sintensis* <sic> Stdf. | det. F. Daniel 1972', 'Genitalpräparat | Nr 3379 | Museum Witt München', 'Holotypus | *Amata gil* | Witt & Kravchenko & Speidel & Mooser & Junilla & Müller'. Deposited in Museum Witt, Munich (MWM). – Paratypes: 1♂, 'Israel | Hermon | 2200 m | 21.6.1969' (MWM). 1♂, 'Israel, 1900 m | Mt. Hermon | 1.vii.1986 | A. Freidberg' (deposited in Tel Aviv University). 1♂, 'Israel | Nord Galiläa, Mt. Hermon | Lower Cable Station, 1500 m | 18.6.87 | coll. Mooser' (deposited in coll. Mooser). 1♂, 'Israel | Mt. Chermom [sic., for Hermon], 2000 m | 26.V.1967 | coll. Nisan' (deposited in Tel Aviv University). 2♂, 'Syria | Mt. Hermon, ca. 2600 m | 10.7.2003 | coll. R. Preiss' (deposited in coll. R. Preiss).

Description. Adult male (Figs 1–5). Head, antennae and body black, with yellowish white ring on abdominal segment 5. Underside of body and legs black, with few white scales on thorax and rarely on abdomen laterally.

Wingspan: 18–20 mm (Holotype 19 mm). Forewing black, with white spots: basal spot (m1) round, spot m2 small, round, spot m3 a narrow oblique stripe, m4 elongate, spots m5 and m6 very close to each other and small. Hindwing white, with margin at costa and termen broad, black; black border broader near anal angle; anal margin only with very narrow black border; wing base also with black scales.

Female. Unknown.

¹ There is a 'subspecies' *Amata mestrallii palaestinae* 'Hampson, 1898' according to Obratzsov (1966). However, this name was introduced as *Syntomis mestrallii* [aberration]. *palaestinae* and so is unavailable (ICZN art. 45.6.2). It was first cited in the sense of a geographical population as var. *palaestinae* by Bang-Haas (1906) and so it became nomenclatorially available (ICZN, 4th ed., art. 10.2). *Amata mestrallii palaestinae* (Bang-Haas, 1906) doubtfully represents a valid biological entity. The large material of *A. mestrallii* at hand seems to demonstrate no constant geographical variability.



Figs 1–8. Adult moths (Photos by Igor Kostjuk). **1.** *Amata gil* sp. n. 'Israel, Hermon, 2200 m, 21. 6. 1969, leg. Bytinski-Salz', 'coll. Daniel', '*Amata* sp. n. nahe *sintensis* <sic> Stdf., det. F. Daniel 1972', 'Genitalpräparat Nr 3379 Museum Witt München'. Holotype. **2.** *Amata gil* sp. n. Holotype. Underside. **3.** *Amata gil* sp. n. 'Israel, Hermon, 2200 m, 21. 6. 1969', 'Museum Witt' (MWM). Paratype. **4.** *Amata gil* sp. n. 'Israel, Nord Galiläa, Mt. Hermon, Lower Cable Station, 1500 m, 18. 6. 87, coll. Mooser'. Coll. Mooser, Freising. Paratype. **5.** *Amata gil* sp. n. 'Israel, 1900 m, Mt. Hermon, 1. vii. 1986, A. Freidberg'. Tel Aviv University. Paratype. **6.** *Amata libanotica* (Bang-Haas, 1906) 'Libanon, Franz Daniel', '*Amata libanotica* B.-H. ♂ det. N. Obraztsov 1948', 'Fig. in N. Obraztsov Monogr. *Amata*'. **7.** *Amata mestralii* (Bugnion, 1837) ♂ 'Israel, Nord-Galliläa, 10 km E Quiryat-Shemona, 350 m, leg. de Freina', 'coll. de Freina, Museum Witt, München'. **8.** *Amata mestralii* (Bugnion, 1837) ♀ 'Meron, Israel, 5. v. 1975, leg. Kugler', '*Amata mestralii* (Bugnion, 1837), det. T. Witt 2003'. Tel Aviv University.

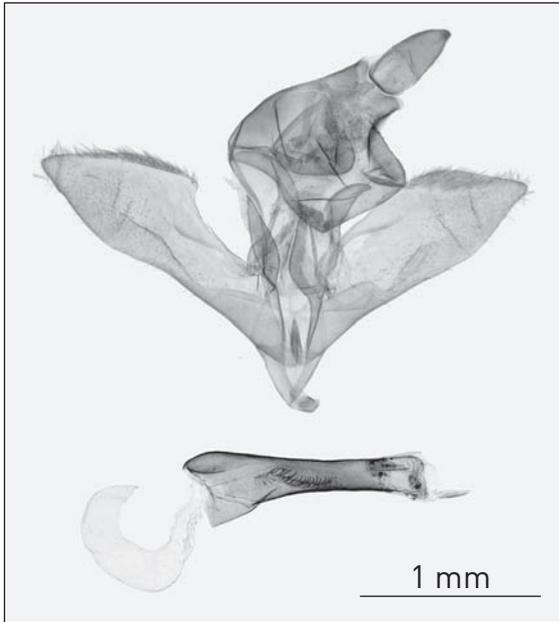


Fig. 9. *Amata gil* sp. n. Holotype, male genitalia.

Male genitalia (Fig. 9, one specimen dissected). Uncus stout; vinculum with small saccus; valvae similarly shaped, pointed at apex; phallus basally very broad, bulbus ejaculatorius rather short, inserting at base of phallus.

Diagnosis. The new species is closely related to *Amata libanotica* (Fig. 6) and *A. mestratii* (Figs 7, 8) because in these two species both valvae are more or less pointed, the right and left one of approximately the same shape. The genitalia structure of *A. sintenisi* is somewhat similar, but the valvae are more rounded at the apex.

Amata libanotica always has a quite clear basal abdominal yellow ring dorsally on abdominal segment 1, which is weak or sometimes absent

in *A. mestratii*. In this respect, the new species is very similar to *A. mestratii*, as the yellow ring is absent in all known specimens. *Amata mestratii* is therefore regarded as possibly the closest relative of the new species. However, in *A. mestratii* and *A. libanotica*, the basal processus of the left valva is longer than the processus of the right one (Obraztsov 1966), whereas in the new species the right processus is longer than the left one. Nevertheless, the new species can be clearly distinguished from *A. mestratii* by the much smaller size and the smaller forewing spots in combination with the larger white area in the hindwing. *Amata mestratii* males have a wingspan of 33–40 mm.

A. antiochena and *A. tanina* have a different shape of each valva: the right valva is angled at outer margin, with shorter processus basalis, whereas the left one is pointed, with longer basal processus (Obraztsov 1966; de Freina 1982).

Comparative figures of the genitalia of all species can be found in Obraztsov (1966) except *N. tanina*, which is figured in the original description (de Freina 1982).

Etymology. The species is dedicated to Gil D. Reichstadt-Ofarim, the well-known musician who now lives in Munich.

Distribution, ecology and phenology. The new species has so far only been collected from Mount Hermon where it inhabits elevations from 1500 to 2600 m. However, if its distribution pattern extends beyond this at all, it is probably restricted to the Levant.

Mount Hermon is a cluster of mountains, mostly made of limestone, with three distinct summits comprising the southernmost part of the Anti-Lebanon mountain range. The highest elevation in Israel is only 2224 m while the highest peak (2800 m) is in Syria. Five of the six records of this new species are from the Tragacanth high altitude zone, which is restricted to the areas above 1900 m. This area receives snow cover and has



Figs 10–14. Habitat *Amata gil* sp. n. **10.** View from Israel, towards the northeast, on the Hermon Mountain Range, with snow line at about 1500 m, mid winter. **11.** View from Syria, towards the south, tragacanth vegetation on Mt Hermon on a wind-facing slope, about 2200 m, mid summer. **12.** North-facing slope of Mt Hermon in Syria, about 2500 m, mid summer. **13.** Large dolinas, a traditional collecting place on the Israeli part of the mountain ridge, near the upper cable station, about 2000 m, mid summer. **14.** Rocky, south-facing summit with scattered bushes, near the lower cable station, about 1600 m, mid spring.

very low temperatures in winter, whereas summers are hot and dry. This situation creates specific plant communities dominated by spiny, round, dense, cushion-like shrubs such as *Astragalus* and *Onobrychis* (Danin 1988). The main water source in this area is melting snow, consequently most of this karstic mountain area is rather arid (Danin 1995). Only one specimen was collected in flight on a xerotherm, karstic slope about 1500 m with few scattered *Rosa canina* L. and *Crataegus* sp. bushes (Rosaceae) (see Fig. 1). The two specimens from Syria were collected sitting on flowers growing among *Astragalus* sp. bushes (see Fig. 3) in the late morning. *A. gil* appears to be a summer

species that flies from June to July. The area is well known for its wealth of indigenous animals and plants, however, it is a sensitive border area between Israel, Lebanon and Syria and as such, it was, in the last few decades, difficult to collect material there, especially on the peaks on which military installations are found (Furth 1975; Kravchenko et al. 2006). Nevertheless, the Tel Aviv University Entomology Department was able to conduct considerable day-time collecting activities in this area. Because this rather distinctive species is absent in local collections, it is probably rare. It should also be mentioned that although numerous light traps were operated for years by the Israeli-German Lepidoptera Project, on the Israeli part of Mt Hermon, and hundreds of other *Amata* were caught, all the specimens of the new species were collected during the day (Müller et al. 2006). The host plants of *A. gil* are unknown, but the larvae of the closely related *A. mestralii* in Israel are polyphagous on low herbaceous plants (unpublished data of the authors).

Remark. *Amata tanina*, which is very similar in size to *A. gil*, is found in similar habitats at high elevations and has brachypterous females with extremely small wing rudiments. The related species *A. mestralii* has reduced wings and the female of the related *Amata libanotica* has fully developed wings. Accordingly it is difficult to predict the characteristics of the wings of the female of the new species.

Acknowledgements

We are thankful to all the colleagues and to the many generous Israeli citizens who helped with this survey. Moreover, we are grateful to the Israeli Nature and Parks Authority (NPA) who supplied the collecting permits. The authors would like to specially thank Dr. Rueben Ortal (Science and Conservation Division), Dr. Didi Kaplan (NPA Northern District Biologist), Mr. Yiftah Sinai (NRA Carmel District Biologist), Mr. Zeev Kuller (Central District Biologist), the staff of the NPA- regional rangers, Nature Reserves and National Parks directors of Israel, Prof. J. Kugler, Dr. A. Freidberg (Entomological collection, University of Tel Aviv), Prof. J. Fittkau (former Head of the Bayerische Zoologische Staatssammlung, Munich, Germany), Dr. Hedva Pener, Dr. Laor Orshan and Dr. Heather Bromly-Schnur (Entomological Laboratory, Ministry of Health), the late Dr. Shoshana Yatom (Volcani Center, Bet Dagan), Mr. Yossi Lev Ari, and Mr. Giora Gissis (Bet Ushishkin Museum, Qibbutz Dan), the late Mr. Zeev Shoam (Qibbutz Neot Mordachai), and particularly Benni & Aliza Ben David of Kefar Sabba. This study would not have been possible without the generous help of Prof. Y. Schlein, Hebrew University, Hadassah Medical School.

References

- Bang-Haas, A. 1906. Neue oder wenig bekannte palaeartische Macrolepidopteren. – Deutsche entomologische Zeitschrift *Iris* **19**: 127–144.
- Danin, A. 1988. Flora and vegetation of Israel and adjacent areas. Pp. 251–276. – In: Y. Yom-Tov & E. Tchernov (eds), *The Zoogeography of Israel*. – Junk Publishers, Dordrecht, The Netherlands.
- Danin, A. 1995. Vegetation maps. Pp. 32–33. – In: *The New Atlas of Israel. The Survey of Israel and The Hebrew University of Jerusalem, Tel Aviv* [in Hebrew].
- de Freina, J. J. 1982. 3. Beitrag zur systematischen Erfassung der Bombyces- und Sphinges-Fauna Kleinasiens. Neue Arten der Gattung *Syntomis* Ochsenheimer, 1808, aus Türkisch-Kurdistan und Aserbeidjan. – Nachrichtenblatt der Bayerischen Entomologen **31**: 47–64.
- Edwards, E. D. 1996. Arctiidae. Pp. 278–286. – In: E. S. Nielsen, E. D. Edwards & T. V. Rangsi (eds), *Checklist of the Lepidoptera of Australia*. – CSIRO Publishing, Collingwood.
- Furth, D. G. 1975. Israel, a great biogeographic crossroad. – *Discovery* **11**: 3–13.
- Hampson, G. F. 1898. *Catalogue of the Lepidoptera Phalaenae in the British Museum 1. Catalogue of the Syntomidae in the collection of the British Museum*. – Taylor and Francis, London. xxi + 559 pp.

- Holloway, J. D. 1988. The moths of Borneo. 6: Family Arctiidae, subfamilies Syntominiinae, Euchromiinae, Arctiinae; Noctuidae misplaced in Arctiidae (*Camptoloma*, Aganainae). – Southdene Sdn. Bhd., Kuala Lumpur. 101 pp., 168 figs, 6 color plates.
- Kravchenko, V. D., M. Fibiger, J. Mooser & G. C. Müller 2006. The Noctuidae of Israel (Lepidoptera: Noctuidae). – SHILAP Revista Lepidopterologica **34**: 353–370.
- Müller, G. C., V. D. Kravchenko, D. Chikatunov, R. Ortal, O. Orlova, C. Li, T. Witt, W. Speidel, J. Mooser & A. Hausmann 2006. General aspects of the Israeli light-trap network concerning Coleoptera. – Esperiana **12**: 269–281.
- Nielsen, P. S. 1996. Syntominiinae. P. 297. – In: O. Karsholt & J. Razowski (eds), The Lepidoptera of Europe. A distributional checklist. – Apollo Books, Stenstrup. 380 pp.
- Obraztsov, N. S. 1966. Die palaearktischen *Amata*-Arten (Lepidoptera, Ctenuchidae). – Veröffentlichungen der Zoologischen Staatssammlung München **10**: 1–383.
- Schneider, D., L. Legal, W. Dierl & M. Wink 1999. Androconial hairbrushes of the *Syntomis* (*Amata*) *phegea* (L.) group (Lepidoptera, Ctenuchinae): A synapomorphic character supported by sequence data of the mitochondrial 16S rRNA gene. – Zeitschrift für Naturforschung **54c**: 1119–1139.