

*Orthotylus (s. str.) flavonigrum* n. sp.  
from the Island of Cyprus  
(Hemiptera: Heteroptera: Miridae)

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### Abstract

*Orthotylus (s. str.) flavonigrum* n. sp. (Hemiptera: Heteroptera: Miridae: Orthotylinae: Orthotylini) is described from the mountains of Cyprus. It can be separated from the remaining species of the genus by characters of external morphology, male and female genitalia. Dorsal colouration is the most conspicuous trait.

**Key words:** *Orthotylus (s. str.) flavonigrum* n. sp., Heteroptera, Miridae, Orthotylinae, Cyprus, taxonomy.

### Resumen

*Orthotylus (s. str.) flavonigrum* n. sp. de la Isla de Chipre (Hemiptera: Heteroptera: Miridae)

Se describe *Orthotylus (s. str.) flavonigrum* n. sp. (Hemiptera: Heteroptera: Miridae: Orthotylinae: Orthotylini) de las montañas de Chipre. Puede separarse de las restantes especies del género mediante caracteres de morfología externa, de la genitalia masculina y de la femenina. Su coloración dorsal es el rasgo más llamativo.

**Palabras clave:** *Orthotylus (s. str.) flavonigrum* n. sp., Heteroptera, Miridae, Orthotylinae, Chipre, taxonomía.

### Laburpena

*Orthotylus (s. str.) flavonigrum* n. sp., Zipre Uhartekoa (Hemiptera: Heteroptera: Miridae)

*Orthotylus (s. str.) flavonigrum* n. sp. (Hemiptera: Heteroptera: Miridae: Orthotylinae: Orthotylini) deskribatzen da, Zipreko mendietakoa. Generoaren beste espezieetatik, kanpo-morfologiaren eta arren eta emeen genitalien hainbat karaktererengatik bereiz daiteke espezie berria. Gainaldeko kolorazioa ezaugarri nabarmengarria da.

**Gako-hitzak:** *Orthotylus (s. str.) flavonigrum* n. sp., Heteroptera, Miridae, Orthotylinae, Zipre, taxonomia.

## Introduction

With more than 400 species known worldwide, *Orthotylus* Fieber, 1858 is the most diverse genus of the subfamily Orthotylinae (Heteroptera: Miridae). New species are regularly described, also in the better-studied Palaearctic Region, where about 150 members are currently known. Concerning only the Mediterranean fauna, recent additions include: *O. gemmae* Gessé & Goula, 2004; *O. jordii* Pagola-Carte & Zabalegui, 2006; *O. attali* Morkel & Wyniger,

2009; *O. neoriegeri* Matocq & Pluot-Sigwalt, 2014; *O. olympicus* Matocq, Pagola-Carte & Pluot-Sigwalt, 2018.

The genus *Orthotylus* has never been revised on a world basis and there is no clear concept for it (Kerzhner and Schuh, 1995; Schuh, 1995). As to the Palaearctic fauna, it has been divided in ten subgenera (see: Kerzhner and Josifov, 1999; Aukema *et al.*, 2013), seven of them with species occurring in the western Palaearctic. Keys to these subgenera were provided by Ehanno and Matocq (1990).

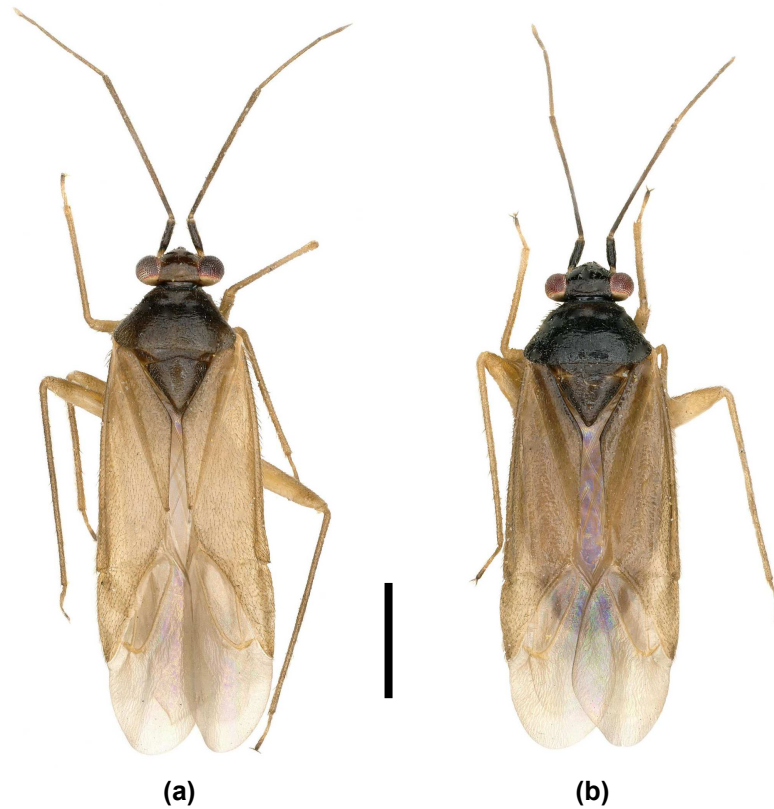


FIGURE 1. *Orthotylus* (*O.*) *flavonigrum* n. sp., habitus: (a) Male (holotype); (b) Female (paratype) (Scale bar = 1 mm).

*Orthotylus* s. str. is a very speciose and heterogeneous group. The uniting characters are basically: dorsal vestiture consisting of semierect, pale setae (only rarely also reclining, thin, brown setae); parameres well developed yet very diverse in shape; sclerotized appendages of the vesica usually large, complex and branching and/or denticulate (Wagner and Weber, 1964; Wagner, 1974; Ehanno and Matocq, 1990).

Among the material collected by AM in Cyprus, a few specimens of a dark *Orthotylus* cannot be ascribed to any of the known species. After the study of external morphology and male and female genitalia, it is described below as a new species belonging to the nominal subgenus.

Measurements are based on the whole type series and are given in millimetres (mm). Measurements are indicated separately for males and for females only for those characters showing sexual dimorphism.

## Description

### *Orthotylus* (s. str.) *flavonigrum* n. sp.

#### *General habitus:*

Macropterous males and females (Figs. 1-2). Total length:  $\sigma\sigma$  = 4.1–4.6;  $\text{♀♀}$  = 4.0–4.6. Body slender, males and females similarly shaped, with females only slightly stouter. Bicolour: head, antennae, pronotum and scutellum dark brown; pro-, meso-, metapleura, hemelytra, abdomen and legs yellowish. Entirely covered by a semierect, pale pubescence.

#### *Head:*

Transverse. Dark brown. Eyes reddish, rounded, protruding and exceeding the anterior pronotal margin by their whole width. Ocular index:  $\sigma\sigma$  = 1.25–1.35;



FIGURE 2. *Orthotylus* (*O.*) *flavonigrum* n. sp., habitus: Male and female in copula (Scale bars: general = 1 mm; inset = 0.2 mm).

♀♀ = 1.75–2.00. Vertex slightly margined, posteriorly bearing a concavity. Gula pale yellow. Tylus protruding and very dark. Rostrum mostly yellowish, fourth segment darkened; first segment the widest, the remaining segments of similar width or progressively thinner towards the apex; reaching mesocoxae. Antennae dark brown, except for the base and apex of segment I and the base of segment II, which are narrowly white; segment I darker than II; segment II darker than III + IV. Length of antennal segments I–II–III–IV = 0.32–1.40–0.72–0.32. Ratio length of segment I / head width = 1/3. Ratio length of segment II / pronotum width: ♂♂ = 1.2–1.3; ♀♀ = 1.0.

#### *Thorax:*

Trapeziform. Dark brown. Surface mostly wrinkled, calli conspicuous and smooth. Lateral margins slightly arcuate and rounded. Mesoscutum marked, with anterolateral angles paler. Legs yellowish, with the claws and apical half of third tarsomeres dark. Tibiae provided with small, mostly pale spines, sometimes a few of them brown. Ratio metatibia length / metatarsus length = approx. 5 in both sexes. Ratio metatibia length / pronotum width: ♂♂ = 1.7; ♀♀ = 1.4. Hemelytra entirely translucent, yellowish, cuneus

tinged with green, clavus slightly darker in some specimens, inner margins of clavus narrowly dark; membrane greyish hyaline, veins yellow. Setae on pronotum and hemelytra clearly longer than the width of antennal segment I; pale, only appearing darker (brownish) on the exocoria and the apex of cuneus.

#### *Male genitalia:*

Pygophore (Fig. 3a) short and trapeziform; genital opening provided with a large, submedian processus on its ventral margin and with several minute spines near the parameres. Parameres rather similar to each other, spoon-like shaped with the apex swollen or revoluted; right paramere (Fig. 3b) more elongate, bearing abundant teeth, 3–4 of them being more protruding and spine-like, and located along the apical margin; left paramere (Fig. 3c) of *O. (O.) prasinus*-type, provided with protuberances and teeth on the revoluted, outer side, and with a moderately long processus on the inner side. Vesica with two sclerotized appendages, their branches complicatedly crossing each other in resting position (Figs. 4a–c); a major appendage (Fig. 4d) consisting in two large and two small branches, the large ones provided with teeth, the small ones smooth and spine-like, one of the large ones clearly

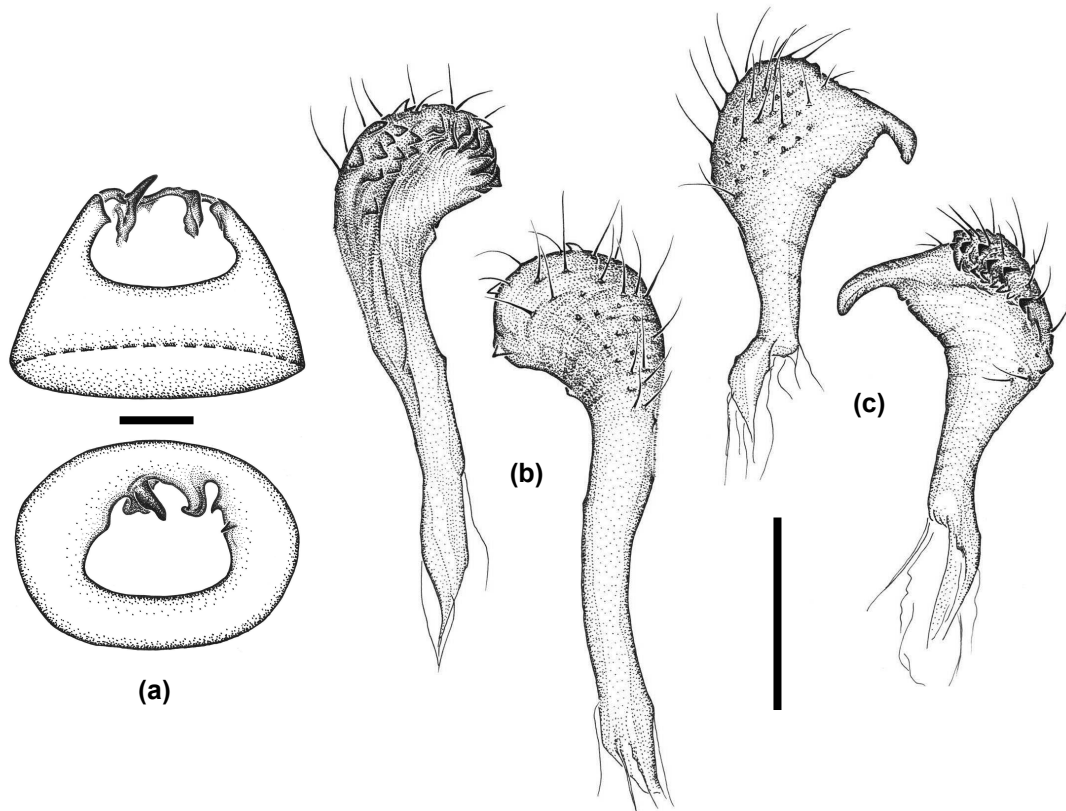


FIGURE 3. *Orthotylus* (*O.*) *flavonigrum* n. sp., pygophore and male genitalia: (a) Pygophore (parameres removed, setae omitted); (b) Right paramere in two views; (c) Left paramere in two views (Scale bars = 0.2 mm).

subdivided apically; a minor appendage (Fig. 4e) thicker, provided with teeth in the apical half, which is twice branched and with branches twisted «backwards».

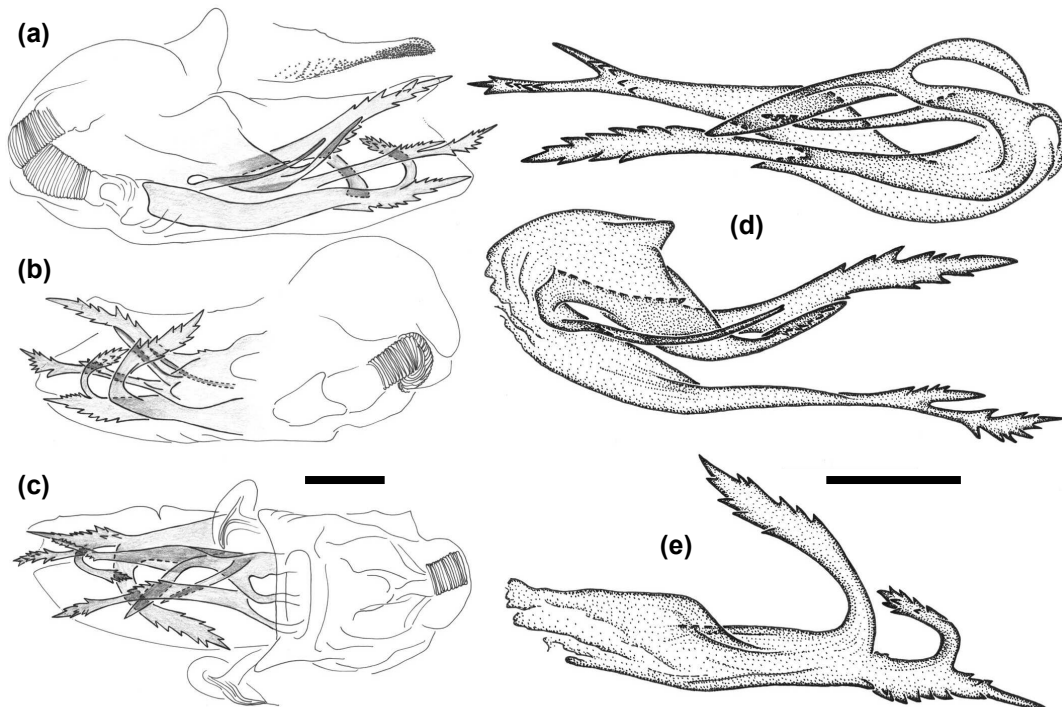
*Female genitalia:*

Genital chamber wider than long (Fig. 5a). Dorsal wall with small, anteriorly pointed sclerotized rings, their inner margin straight; dorsal sac forming a small «V»-shaped structure; lateral oviducts small. Seminal sac large. Posterior wall as in Fig. 5b; dorsal lobes of interramal sclerites (K structures) apically denticulate and with the external projection blunt, short and wide (Figs. 5b-c). Basis of gonapophyses VIII and vulva (Fig. 5d) with cuticular protuberances including a pair of conspicuous, asymmetrical sclerites.

**Type material:**

HOLOTYPE: ♂, labelled «Chypre: 3km de Moutoulias 25-VI-2006, Alt. 1089 m., N 34°5862, E 32°4856, A. Matocq leg.». A red label is now added below: «HOLOTYPE ♂ / *Orthotylus* (s. str.) / *flavonigrum* n. sp. / Pagola-Carte & Matocq, 2018». The specimen is mounted on a white card. Deposited in the Muséum national d'Histoire naturelle (MNHN, Paris).

PARATYPES: 9 specimens (4 ♂♂ + 5 ♀♀), same data as the holotype: 1 ♀ (MNHN, Paris); 3 ♂♂, 3 ♀♀ (Coll. Matocq, Paris); 1 ♂, 1 ♀ (Coll. Pagola-Carte, Villabona). A red label is now added below: «PARATYPE ♂ [or ♀] / *Orthotylus* (s. str.) / *flavonigrum* n. sp. / Pagola-Carte & Matocq, 2018».



**FIGURE 4.** *Orthotylus (O.) flavonigrum* n. sp., male genitalia: (a)-(c) Sclerotized appendages within the vesica; (d) Major sclerotized appendage, in two views; (e) Minor sclerotized appendage (Scale bars = 0.1 mm).

#### Etymology:

The specific epithet «*flavonigrum*» refers to the bicolour pattern of the adults (dark brown and yellowish), from the Latin «*flavo*», meaning yellow, and «*nigro*», meaning black.

#### Type locality:

Moutoulias, in the Marathasa Valley, Nicosia District of Cyprus.

#### Distribution and biology:

So far only recorded from the type locality. Host plant/s unknown. Since the specimens are covered in pollen, it is likely to be an anthophilous species. The pollen grains mainly belong to Rosaceae, most probably of the genus *Prunus*, but also to other trees or bushes such as *Salix* and *Pinus* (Valérie Andrieu-Ponel, pers. comm.). The collecting date (late June) correspond to a period of adult maturity, as the copulation of Fig. 2 demonstrates.

#### Discussion

The new species is easily ascribed to the nominal subgenus of *Orthotylus* according to the type of vestiture as well as to the shape and complexity of the male genitalic structures. It is more difficult to place it within any of the species groups used by Wagner (1974) for species separation. Those groupings are based on the dorsal colouration and on the type and colour of setae, and they probably do not reflect true phylogenetic relationships but partially. As to *O. (O.) flavonigrum* n. sp., it could be placed in the *tenellus*-group due to the pubescence, whereas only the *obscurus*-group should be considered according to its dorsal colouration. Moreover, the body shape and parameres put it closer to *O. (O.) elongatus* Wagner, 1965, in the *diaphannus*-group.

Regardless of Wagner's groups of species, the coherence of which is limited (maybe with the exception of the *virens*-group), we prefer not to place the new

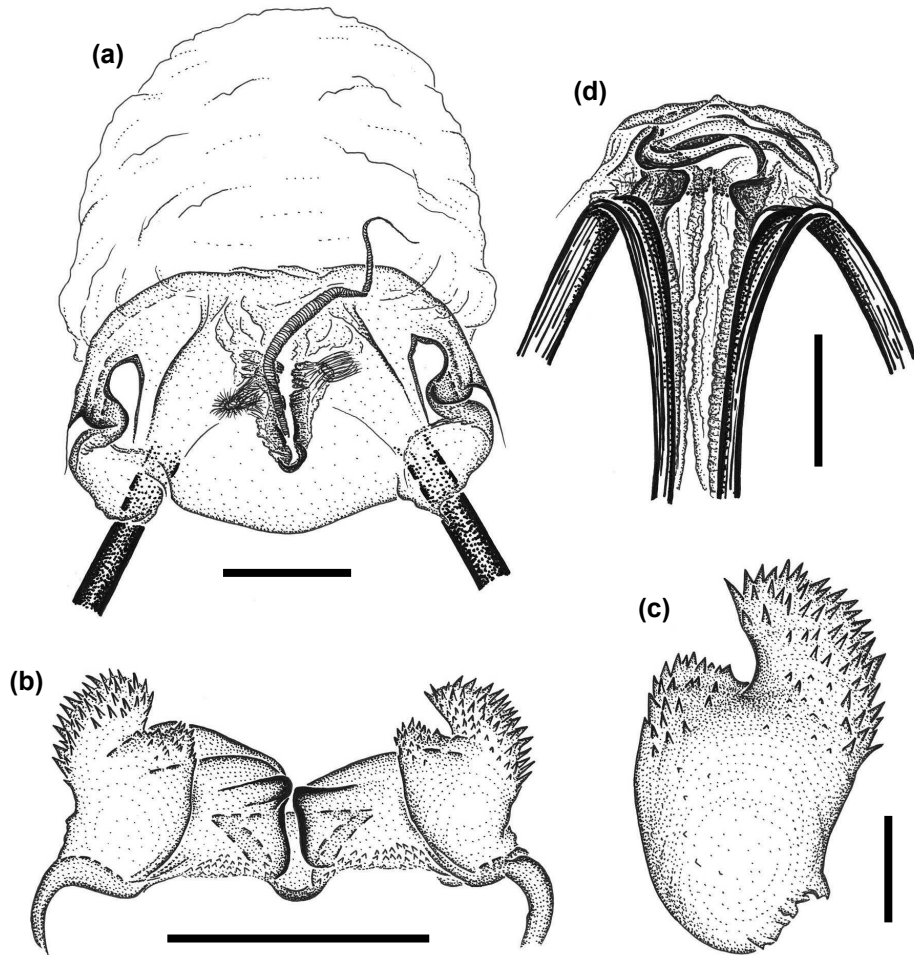


FIGURE 5. *Orthotylus* (*O.*) *flavonigrum* n. sp., female genitalia: (a) Genital chamber, dorsal wall; (b) Posterior wall; (c) Detail of a dorsal lobe of the interramal sclerites (K structure); (d) Vulvar area, ventral view (Scale bars: (a), (b), (d) = 0.2 mm; (c) = 0.05 mm).

species in any of them. Instead, it will be compared with *O. (O.) elongatus*, the most similar species and also known from Cyprus (Wagner, 1965). A photograph of *O. (O.) elongatus* is available on the Discover Life internet site ([www.discoverlife.org](http://www.discoverlife.org)).

The dorsal colouration of *O. (O.) flavonigrum* n. sp. is very distinguishing among west-Palaeartic species of *Orthotylus*, giving it the appearance of some members of other Orthotylinae genera (e.g. *Platycranus*, *Cyrtorhinus*, *Mecomma*). In addition, the new species is slightly longer (4.0–4.6 mm) than *O. (O.) elongatus*

(3.95–4.05 mm) and the ocular index of males is greater (1.25–1.35 *vs.* 1.10). The metatibia is 5 × longer than metatarsus instead of 6 ×.

Concerning the male genitalia, the parameres and sclerotized appendages of the vesica are differently shaped (see: Wagner, 1965, 1974). In the new species the right paramere lacks lateral process and the left paramere is provided with abundant protuberances and teeth on its revolved side. The sclerotized appendages are more complex and some of their branches are twisted «backwards».

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