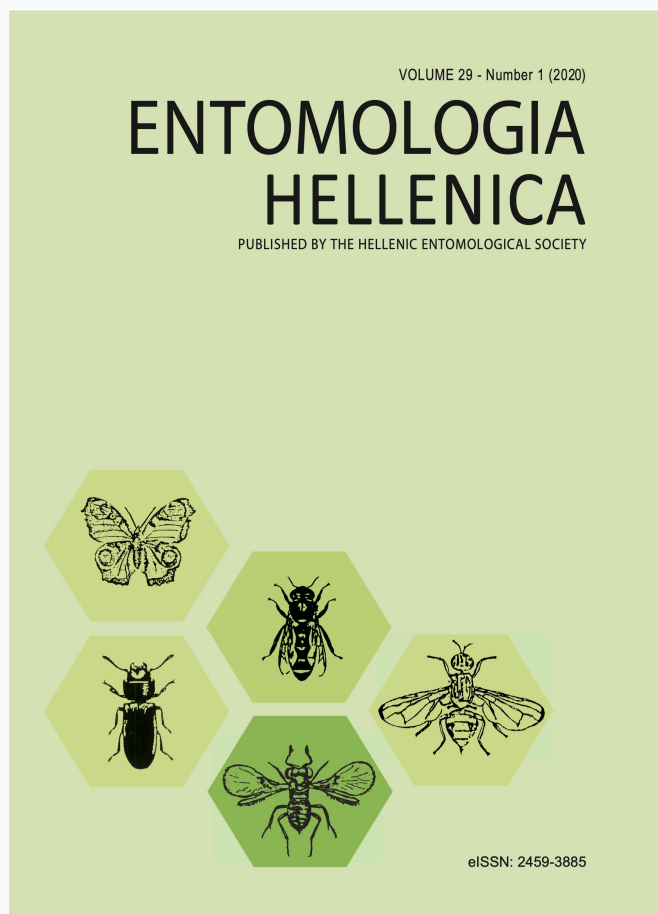


ENTOMOLOGIA HELLENICA

Vol 29, No 1 (2020)



Description of a new species of *Platypalpus* of the *candicans* - *cursitans* subgroup from the Peloponnesus, Greece (Diptera: Hybotidae, Tachydromiinae)

Patrick Grootaert, Sotiris Alexiou

doi: [10.12681/eh.21760](https://doi.org/10.12681/eh.21760)

Copyright © 2020, Patrick Grootaert, Sotiris Alexiou



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/).

To cite this article:

Grootaert, P., & Alexiou, S. (2020). Description of a new species of *Platypalpus* of the *candicans* - *cursitans* subgroup from the Peloponnesus, Greece (Diptera: Hybotidae, Tachydromiinae). *ENTOMOLOGIA HELLENICA*, 29(1), 17–26. <https://doi.org/10.12681/eh.21760>



Description of a new species of *Platypalpus* (Diptera: Hybotidae) of the *candicans* - *cursitans* subgroup from the Peloponnese, Greece

P. GROOTAERT¹ AND S. ALEXIOU^{2,*}

¹Royal Belgian Institute of Natural Sciences, Vautierstreet 29, 1000 Brussels, Belgium

²Deutsches Institut für Lebensmitteltechnik e.V., Prof.-von-Klitzing-Str. 7,
D-49610 Quakenbrück, Germany

ABSTRACT

Platypalpus cylleneus sp. n. belonging to the subgroup of *Platypalpus candicans* and *cursitans* is described from Mt Killini in the Peloponnese, Greece. A review and a key to the members of the subgroup, *P. candicans* (Fallén, 1815), *P. cursitans* (Fabricius, 1775), *P. cylleneus* sp. nov. and *P. nigrimanus* Strobl, 1880, is provided.

KEY WORDS: Greece, new species, Peloponnese, *Platypalpus*, Tachydromiinae, taxonomy.

Introduction

The genus *Platypalpus* Macquart is a mega-diverse genus with more than 250 species known from Europe and although several revisions of the European species were done in the last century (Collin, 1961; Chvála, 1975, 1989; Grootaert & Chvála, 1992) still new species are found in Europe (Barták & Kubík, 2015, 2016) and in the Middle East (Barták & Kubík, 2018; Kustov et al., 2014, 2015).

The *Platypalpus* fauna in Greece has hardly been sampled and very few species have been reported. The Fauna Europaea website lists only eight species (Chvála, 2013). Since the Peloponnese is known for its remarkable and endemic fauna (Sfenthourakis & Legakis 2001) it is not a surprise to find a new species for science.

Here we describe a new species collected on Mt. Killini at the NE of Peloponnese. The new species belongs to the *P. pallidiventris* – *cursitans* group *sensu* Grootaert & Chvála (1992) and to a subgroup containing *P. cursitans*, *P. candicans* and *P. nigrimanus*,

characterized by the yellow basal antennal segments, the dusted sternopleura and the apical section of vein M evenly but distinctly bowed before reaching the wing tip.

Materials and Methods

A three-day survey of Mt. Killini, focused on Diptera, was done in the middle of April 2019. The mountain was searched on the north side and at medium altitudes ranging from 900 to 1200m (at spring time it is not unusual for the Mediterranean mountains to still hold snow, especially above the tree-line, thus the climatological conditions at higher altitudes are not ideal for flying insects at that moment). Diptera specimens were collected with the use of a hand net and yellow pan traps filled with water and liquid soap.

The three *Platypalpus* specimens were collected from the same yellow pan trap and placed in tubes containing 70% ethanol. After sorting they were mounted on entomological pins. The dusting on the

*Corresponding author: s.alexiou@dil-ev.de

thorax and the abdomen is well visible caused by densely set microtrichia. However due to having been wet, it is not possible to see if this dusting had a grey hue like i.e. in *P. candicans*.

After maceration in 10% hot KOH, the male terminalia were washed in tap water, brought to 70% ethanol, eventually in glycerine and mounted in a neutral gel to allow orientation of the terminalia on the slide. Drawings were made with a camera lucida.

Abbreviations: cSA (collection Sotiris Alexiou), RBINS (Royal Belgian Institute of Natural Sciences), ZMUA (Zoological Museum of the University of Athens).

Results

Class Insecta Linnaeus, 1758

Order Diptera Linnaeus, 1758

Superfamily Empidoidea Latreille, 1804

Family Hybotidae Meigen, 1820

Subfamily Tachydromiinae Meigen, 1822

Genus *Platypalpus* Macquart, 1827

Platypalpus cylleneus sp. nov.

Figs 1 – 2.

Diagnosis. A medium-sized species (2.9 – 3.4 mm) with a pair of vertical bristles and a dusted sternopleura. Basal antennal segments yellow, third segment entirely black. Vertical bristles and thoracic bristles black. Fore tibia spindle-shaped swollen. Mid femur more than 2 x as wide as fore femur. Fore femur with 3 back anterior bristles in apical third, short posteroventral bristles hardly half as long as femur is wide. Mid tibia with a stout spur just a little longer than tibia is wide. Eight scutellar bristles. Abdomen black with all tergites grey dusted at base, sternites entirely grey dusted.

Etymology. The new species is named after the mountain it was collected, Kyllini (Cyllene), the birthplace of god Hermes. The name of the mountain derives from a homonymous nymph of the Greek

mythology. The mountain sometimes is referred to as Ziria, (a Slavic word for acorn).

Material examined.

Holotype male. Greece, Peloponnese, Prefecture of Korinthia, Mt. Killini, 200m from the village of Kato Trikala, 900m a.s.l., 17.IV.2019, in coll. RBINS.

Paratypes. Data as for holotype, 2♂ (1 ZMUA, 1 cSA).

Male. Body: 2.9 – 3.4 mm; wing length: 3.5 – 3.7 mm.

Head: Black in ground-colour. Frons grey dusted, twice as wide as front ocellus. Face silvery grey dusted including clypeus. Jowls wide, dusted. Ocellar bristles black, as long as verticals. A pair of long black vertical bristles as long as third antennal segment, rather close together. Upper postocular bristles black, lower postoculars white and multiseriate. Antenna with basal 2 segments yellow. Third antennal segment entirely black, nearly 2 x as long as wide. Arista 1.5 – 2 x as long as third segment. Palpus clear yellow, large, triangular, sharply pointed, with at least 4 long pale bristles as long as palpus is long.

Thorax: All bristles black. A long humeral, 2 long notopleurals with a few shorter bristles; acrostichal bristles long, biserial, the rows close together, diverging only in the posterior half, not adpressed to the mesonotum. Dorsocentrals biserial, a little longer than acrostichals, the rows ending in 2 longer prescutellars; 2 pairs of long scutellar bristles with 2 pairs of shorter bristles, half as long as the long ones (4 bristles at each side).

Legs: Yellow including all coxae; all tarsi weakly annulated pale brownish. Fore coxa with long pale bristles. Fore femur thickened with a row of long yellow ventral



FIG. 1. *Platypalpus cylleneus* sp. nov. Holotype male. Habitus. Abbreviations: ft: fore tibia; mt: mid tibia; vt: vertical bristles. Scale 1 mm.

bristles, half as long as femur is wide. Fore tibia spindle-shaped dilated with a number

of short black dorsal bristles. Mid femur very thickened, almost 2 x as wide as fore

femur. Four black anterior bristles in apical third, about half as long as femur is wide and a few black anteroventrals in apical half. A double row of black ventral spines, the spines in the posterior row a little longer than in the anterior row. A row of 8 black posteroventral bristles about 1/3 as long as femur is wide. Mid tibia with a strong spur about as long as tibia is wide and rather triangular in lateral view (Fig. 1). Hind femur half as wide as mid femur with a ventral row of short dusky yellow bristles.

Wing: Hyaline with a brownish tinge. Veins brownish black. Vein R₄₊₅ almost straight. Apical section of vein M strongly but evenly bowed up to the tip of the wing. Cross veins separated. Vein closing anal cell S-shaped.

Abdomen, terminalia (Fig. 2): Cerci enclosed in epandrium. Apex of right cercus somewhat truncate (Fig. 2B, E) while apex of left cercus is pointed. Left cercus nearly as long as right cercus. Right epandrial lamella with multiple rows of short bristles on right side (Fig. 2 A, F). Some weak striations on the cuticle. Right surstylus with a strong protuberance at base (Fig. 2 A). Left epandrial lamella in lateral view with rounded apex (Fig. 2 C). Short bristles on apical margin while very long pale bristles on left margin (Fig. 2D).

Female. Unknown.

Distribution. Known only from the type locality.

Habitat. The type locality is a north-facing mountain slope immediately below the coniferous forest zone of the mountain. The location lies at the outskirts of Kato Trikala settlement, a famous winter destination that serves as a resort of a ski center, placed higher up in the mountain. The vegetation of the area is thus now largely anthropogenic: strongly affected by fires and a mosaic of cultivations, mainly vineyards and orchards

and semi-natural shrub (macchie). The specimens were collected in a trap placed next to a stand of macchie shrubs, mainly *Quercus coccifera* and *Cercis siliquastrum*.

Comments. *Platypalpus cylleneus* sp. nov. is closely related to *P. candicans* though there are some distinct differences. First of all there is the difference in colouration of the bristling: the vertical bristles, the upper postocular bristles, the anterior, anteroventral and posteroventral bristles on the mid femur and the bristles on the mesonotum are all black in the new species, while yellow in *P. candicans*. The wing veins are brownish black while yellowish in *P. candicans*. Striking are the multiple scutellar bristles, up to 8 in total while only 4 in *P. candicans* and the other related species. The cerci of the male are concealed in the epandrium with the tip of the left cercus a little lower in position than the right cercus (Fig. 2E). The apex of the latter is truncate while the left cercus is pointed. In *P. candicans* the cerci seem longer and surpassing the epandrium (Chvála, 1975) and both cerci are equally long and the apices of right and left cercus are both pointed. The shape of the left epandrial lamella seems to be more truncate than in the new species. In the new species, the right epandrial lamella has some weak striations on the cuticle, but not roughed as in *P. cursitans* (Collin, 1961: Fig. 60).

The differences with the other related species *P. cursitans* and *P. nigrimanus* are listed in the following key.

**Key to the species of the *candicans* –
cursitans subgroup**

(modified from Grootaert & Chvála, 1992)

138. Vein M strongly and evenly bowed even towards apex. Third antennal segment blackish 139
- Vein M not so strongly and evenly bowed, but curved up and ending at tip of wing close to the tip of vein R₄₊₅. Third antennal

segment brownish, often yellowish at base, broader. Tarsi with brownish annulations. Jowls very narrow, black. Abdomen greyish dusted at sides *cursitans* (Fabricius)

139. Eight scutellar bristles. Vertical bristles and all thoracic bristles black. Spur on mid tibia strong, triangular in lateral view, as long as tibia is wide *cylleneus* sp. nov.

- Only 2 pairs of scutellar bristles. Vertical bristles and thoracic bristles yellowish. Spur on mid tibia slender, longer than tibia is wide..... 139b

139b. Frons very narrow, not broader than front ocellus. Tarsi pale or indistinctly annulated. Mesonotum light grey dusted. Face silvery-grey. Jowls wider, dull grey. Palpus pale yellow. Abdomen extensively shining, often yellowish at base and on venter..... *candicans* (Fallén)
- Frons broader. Tarsi extensively black except for base. Mesonotum and face golden-yellowish dusted. Jowls indistinct, narrowly polished black. Palpus dark golden-yellow. Abdomen mostly greyish dusted*nigrimanus* Strobl

***Platypalpus candicans* (Fallén, 1815)**

Tachydromia candicans Fallén, 1815: 10 (female).

Tachydromia ventralis Meigen, 1822: 85.

Platypalpus varius Walker, 1951:126.

Tachydromia oediclema Strobl, 1898: 211.

Tachydromia candicans var. *flaviventris* Strobl, 1898: 211.

Tachydromia candicans Fallén: Collin, 1961: 163 (re-description).

Platypalpus candicans (Fallén, 1815): Chvála, 1975: 200 (description of male, fig. 159: male palpus; 163: male antenna; 238: female mid femur and tibia; 489 – 491: male terminalia (paralectotype of *P. oediclema* Strobl); 741: wing.

Platypalpus candicans Wéber, 1975: 42, fig. 31A, wing.

Platypalpus candicans Chvála, 1989: 365 (extended diagnosis).

Platypalpus candicans Grootaert & Chvála, 1992: 163 (diagnosis).

Diagnosis. A medium-sized to large species (2.8 – 4.5 mm) with 1 pair of long, pale vertical bristles, dusted sternopleura, very narrow frons and vein M evenly and strongly bowed. Frons very narrow, as wide as front ocellus. Third antennal segment narrower than in *P. cursitans* and entirely black, even at base. Palpus in male large, sharply pointed; smaller and less pointed in female. Thorax grey dusted with all bristles and hairs pale yellowish. Acrostichals biserial, diverging. Dorsocentrals uniserial rather short except for prescutellars. Two pairs of scutellar bristles.

Legs yellow with pale tarsi with inconspicuous light brownish annulations. All hairs and bristles yellowish. Fore tibia in male very spindle-shaped thickened. Mid femur in male at least 2 x as wide as fore femur, with short pale antero- and posteroventral bristles. Mid tibia with a long sharply pointed apical spur. Abdomen polished brownish to black, but often the basal 2 tergites and apical 2 tergites yellowish brown. Sternites generally yellowish brown.

Comments. Females are common while males are very rare. Collin (1961) did not observe males in the UK. Chvála (1975) reported males from Austria, Czechoslovakia and Italy only and illustrated the male terminalia from a male *P. oediclema* Strobl that was considered as a junior synonym of *P. candicans*. These terminalia are different from the new species described here in that the cerci in *P. candicans* are longer, with right and left cercus equally long, both pointed and not concealed in the epandrium, but protruding.

The shape of the left epandrial lamella is also different.

Distribution. Widely distributed throughout Europe and North Africa (Chvála, 1975), but rare in northern Scandinavia. It is known so far from Andorra, Austria, Belgium, Britain I., Central European Russia, Croatia, Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Ireland, Italian mainland, Latvia, Lithuania, North Macedonia, Malta, North Africa, Northwest European Russia, Norwegian mainland, Poland, Romania, Slovakia, Slovenia, Spanish mainland, Sweden, Switzerland, The Netherlands, Ukraine and former-Yugoslavia. The actual distribution is illustrated on the Fauna Europaea website and as can be seen, *P. cursitans* is not yet reported from Greece.

***Platypalpus cursitans* (Fabricius, 1775)**

Musca cursitans Fabricius, 1775: 782.

Tachydromia bicolor Meigen, 1804: 237.

Tachydromia cursitans var. *denominata* Frey, 1907: 409.

Tachydromia cursitans Fabricius: Collin, 1961: 160; fig. 60: male terminalia.

Platypalpus cursitans Fabricius: Chvála, 1975: 202; fig. 158: male palpus; 164: male antenna; 239: male mid femur and tibia; 492 – 494: male terminalia; 742: wing.

Platypalpus cursitans Grootaert & Chvála, 1992: 163: diagnosis.

Diagnosis. A medium-sized to large species (3 – 4.6 mm) with 1 pair of pale vertical bristles, dusted sternopleura and faintly brown annulated tarsi. Frons broader than in *P. candicans*, about as wide as second antennal segment. Jowls narrow below the eyes, shiny black. Basal antennal segments yellow, third antennal segment rather broader, nearly 2 x as long as wide, brownish with base narrowly yellowish. Palpus large, pale yellow, pointed though not sharply like in *P. candicans*. Thorax

light grey dusted, all hairs and bristles yellowish. Acrostichals narrowly biserial, dorsocentrals uniserial, short, except for a pair of long prescutellars. Legs yellow with brownish annulated tarsi. Mid femur not much stouter than fore femur. Posteroventral bristles pale. Mid tibia with a long sharply pointed apical spur. Abdomen polished black, but all terga rather broadly grey dusted at sides.

Distribution. *Platypalpus cursitans* is a species with a wide European distribution and known so far from Austria, Belgium, Britain I., Central European Russia, Croatia, Czech Republic, Danish mainland, Estonia, Finland, French mainland, Germany, Hungary, Ireland, Italian mainland, Latvia, Lithuania, Malta, North European Russia, Northwest European Russia, Norwegian mainland, Poland, Romania, Slovakia, Switzerland and The Netherlands. The actual distribution is illustrated on the Fauna Europaea website and as can be seen, *P. cursitans* is not yet reported from Greece.

***Platypalpus nigrimanus* Strobl, 1880**

Platypalpus nigrimanus Strobl, 1880: 8.

Platypalpus nigrimanus Weber, 1975: 42, fig. 31 B – D: male terminalia (B: right epandrial lamella and cerci; C: cerci; D: left epandrial lamella).

Platypalpus nigrimanus Chvála, 1989: 366. Extended diagnosis.

Diagnosis. A medium-sized (2.6 – 3.8 mm) golden grey dusted species. Vein M is evenly bowed as in *P. cursitans*. Vertical bristles rather short, closely set, dusky yellow. Third antennal segment black, at least 2.5 x as long as wide. Arista slightly longer. All hairs and bristles on thorax dusky yellow to light brownish and short. Acrostichals biserial, diverging and adpressed to the mesonotum. Dorsocentrals uniserial, also short except for the longer prescutellars. Legs entirely yellow except for mid tibia and all tarsi brown or nearly

black. Fore femur slender, mid femur thickened, more than 2 x as wide as fore femur. Mid femur with a few short pale posteroventral bristles. Mid tibia with a long pointed apical spur. Wing hyaline with yellowish veins, cross veins narrowly

separated. Abdomen polished black but all tergites grey dusted at base, leaving only broad polished median triangles. Venter entirely dusted grey. Left epandrial lamella with narrowed apex.

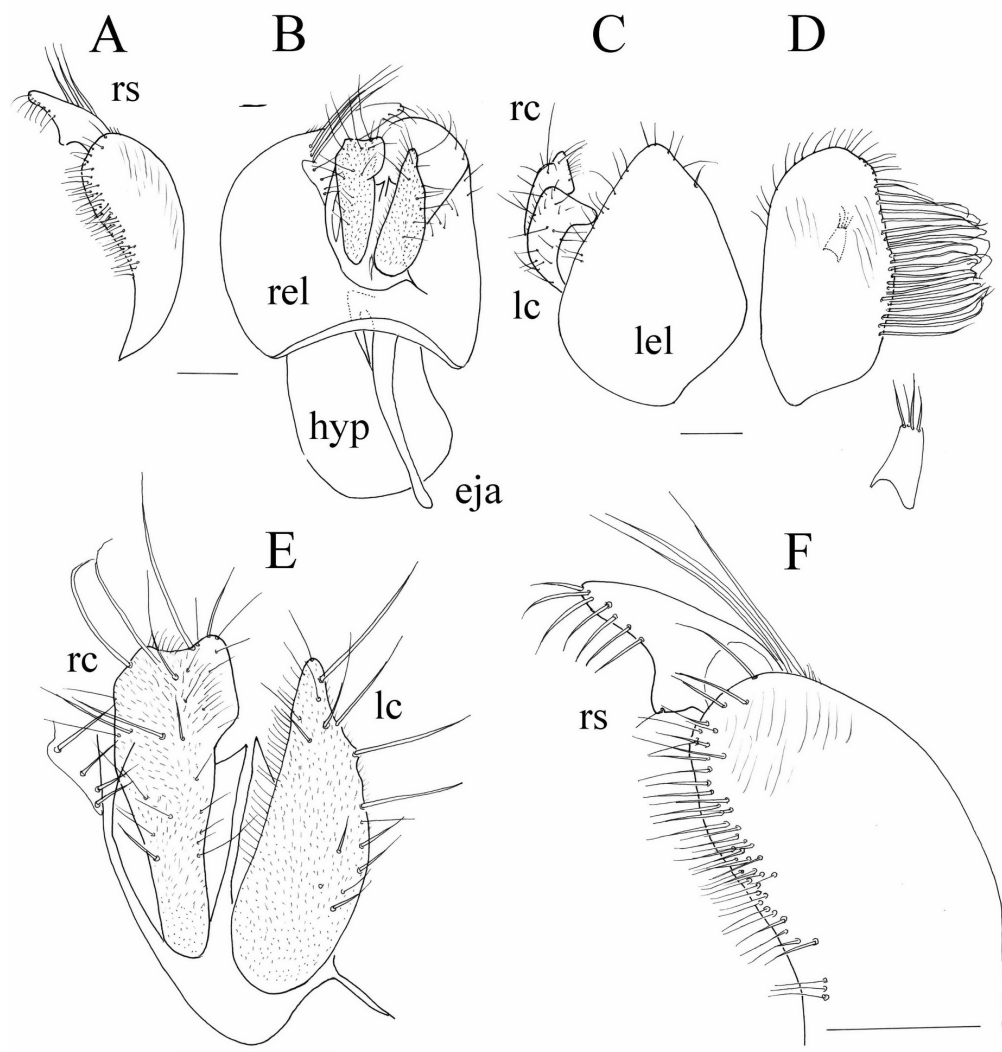


FIG. 2. *Platypalpus cylleneus* sp. nov. Paratype male terminalia. A. Right epandrial lamella; B. Epandrium; C. Left epandrial lamella with left cercus on the front; D. left epandrial lamella with inset: a papilla-like protuberance on the inside of the lamella; E. Cerci dorsal view; F. Tip of right epandrial lamella with right surstylus. Abbreviations: eja: ejaculatory apodeme; hyp: hypandrium; lc: left cercus; rc: right cercus; rs: right surstylus. Scales 0.1 mm.

Material examined. Slovakia centr. 1 male, 24.5.1971, leg. V. Straka (on pin, det. M. Chvála in coll. RBINS).

Comments. We confirm the structure of the male terminalia as illustrated by Wéber (1975).

Distribution. *Platypalpus nigrimanus* is a species with a central European distribution and known so far from Austria, Czech Republic, Germany, Hungary, Slovakia, Switzerland and Ukraine. The actual distribution is illustrated on the Fauna Europaea website and as can be seen, *P. nigrimanus* is not reported from Greece though expected in mountainous areas.

Discussion

In the present paper we added a new species to the European *Platypalpus candicans* - *cursitans* subgroup. However, there are four species, hitherto only known from the Caucasus and hence supposed to be endemic in that region that share some of the characters of this subgroup. Three species: *Platypalpus caucasicus* Kovalev, 1967, *P. kintrishiensis* (Kustov et al. 2015) and *P. subcaucasicus* (Kustov et al. 2015) have three notopleurals bristles and thus differ from the European subgroup that have only two notopleurals. Only *P. odintosovi* (Kustov et al. 2014) has two notopleurals and resembles most *P. cursitans* as is discussed above.

The invertebrate fauna of Greece has only sporadically been investigated and numbers around 27,000 species while several more thousands are still waiting to be detected. Compared to the size of the country, this number is very large (Legakis 2009).

It is well established that Greece holds a rich biodiversity, due to the complex biogeographical history and intense topography, as well as the geographic

position of the country at the European border with western Asia and northern Africa (Arndt et al. 2011). More than that, the fauna of Greece is characterized by a high level of endemism, a phenomenon enhanced by long isolation of populations and subsequent speciation events (Legakis 2009). In general, regarding endemism, the mountains of Peloponnese are considered as hotspots (Sfenthourakis & Legakis 2001).

Acknowledging the fact that dipterans are probably largely undercollected in Greece, the description of a new dipteran species presented in this study, should be considered as the first result of a broader effort undertaken to detect and describe dipteran species so far unknown to science, as well as determining in more precise manner the distribution of already known species.

Acknowledgements

We thank Ms Camille Locatelli for making the stacked photograph as well as Dr Wouter Dekoninck and Mr Pol Limbourg for providing access to the collections. Finally, Dr Igor Shamshev helped us with some literature.

References

- Arndt, E., P. Schnitter, Sfenthourakis, S. and D.W. Wrase (eds). 2011. Ground Beetles (Carabidae of Greece). Pensoft Series Faunistica No 100. Pensoft Publishers. Sofia.
- Barták, M. and Š. Kubík. 2015. Three new species of European *Platypalpus* (Diptera, Hybotidae). ZooKeys 470: 145–155.
- Barták, M. and Š. Kubík. 2016. New species and new synonyms in European *Platypalpus* (Diptera: Hybotidae). Zootaxa 4217: 142–154.
- Barták, M. and Š. Kubík. 2018. Hybotidae (Diptera) from Turkey, with descriptions

- of seven new species. *Zootaxa* 4410: 453–482.
- Collin, J.E. 1961. Empididae. In: *British Flies*. Volume VI. University Press, Cambridge 782 pp.
- Chvála, M. 1975. The Tachydromiinae (Dipt. Empididae) of Fennoscandia and Denmark Part I. *Fauna Entomol. Scand.* 3: 1–336.
- Chvála, M. 1989. Monograph of northern and central European species of *Platypalpus* Macq. (Diptera, Hybotidae), with data on the occurrence in Czechoslovakia. *Acta Universitatis Carolinae Biologica* 32: 209–376.
- Chvála, M. 2013. Fauna Europaea: *Platypalpus*. In: & Beuk, Dr Paul Pape, Dr Thomas (2013) *Fauna Europaea: Diptera*. Fauna Europaea version 2017.06, <https://fauna-eu.org> [Accessed on 14 October 2019].
- Grootaert, P. and M. Chvála. 1992. Monograph of the genus *Platypalpus* (Diptera: Empidoidea, Hybotidae) of the Mediterranean region and the Canary Islands. *Acta Universitatis Carolinae-Biologica* 36: 3–226.
- Legakis, A. 2009. In Marangou & Legakis (eds): *Red Data Book of Threatened Animals of Greece*. Hellenic Zoological Society. Athens, 528pp. [in Greek].
- Kustov, S., I. Shamshev and P. Grootaert. 2014. Six new species of the *Platypalpus pallidiventris-cursitans* group (Diptera: Hybotidae) from the Caucasus. *Zootaxa* 3779: 529–539.
- Kustov, S., I. Shamshev and P. Grootaert. 2015. New data on the genus *Platypalpus* (Diptera: Hybotidae) from the Caucasus with description of seven new species. *Zootaxa* 3973: 451–473.
- Sfenthourakis, S. & A. Legakis. 2001. Hotspots of endemic terrestrial invertebrates in southern Greece. *Biodivers. Conserv.* 10: 1387–1417.
- Strobl, G. 1880. *Dipterologische Funde um Seitenstetten*. Ein Beitrag zur Fauna Nieder-Österreichs. *Gymn. Progr. Seitenstetten* 14: 1–65.
- Wéber, M. 1975. 28. Csalad: Empididae-Tancoslegyek. In *Fauna Hungariae* 121, XIV, Dipt.I (13): 1–220 pp. Budapest.

Περιγραφή ενός νέου είδους *Platypalpus* (Diptera: Hybotidae) της υποομάδας των *candicans* - *cursitans* από την Πελοπόννησο

P. GROOTAERT¹ ΚΑΙ S. ALEXIOU^{2,*}

¹Royal Belgian Institute of Natural Sciences, Vautierstreet 29, 1000 Brussels, Belgium

²Deutsches Institut für Lebensmitteltechnik e.V., Prof.-von-Klitzing-Str. 7,
D-49610 Quakenbrück, Germany

ΠΕΡΙΛΗΨΗ

Στην παρούσα μελέτη περιγράφεται ένα νέο είδος το *Platypalpus cylleneus* sp. n., μέλος της υποομάδας *Platypalpus candicans* και *cursitans*. Το είδος αυτό εντοπίστηκε στο όρος Κυλλήνη της Πελοποννήσου. Επίσης, παρέχεται επισκόπηση και κλειδα προσδιορισμού όλων των μελών της υποομάδας, δηλαδή των ειδών *P. candicans* (Fallén, 1815), *P. cursitans* (Fabricius, 1775), *P. cylleneus* sp. nov. και *P. nigrimanus* Strobl, 1880.