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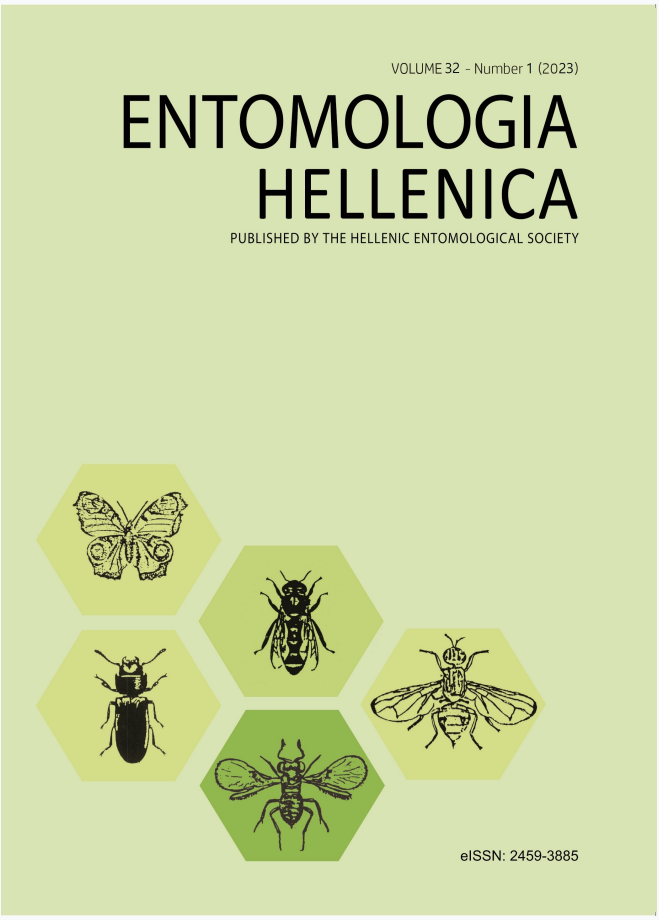

Knowing no limits: First record of Ozognathus cornutus (Coleoptera: Ptinidae: Anobiinae) in Greece, including new host-plant records

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Knowing no limits: First record of *Ozognathus cornutus* (Coleoptera: Ptinidae: Anobiinae) in Greece, including new host-plant records

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ABSTRACT

Ozognathus cornutus (LeConte, 1859), a species native to the Nearctic zoogeographical realm, has gradually spread throughout Europe and the Mediterranean region becoming alien. The species has been associated with at least 41 host-plant species and has been detected in both man-made and natural habitats. Nevertheless, no phytosanitary measures have been applied or adverse impacts on native biodiversity recorded. In this publication, *O. cornutus* is recorded in Greece from Rhodes Island, constituting the first record of this alien species to the country. In addition, examination of material from Cyprus and Greece unveils four new host-plants for the species, *Asphodelus ramosus*, *Schinus terebinthifolia*, *Schinus molle* and *Vachellia farnessiana*.

KEY WORDS: Alien species, biological invasions, Eastern Mediterranean, *Schinus terebinthifolia*, *Schinus molle*, *Vachellia farnessiana*.

Introduction

During the last centuries, introduction and spread of alien species have been facilitated by globalization and international trade (Hulme 2009; Seebens 2019). Approximately 14,000 alien species have been identified in Europe, a large percentage of which accounts for insects (EASIN 2022). A total of 469 alien insect species have been identified in Greece, including ten species of the family Ptinidae (Demetriou et al. 2021). Among them, the subfamily Anobiinae is represented by three stored-product pests, namely: *Lasioderma serricorne* (Fabricius, 1792) (Levinson and Buchelos 1988; Buchelos and Athanassiou 1993), *Stegobium paniceum* (Linnaeus, 1758) (Buchelos and Athanassiou 1993) and *Nicobium castaneum* (Olivier 1790) (Denux and Zagatti 2010).

Originally native to the Nearctic zoogeographical realm *Ozognathus cornutus* (LeConte, 1859) (Coleoptera: Ptinidae: Anobiinae) has been unintentionally introduced and gradually invaded Europe and the Mediterranean region. Its current distribution in the region includes: Cyprus (Demetriou et al. 2022), France (Allemand et al. 2008), Germany (Allemand et al. 2008), Gibraltar (GONHS 2017), Israel (Miłkowski 2019), Italy (including Sardinia and Sicily) (Cusimano et al. 2015; Sidoti et al. 2016; Bazzato et al. 2021; Cerasa and Lo Verde 2021; Lo Cascio et al. 2022), Latvia (Telnov et al. 2016), Malta (Zahradník and Mifsud 2005), Portugal (Madeira) (Zahradník and Mifsud 2005), Spain (including Canary Islands)

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(Bercedo et al. 2005; Viñolas 2017; Trócoli et al. 2020), Switzerland (Germann and Schmidt 2017), Tunisia (Zahradník and Mifsud 2005) and the United Kingdom (Stenhouse 2017).

The ecology of *O. cornutus* still remains largely unknown (Stenhouse 2017; Miłkowski 2019). Nevertheless, it has been associated with at least 41 host-plant species (Bazzato et al. 2021; Cerasa and Lo Verde 2021; Demetriou et al. 2022). In addition, the species is known to feed on decaying plant tissues such as dried fruit, wood shavings, galls formed on plant-foliage or stems, as well as fecal matter in galleries constructed by wood-boring insects (Cerasa and Lo Verde 2021). Regarding its ecological associations with other insects, this saproxylophagous insect has been detected in conspicuous galls of various Diptera (Cecidomyiidae), Hymenoptera (Cynipidae) and Lepidoptera (Gelechiidae) as well as galleries of Coleoptera (Cerambycidae), laying its eggs inside the gall inducer's larval chambers (White 1974; Sidoti et al. 2016; Viñolas 2017; Miłkowski 2019; Trócoli et al. 2020; Cerasa and Lo Verde 2021).

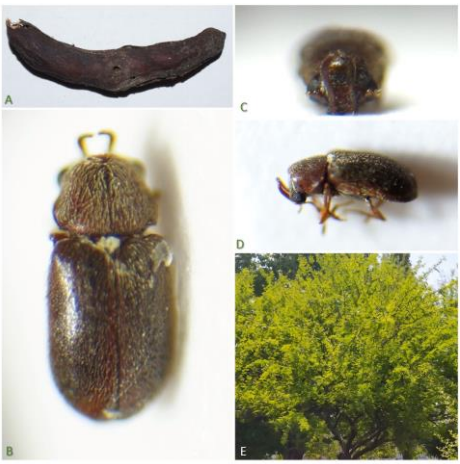

FIG. 1: Pod of *Vachellia farnesiana* (L.) Wight et Arn., infested by *Pseudopachymerina spinipes* (Erichson, 1834) (A). Habitus of *Ozognathus cornutus* (LeConte, 1859), collected from Rhodes Island, Greece (B), frontal view of *O. cornutus* (C), lateral view (D), *V. farnesiana* individual from Rhodes. Photographed by: Evangelos Koutsoukos.

Herein, *O. cornutus* is detected in the island of Rhodes (Dodecanese) constituting the first record of this alien species in Greece. In addition, examination of reared material from Cyprus and Greece allows to add four new host-plants for the species.

Materials and Methods

Material examined:

Asphodelus ramosus L. seeds, *Schinus terebinthifolia* Raddi, *Schinus molle* L. fruits and *Vachellia farnesiana* (L.) Wight et Arn. pods were collected and stored dry in sealed polyethylene bags or containers until emergence of adults. Specimens reared were subsequently stored in 70º ethanol and then card mounted and examined under a stereomicroscope for morphological examination. Identification was performed following diagnostic remarks of Zahradník and Mifsud (2005) and Stenhouse (2017). Additional individuals of *A. ramosus*, *S. molle* and *V. farnessiana* were sampled in various locations in Greece, in order to investigate further presence of *O. cornutus.*

Locations:

GREECE: Dodecanese, Rhodes, Rhodes city, 23.vi.2022, alt. 15 m, 36.4308º N, 28.2296º E, 2 males, 1 female, lgt. et coll. E. Koutsoukos, reared from *Vachellia farnessiana* (L.) Wight et Arn. pods.

CYPRUS: Limassol, Kato Polemidia, iii.-viii.2022, alt. 30 m, 34.675556º N, 32.998611º E, 30 spec., lgt. et coll. J. Demetriou, reared from *Schinus molle* L. fruit.; Limassol, Kato Polemidia, 26.iii.2022, alt. 34 m, 34.678056º N, 33.005556º E, 4 females, 1 male, lgt. et coll. E. Koutsoukos, reared from *Schinus*

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terebinthifolia Raddi fruit.; Larnaca, Larnaca airport env., 26.iii.2022, alt. 10 m, 34.85° N, 33.6° E, 2 males, lgt. et coll. E. Koutsoukos, reared from *Schinus molle* L. fruit. Paphos, Chloraka, Melanos, 17.viii.2022, alt. 90 m, 34.79083° N, 32.41278° E, 2 females, 2 males, lgt. et coll. J. Demetriou, reared from *Asphodelus ramosus* L. fruit.

Results and Discussion

The newly presented record of *O. cornutus* alongside previously omitted *Ernobius mollis* (Linnaeus, 1758), *Mezium affine* Boieldieu, 1856 and *Trigonogenius globolus* Solier, 1849 (Zahradník 2015; EASIN 2022), raise the number of alien and cryptogenic Ptinidae of Greece to 14. Upon examination of reared material from Cyprus and Greece, *A. ramosus*, *S. terebinthifolia*, *S. molle* and *V. farnessiana* are recorded for the first time as host-plants for *O. cornutus.*

The species is presumed to be associated with gall-inducers of the family Megastigmidae collected from the aforementioned Anacardiaceae species (summarized in Roques and Skrzypczyńska 2003), phytophagous Eurytomidae developing in *A. ramosus* seed capsules (Delvare et al. 2019) as well as *Pseudopachymerina spinipes* (Erichson, 1834) developing in *V. farnessiana* pods. No specimens of *O. cornutus* were obtained from *A. ramosus*, *S. molle* and *V. farnesiana* samples collected across different localities throughout Greece (Attica, Crete). Nevertheless, given the wide host range of the species, its distribution in Greece is expected to be much wider.

Any adverse impact of *O. cornutus* to native biodiversity is hard to assess, given our lack of knowledge concerning its ecological networks both within its native and invaded range (Cerasa and Lo Verde 2021). Nevertheless, the species could cause minor socio-economic damages since it has been reported to damage heritage works (Manachini 2015). In Greece and Cyprus, all reported host-plants, except for *A. ramosus*, have been mainly planted as ornamental foliage within urban sites. However, this newly found association may implicate further integration into plant-insect interactions and native species interrelationships throughout Cyprus and Greece. Further research regarding the ecology of this species and any putative adverse impact to gall inducing insects in its invaded range are encouraged.

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References

Allemand, R., É. Laclos, B. de Büche and P. Ponel. 2008. Anobiidae nouveaux ou méconnus de la faune de France (3e note) (Coleoptera). Bulletin de la Société entomologique de France. 113(3): 397-402.

Bazzato, E., M. Marignaia, C. Ancona, M. Caria, D. Cillo and E. Serra. 2021. First record of *Ozognathus cornutus* (LeConte, 1859) (Coleoptera Ptinidae) from Sardinia, Italy. REDIA. 104: 89-99. http://dx.doi.org/10.19263/REDIA-104.21.10

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Bercedo, P., L. Arnáiz, P. Coello and M. Baena. 2005. *Ozognathus cornutus* (LeConte, 1859), nuevo anòbido para la fauna Ibérica (Coleoptera: Anobiidae). Boletín de la Sociedad Entomológica Aragonesa. 37: 213-214.

Buchelos, C. T. and C. G. Athanassiou. 1993. Dominance and frequency of Coleoptera found on stored cereals and cereal products in Central Greece. Entomologia Hellenica. 11: 17-22. http://dx.doi.org/10.12681/eh.14007

Cerasa, G. and G. Lo Verde. 2021. Naturalization and spread of the alien species *Ozognathus cornutus* (LeConte, 1859) (Coleoptera: Ptinidae: Ernobiinae) in Italy. Phytoparasitica. 49: 841-849. https://doi.org/10.1007/s12600-021-00923-x

Cusimano, C., G. Cerasa, G. Lo Verde and B. Massa. 2014. *Ozognathus cornutus* (LeConte, 1859) (Coleoptera Anobiidae), new record for Italy. Il Naturalista siciliano N. S. 38(1): 131-132.

Delvare, G., A. Escolà, A. Stojanova, B. Muriel, J. Lecomte, and R. R. Askew. 2019. Exploring insect biodiversity: the parasitic Hymenoptera, chiefly Chalcidoidea, associated with seeds of asphodels (Xanthorrhoeaceae), with the description of nine new species belonging to Eurytomidae and Torymidae. Zootaxa. 4597(1): https://doi.org/1–90 10.11646/ zootaxa.4597.1.1.

Demetriou J., G. Kakiopoulos and A. F. Martinou. 2022. First record of the Nearctic *Ozognathus cornutus* (LeConte, 1859) (Coleoptera: Ptinidae: Anobiinae) in Cyprus. Hellenic Plant Protection Journal. 15: 76-79. https://doi.org/10.2478/hppj-2022-0009

Demetriou, J., K. Kalaentzis, C. Kazilas, E. Koutsoukos, D. N. Avtzis and C. Georgiadis. 2021. Revisiting the non-native insect fauna of Greece: Current trends and an updated checklist. NeoBiota. 65: 93-108. https://doi.org/10.3897/neobiota.65.64686

Denux, O. and P. Zagatti. 2010. Coleoptera families other than Cerambycidae, Curculionidae sensu lato, Chrysomelidae sensu lato and Coccinelidae. BioRisk. 4(1): 315-406. https://doi.org/10.3897/biorisk.4.61

EASIN 2022. European Commission Joint Research Centre: European Alien Species Information Network (EASIN). https://easin.jrc.ec.europa.eu/

Germann, C. and M. Schmidt. 2017. Erstes Auftreten von *Ozognathus cornutus* (LeConte, 1859) in der Schweiz (Coleóptera, Ptinidae). Entomologische Nachrichten und Berichte. 61: 151-153.

GONHS (Gibraltar Ornithological and Natural History Society) 2017. Provisional List of the Coleoptera of Gibraltar. Available at: https://www.gonhs.org/list/coleoptera (Accessed 08 Sep 2022).

Hulme, P.E. 2009. Trade, transport and trouble: managing invasive species pathways in an era of globalization Journal of Applied Ecology. 46(1): 10-18. https://doi.org/10.1111/j.1365-2664.2008.01600.x

Levinson, A. R. and T. Buchelos. 1988. Population dynamics of *Lasioderma serricorne* F. (Col., Anobiidae) in tobacco stores with and without insecticidal treatments: a three year - survey by pheromone and unbaited traps. Journal of Applied Entomology. 106: 201-211. https://doi.org/10.1111/j.1439-0418.1988.tb00584.x

Lo Cascio, P., G. Altadonna and P. Ponel. 2022. Diversity and distribution of beetles in a Mediterranean volcanic archipelago: an updated checklist of the Coleoptera of

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the Aeolian Islands. Biodiversity journal. 13(3): 531-585. http://dx.doi.org/10.31396/Biodiv.Jour.2022.13.3.531.585

Manachini, B. 2015. Alien insect impact on cultural heritage and landscape: an underestimated problem. Conservation Science in Cultural Heritage. 15(2): 61-72. http://dx.doi.org/10.6092/issn.1973-9494/7119

Miłkowski, M. 2019. *Ozognathus cornutus* (LECONTE, 1859) (Coleoptera: Ptinidae) – nowy gatunek w faunie Izraela. Wiadomości Entomologiczne. 38(2): 87-90.

Roques, A. and M. Skrzypczyńska. 2010. Seed-infesting chalcids of the genus *Megastigmus* Dalman, 1820 (Hymenoptera: Torymidae) native and introduced to the West Palearctic region: Taxonomy, host specificity and distribution. Journal of Natural History 37: 127-238. https://doi.org/10.1080/713834669

Seebens, H. 2019. Invasion Ecology: Expanding trade and the dispersal of alien species. Current Biology 29(4): 120-122. https://doi.org/10.1016/j.cub.2018.12.047

Sidoti, A. and F. Bellomo. 2006. Funghi e insetti riscontrati nei boschi della Sicilia nell'anno 2006. Regione Siciliana, Assessorato regionale Agricoltura e Foreste, Azienda Foreste Demaniali – UOB n. 3 – Difesa fitosanitaria dei boschi, Palermo. 35 pp.

Stenhouse, D. A. 2017. Ozognathus cornutus (LeConte, 1859) (Ptinidae) in Britain. The Coleopterist. 26(2): 94-96.

Telnov, D., A. Bukejs, J. Gailis, M. Kalniņš, A. G. Kirejtshuk, U. Piterāns and F. Savich. 2016. Contributions to the knowledge of Latvian Coleoptera 10. Latvijas Entomologs. 53: 89-121.

Trócoli, S., M. Tomás, J. L. Lencina, J. L. Torres, J. M. Vela and M. Baena. 2020. Nuevos registros ibéricos de *Ozognathus cornutus* (LeConte, 1859) y notas sobre su biología y distribución (Coleoptera: Ptinidae). Boletín de la Sociedad Entomológica Aragonesa. 30: 83-95.

Viñolas, A. 2017. Nueva aportación al conocimiento de los Ptinidae (Coleoptera) de la Península Ibérica e Islas Canarias, con la descripción de un nuevo *Stagetus* Wollaston, 1861 de Navarra. Arquivos Entomolóxicos. 18: 137-148.

White, R. E. 1974. Type-species for world genera of Anobiidae (Coleoptera). Transactions of the American Entomological Society. 99: 415-475.

Zahradník, P. 2015. Ptinidae of Greece (Coleoptera: Bostrichoidea) – a commended checklist with descriptions of new species. Folia Heyrovskyana A. 23(2): 151-200.

Zahradník, P. and D. Mifsud. 2005. *Ozognathus cornutus* (LeConte) – new record for the Palaearctic Region (Coleoptera: Anobiidae). Studies and reports of District Museum Prague-East. Taxonomical Series 1(1): 141-143.

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Πρώτη καταγραφή του *Ozognathus cornutus* (Coleoptera: Ptinidae: Anobiinae) στην Ελλάδα, με νέες καταγραφές φυτών-ξενιστών

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ΠΕΡΙΛΗΨΗ

Το *Ozognathus cornutus* (LeConte, 1859), είναι ένα είδος με καταγωγή από τη Νεαρκτική, και έχει σταδιακά εξαπλωθεί στην Ευρώπη και τη Μεσόγειο, ως ξενικό. Το είδος αυτό σχετίζεται με τουλάχιστον 41 είδη φυτών – ξενιστών, και έχει εντοπιστεί τόσο σε ανθρωπογενή όσο και φυσικά οικοσυστήματα. Παρόλα αυτά, δεν έχουν θεσπιστεί φυτο-υγειονομικά μέτρα σχετικά με το είδος αυτό, ενώ παράλληλα δεν έχουν καταγραφεί οι πιθανές του επιπτώσεις στη ντόπια βιοποικιλότητα. Στην εργασία αυτή, το *O. cornutus* καταγράφεται για την Ελλάδα από το νησί της Ρόδου, αποτελώντας έτσι την πρώτη αναφορά του ξενικού αυτού είδους για την χώρα. Επιπρόσθετα, εξέταση υλικού από την Κύπρο και την Ελλάδα αποκαλύπτει συνολικά τέσσερα νέα είδη φυτών – ξενιστών για το είδος αυτό, και συγκεκριμένα τα *Asphodelus ramosus*, *Schinus terebinthifolia*, *S. molle* and *Vachellia farnessiana*.

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