

FIRST RECORD OF *DERELOMUS PIRIFORMIS* (COLEOPTERA: CURCULIONIDAE), AN ALIEN SPECIES ASSOCIATED WITH PALM TREES, IN GREECE

GEORGE KAKIPOULOS*¹, SAVVAS ZAFEIRIOU² & JAKOVOS DEMETRIOU³

¹Ilidos 60-62 street, 11527 Athens (Ampelokipi), Greece (E-mail: strepens@yahoo.com)

²Department of Biotechnology, Agricultural University of Athens, 11855 Athens, Greece
(E-mail: savzafi@yahoo.com; ORCIDID: <https://orcid.org/0000-0001-6800-1235>)

³Joint Services Health Unit Cyprus, BFC RAF Akrotiri BFPO 57, Akrotiri, Cyprus
(E-mail: jakovosdemetriou@gmail.com; ORCID ID: <https://orcid.org/0000-0001-5273-7109>)

Kakiopoulos, G., Zafeiriou, S. & Demetriou, J.: First record of *Derelomus piriformis* (Coleoptera: Curculionidae), an alien species associated with palm trees, in Greece. Nat. Croat., Vol. 31, No. 1, 127-131, 2022, Zagreb.

The tribe Derelomini Lacordaire, 1865 includes 13 species in the Palearctic region, including *Derelomus piriformis* (Hoffmann, 1938), a species introduced to Southern Europe through the horticultural pathway alongside its host plant *Phoenix canariensis* H. Wildpret. Most records of the species correspond to Western European countries and Israel at the eastern borders of the Mediterranean. In this publication, the alien *D. piriformis* is recorded as present in Greece for the first time, constituting the only known representative of the genus *Derelomus* in the country. Three specimens were collected from the Greek mainland, the Cyclades and the North-Eastern Aegean, extending our knowledge regarding the distribution of this alien species and raising the number of alien Curculionoidea in Greece to 11. Although the species is speculated to have minor socioeconomic impacts, further research is due in order to guard against any potential negative environmental impacts on the native palm tree *Phoenix theophrasti* Greuter.

Key words: alien species, biological invasions, Derelomini, *Derelomus piriformis*, Greece, Phoenix

Kakiopoulos, G., Zafeiriou, S. & Demetriou, J.: Prvi nalaz strane vrste povezane s palmama, *Derelomus piriformis* (Coleoptera: Curculionidae), u Grčkoj. Nat. Croat., Vol. 31, No. 1, 127-131, 2022, Zagreb.

Tribus Derelomini Lacordaire, 1865 obuhvaća 13 palearktičkih vrsta, uključujući *Derelomus piriformis* (Hoffmann, 1938), vrstu unesenu u južnu Europu putem hortikulture, zajedno s njenom biljkom domaćinom, palmom *Phoenix canariensis* H. Wildpret. Većina nalaza je iz zapadnoeuropskih zemalja te Izraela na istočnoj obali Sredozemlja. U ovom radu prvi puta donosimo nalaz strane vrste *D. piriformis* za Grčku, što je jedini predstavnik roda *Derelomus* u zemlji. Tri primjerka su prikupljena u kopnenom dijelu Grčke, Cikladima i sjeveroistočnom Egeju, proširujući tako naša saznanja o rasprostranjenosti vrste i povećavajući broj stranih vrsta Curculionoidea u Grčkoj na 11. Iako se čini da ova vrsta ima manji socioekonomski učinak, potrebna su daljnja istraživanja radi eventualnih potencijalnih negativnih okolišnih učinaka na domaću palmu *Phoenix theophrasti* Greuter.

Ključne riječi: strane vrste, biološka invazija, Derelomini, *Derelomus piriformis*, Grčka, *Phoenix*

INTRODUCTION

Old World species of the tribe Derelomini Lacordaire, 1865 remain rather poorly known (HARAN *et al.*, 2020). Nevertheless, the tribe is currently represented by 13 spe-

cies distributed in the Palearctic zoogeographic realm (ALONSO-ZARAZAGA *et al.*, 2017). Amongst them, *Derelomus piriformis* (Hoffmann, 1938), a species presumably native to Northern Africa (Canary Islands) has been transported to Southern Europe through the import of its host plant *Phoenix canariensis* H. Wildpret (SAUVARD *et al.*, 2010). Native to the Canary Islands, *P. canariensis* grew in popularity during the mid- and late 19th century and to this day it has been extensively planted in Southern European countries, symbolizing wealth and luxurious holidays (ZONA, 2008).

To date, this translocation of its host plant has led to the range expansion and detection of *D. piriformis* from Israel, Italy (including Sicily), France, Spain (including Canary Islands), Portugal (only Madeira) and Morocco (ABBAZZI & OSELLA, 1992; ALONSO-ZARAZAGA *et al.*, 2017; EPPO, 2007; FRIEDMAN, 2006; HOFFMANN, 1938a; PIRY & GOMPEL, 2002; SAUVARD *et al.*, 2010), while even reaching Chile in the Neotropical realm (ELGUETA & MARVALDI, 2006).

Although the species was first described as *Pseudoderelomus piriformis* Hoffmann, 1938 (HOFFMANN, 1938a), it was shortly after transported to the genus *Neoderelomus* Hoffmann, 1938 (HOFFMANN, 1938b), with PIRY & GOMPEL (2002) providing a key to distinguish the two genera. Nevertheless, a revised phylogenetic classification for *Derelomini* nested *Neoderelomus piriformis* Hoffmann, 1938 within the genus *Derelomus* Schoenherr, 1825, thus renaming the species as *D. piriformis* (FRANZ, 2006).

In this article, three specimens of the alien *D. piriformis* constitute its first record from Greece, representing the only known species of the genus *Derelomus* in the country.

MATERIALS AND METHODS

Material examined:

1 ♀ Attiki (Attica), Athens, Ampelokipoi [37.99°N, 24.76°E], 17.XII.1990, leg. and det. G. Kakiopoulos, coll. G. Kakiopoulos; 1 ♀ Central Aegean, Cyclades, Ios Island, Ayia Theodoti beach [36.75161°N, 25.3310°E], 23.X.2015, leg. and det. G. Kakiopoulos, collected on beach near closed touristic facilities, coll. G. Kakiopoulos; 1 ♀ North-Eastern Aegean, Lesvos Island, Pyrgoi Thermis [39.1753°N, 26.5039°E], 24.I.2021 leg. S. Zafeiriou, det. G. Kakiopoulos, collected from house window, coll. S. Zafeiriou (Fig. 1).

Maps:

Data were mapped using QGIS Version 3.18.2 free and open source Geographic Information System (<https://qgis.org/en/site/>) (Fig. 2).

RESULTS AND DISCUSSION

In this publication, the alien *D. piriformis* is reported for the first time in Greece. The specimens were collected from areas where palm trees could be found in the vicinity. The first collected specimen dates back to 1990, showing that this alien species has been present on the country for more than three decades although remaining unreported. Given the large distance between localities of presence as well as the long time scale of collection events, we assume that *D. piriformis* must be widely distributed in the country, inhabiting localities of Southern Greece and the Aegean where *P. canariensis* palms prosper. This example constitutes an alarming case of late detection and reporting of



Fig. 1. Habitus of *Derelomus piriformis* (Hoffmann, 1938) collected and photographed by S. Zafeiriou on Lesvos Island.

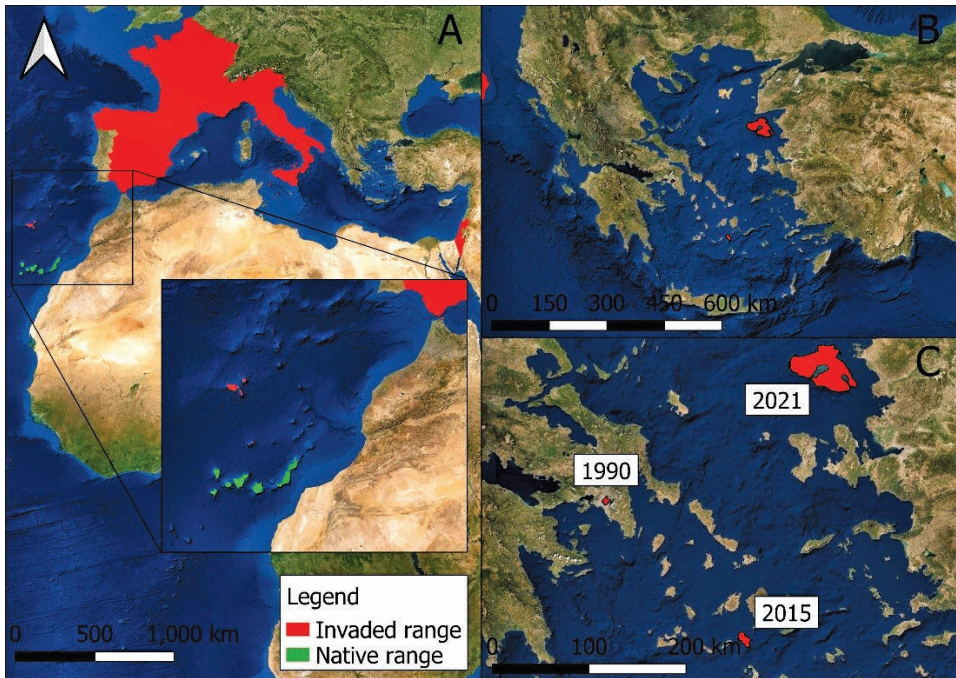


Fig. 2. Updated distribution of *Derelomus piriformis* (Hoffmann, 1938) in the Mediterranean Basin. Inset: Canary Islands (native range) (A). Localities where *D. piriformis* was collected in Greece (B), year of collection shown in labels (C).

alien species hampering the detectability, management efficiency, and containment of species as well as adding to the related costs (SIMBERLOFF *et al.*, 2013).

Despite effectively pollinating *P. canariensis* plants, *D. piriformis* has been also considered an important potential pest of cultivated *P. canariensis* plants, causing flower loss (FRIEDMAN, 2006; PIRY & GOMPEL, 2002). In Greece, the plant has been extensively used as ornamental foliage in parks, gardens, roadsides and touristic sites. Although no negative impacts were recorded or researched in Greece, the species should be monitored for any adverse socioeconomic impacts in the tourism sector or deterioration of the aesthetics of the urban landscape. Furthermore, taking into consideration the necessity for monitoring infestations caused by *Rhynchophorus ferrugineus* (Olivier, 1790) (KONTODIMAS *et al.*, 2006) as well as its capability to infest native palm trees (MELITA *et al.*, 2017), any potential negative impacts made by the newly recorded *D. piriformis* on native *P. theophrasti* should be closely studied.

Overall, the collected specimens constitute the first record of the genus *Derelomus* in Greece, adding an alien species as its sole representative. The overall number of alien Curculionidae of Greece is raised from ten (DEMETRIOU *et al.*, 2021) to 11 species.

ACKNOWLEDGEMENTS

We are very grateful to the two anonymous reviewers for their suggestions, comments, and corrections.

Received April 21, 2022

REFERENCES

- ABBAZZI, P. & OSELLA, G., 1992: Elenco sistematico faunistico degli Anthribidae, Rhinomaceridae, Attelabidae, Apionidae, Brentidae, Curculionidae italiani (Insecta, Coleoptera, Curculionoidea) I parte. *Redia* 75(2), 267-414.
- ALONSO-ZARAZAGA, M.Á., BARRIOS, H., BOROVEC, R., BOUCHARD, P., CALDARA, R., COLONNELLI, E., GÜLTEKIN, L., HLAVÁČ, P., KOROTYAEV, B., LYAL, C.H.C., MACHADO, A., MEREGALLI, M., PIEROTTI, H., REN, L., SÁNCHEZ-RUIZ, M., SFORZI, A., SILFVERBERG, H., SKUHROVEC, J., TRÝZNA, M., VELÁZQUEZ DE CASTRO, A.J. & YUNAKOV, N.N., 2017: Cooperative Catalogue of Palaearctic Coleoptera Curculionoidea. Monografías electrónicas Sociedad Entomológica Aragonesa S.E.A. 8, 1-729.
- DEMETRIOU, J., KALAENTZIS, K., KAZILAS, C., KOUTSOUKOS, E., AVTZIS, D.N. & GEORGIADIS, C., 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>
- ELGUETA, M. & MARVALDI, A.E., 2006: Lista sistemática de las especies de Curculionoidea (Insecta: Coleoptera) presents en Chile, con susinonimia. *Boletín del Museo Nacional de Historia Natural Chile* 55, 113-153.
- EPPO, 2007: New arthropods identified in Israel. EPPO Reporting Service no. 04 - 2007. Num. article: 2007/069. Available at: <https://gd.eppo.int/reporting/article-1040>
- FRANZ, N.M., 2006: Towards a phylogenetic system of derelomine flower weevils (Coleoptera: Curculionidae). *Systematic Entomology* 31(2), 220-287. <http://dx.doi.org/10.1111/j.1365-3113.2005.00308.x>
- FRIEDMAN, A.L.L., 2006: *Derelomus piriformis* Hoffmann (Curculionoidea: Curculionidae: Curculioninae: Derelomini), a new invasive species in Israel. *Phytoparasitica* 34, 357-359. <https://doi.org/10.1007/BF02981022>
- HARAN, J. M., BEAUDOIN-OLLIVIER, L., BENOIT, L. & KUSCHEL, G., 2020: Revision of the palm-pollinating weevil genus *Elaeidobius* Kuschel, 1952 (Curculionidae, Curculioninae, Derelomini) with descriptions of two new species. *European Journal of Taxonomy* 684, 1-32. <https://doi.org/10.5852/ejt.2020.684>
- HOFFMANN, A., 1938a: Description d'un genre nouveau et de nouvelles espèces de Curculionidae de la region Paléarctique (Col.). *Bulletin de la Société entomologique de France* 43, 46-52.

- HOFFMANN, A., 1938b: Observations diverses. Bulletin de la Société entomologique de France **43** (9-10): 107.
- KONTODIMAS, D.C., MILONAS, P.G., VASSILIOU, V., THYMAKIS, N. & ECONOMOU, D., 2006: The occurrence of *Rhynchophorus ferrugineus* in Greece and Cyprus and the risk against the native greek palm tree *Phoenix theophrasti*. Entomologia hellenica **16**, 11-15. <https://doi.org/10.12681/eh.11621>
- MELITA, O., GKOUNTI, V., KONTODIMAS, D., PAPACHRISTOS, D. & KARAMAOUNA, F., 2017: Can high pest pressure of the red palm weevil *Rhynchophorus ferrugineus* beat the defence of *Phoenix theophrasti*? *Hellenic Plant Protection Journal* **10**, 46-50. <https://doi.org/10.1515/hppj-2017-0005>
- PIRY, S. & GOMPEL, N., 2002: Présence en France de *Neoderelomus piriformis* (Hoffmann, 1938) sur le palmier *Phoenix canariensis* Hort. (Coleoptera, Curculionidae, Derelomini). Bulletin de la Société entomologique de France **107**(5), 529-534.
- SAUVARD, D., BRANCO, M., LAKATOS, F., FACCOLI, M. & KIRKENDALL, L.R., 2010: Weevils and Bark Beetles (Coleoptera, Curculionoidea). *BioRisk* **4**(1), 219-266. <https://doi.org/10.3897/biorisk.4.64>
- SIMBERLOFF, D., MARTIN, J.-L., GENOVESI, P., MARIS, V., WARDLE, D.A., ARONSON, J., COURCHAMP, F., GALIL, B., GARCÍA-BERTHOU, E., PASCAL, M., PYŠEK, P., SOUSA, R., TABACCHI, E. & VILÀ, M., 2013. Impacts of biological invasions: what's what and the way forward. *Trends in Ecology & Evolution* **28**(1): 58-66. <http://dx.doi.org/10.1016/j.tree.2012.07.013>
- ZONA, S., 2008: The horticultural history of the Canary Island Date Palm (*Phoenix canariensis*). *Garden History* **36**, 301-308.

