

**First report of the palm borer moth, *Paysandisia archon* (Burmeister, 1879),
in Hungary (Lepidoptera: Castniidae)**

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Abstract – *Paysandisia archon* (Burmeister, 1879), as well as the family Castniidae (Lepidoptera), is reported for the first time from Hungary.

Key words – invasive species, biological pest, accidental introduction, ornamental palm, climate change

INTRODUCTION

The palm borer moth, *Paysandisia archon* (Burmeister, 1879), is a member of the family Castniidae (Lepidoptera), native to Brazil, Paraguay, Uruguay and Argentina (MUÑOZ-ADALIA & COLINAS 2020). According to the citizen science website iNaturalist**, there are recent observations from Colombia (Cimitarra, Santander Department) and Ecuador (Quito). Its presence in Europe (Fig. 1) was discovered in 2000, in Spain (MÉRIT & MÉRIT 2002) and, since then, populations have been established in Portugal, Spain (mainland and Balearic Islands), United Kingdom (Gibraltar), France (mainland and Corsica), Italy (mainland, Sardinia, Sicily and Pantelleria Island), Slovenia, Croatia (mainland and several islands), Albania, Greece (mainland and several islands including Crete), Bulgaria, Cyprus, and around the Black Sea coast: Crimea, Russia (Western Caucasus region) and Abkhazia. Individual observations are available also from the United Kingdom (England and Northern Ireland), Belgium, the Netherlands, Germany, Denmark, Switzerland, Czech Republic and Austria (VOS 2008, VASSILIOU *et al.* 2009, VANDROMME *et al.* 2020, MUÑOZ-ADALIA & COLINAS 2020, MORI *et al.* 2022, SINEV 2022, RENNWALD & RODELAND 2023). It is a serious pest of various palm species (Arecaceae), representing a threat also for the two native

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** <https://www.inaturalist.org>

palm species in Europe: *Chamaerops humilis* L. and *Phoenix theophrasti* Greuter. Larval host plants include also species of the genera *Brahea* Mart. ex Endl., *Butia* Becc., *Jubaea* Kunth, *Livistona* R. Br., *Sabal* Adans., *Syagrus* Mart., *Trachycarpus* H. Wendl., *Trithrinax* Mart. and *Washingtonia* H. Wendl. (BAKER *et al.* 2014), containing palm species that are planted as ornamental plants across Europe.

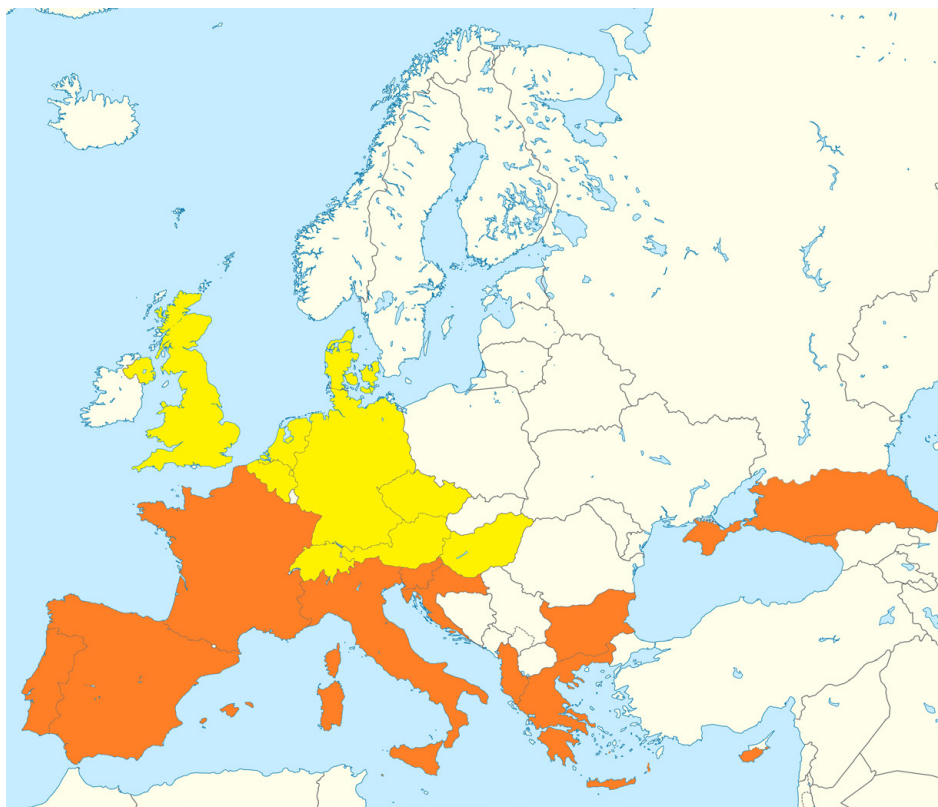


Fig. 1. Distribution map of *Paysandisia archon* (Burmeister, 1879) in Europe by countries (mainland), regions (Northeastern Black Sea coast) and islands. Orange = regularly observed, yellow = rare, individual observations

The larvae are endophagous in different parts of the plant. They have usually nine instars and can reach a length of 9 cm, thus having considerable potential of damage. Signs of infection include presence of saw-dust on the crown or trunk, presence of gallery holes or abnormal development of leaves or trunk; for further details on life history see the paper of SARTO I MONTEYS & AGUILAR (2005).

With the regularly warmer summers and milder winters, Hungary is experiencing the establishment of various new ornamental plants in gardens and conservatories, recently *Citrus* L. species (Rutaceae), bananas (e.g. *Musa* spp. L., Musaceae), *Nerium oleander* L. (Apocynaceae), also various palm species appear commonly as ornamentals in such places and even planted out in public areas. In the last decade observations of the oleander hawk-moth (*Daphnis nerii* (Linnaeus, 1758)) multiplied (KATONA *et al.* 2018) and along the warmer and longer autumns, which allowed migration of the species to further north of its native range, the commonness of its larval foodplant probably also plays a role. The increasing use of these ornamental plants also carries the danger of new introductions of subtropical and tropical species, as recorded already on *Citrus* species (KATONA *et al.* 2020) and bananas (TÓTH *et al.* 2022).

RESULTS

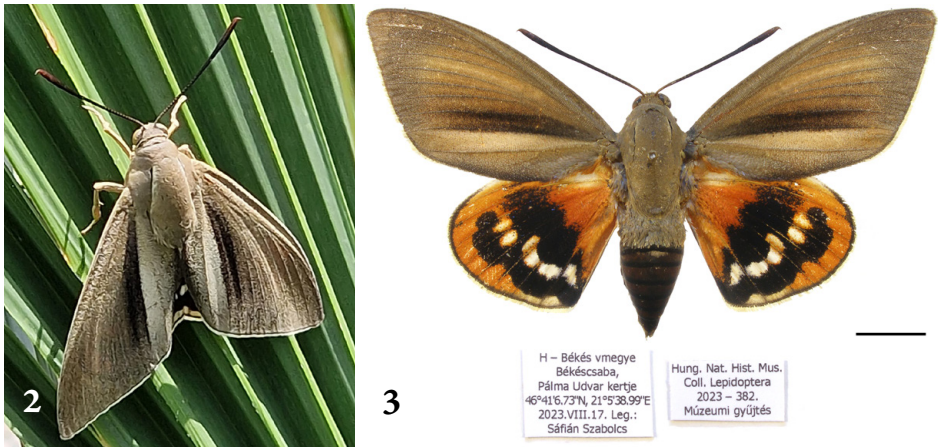
Paysandisia archon (Burmeister, 1879) (Figs 2–3)

Material examined – One male, Hungary, Békés County, Békéscsaba, garden of Pálma Udvar, 46°41'6.73"N, 21°5'38.99"E, 17.VIII.2023, leg. Sz. Sáfián; the voucher specimen is deposited in the Lepidoptera Collection of the Hungarian Natural History Museum (HNHM), Budapest.

Remarks – The occurrence of *Paysandisia archon* represents the first record of the species and the family Castniidae in Hungary and also in the Carpathian Basin. Circumstances of the observation of the species and the collecting of the voucher specimen were as follows. Photos of a male *Paysandisia archon* specimen were posted on 12.VIII.2023 in an entomological group on a social media platform*** by Lajos Balogh-Langer. The photos were taken in Békéscsaba, Békés County, South-East Hungary on the same day, in the open-air yard of a palm garden centre which sells a wide variety of ornamental palms and other Mediterranean and subtropical plants. The photos were sent to the first author, who first visited the palm garden centre (Fig. 4) on 15.VIII.2023 in the afternoon, by approximately 15.00 in hot weather with temperature above 30°C. During careful investigation of palm leaves, he spotted the thick clubbed antennae of a *Paysandisia archon* specimen, which was resting on a palm leaf. Not being aware of its diurnal activity, the senior author approached the moth with his phone camera but the specimen was alert and flew off at fast and powerful flight, circling around the palm pots at about 50 cm above the ground. Soon it flew higher, investigating palm leaves suitable for resting and it landed after a couple of minutes of flight. Yet, it flew off again and passed over the garden trees and disappeared from sight within a second, before the actual attempt of capture.

*** <https://www.facebook.com/groups/izeltlabuhatarozo/posts/1498857950888408>

Two days later, on 17.VIII.2023 by about noon, the senior author made a second attempt of finding the species in the palm garden centre. This time a specimen was disturbed from a different cluster of young palms, it stayed around and settled again. After settling, it raised its wing, showing the colourful hindwing, and walked with short interruptions. This time documentary photographs were taken (Fig. 2), but the specimen escaped from collecting and flew off to another cluster of palms at high speed. After circling above the palms, it landed at about head height, and it was soon secured with a butterfly net.



Figs 2–3. Voucher specimen of *Paysandisia archon* (Burmeister, 1879), 2 = living specimen resting on a palm leaf in the garden centre, 3 = same specimen in set condition, scale bar = 10 mm (photos by Szabolcs Sáfián (Fig. 2) and Balázs Tóth (Fig. 3))



Fig. 4. View of the open-air yard of the palm garden centre "Pálma Udvar" in Békéscsaba, Békés County, with some palm species in stock (photo by Zoltán Andorné Végh)

DISCUSSION

The main palm species sold in the Pálma Udvar palm garden centre are of Asian (*Trachycarpus fortunei* (Hook.) H. Wendl., *Trachycarpus wagnerianus* Becc.) and of Central and/or Southern American (*Washingtonia filifera* (Lindl.) H. Wendl., *Syagrus romanzoffiana* (Cham.) Glassman) origins; however, palms of Mediterranean Europe, such as *Chamaerops humilis* are also available. Since *Paysandisia archon* is already well established along the Iberian shores of the Mediterranean Sea, it is more likely that the species was introduced as larvae or pupae with a batch of palms imported from Spain, rather than through a direct transcontinental import from Southern America or through spontaneous dispersal from the shores of the Mediterranean or Adriatic Sea. The closest stable populations can be found in Croatia and Slovenia, the latter is represented by four specimens in HNHM. The record of the species in Portugal, published by CORLEY et al. (2012), was considered unreliable according to MUÑOZ-ADALIA & COLINAS (2020), however without justification of the decision. Hereby we confirm its presence in Portugal (Faro district) by drawing attention to several records shared on the iNaturalist website****.

Since no indigenous palms occur in Hungary, the appearance of *Paysandisia archon* does not impose a direct threat to native biodiversity, unlike the Iberian Peninsula through being pest on native palms. However, introduced palms are becoming increasingly popular as ornamentals in yards and conservatories, therefore further studies are necessary to understand the range of secondary hostplants of *Paysandisia archon*. As to avoid biological invasion and damage by the species, imports of potential hosts should largely be avoided. In Spain, Southern France and Italy the palm species *Trachycarpus fortunei* and *Phoenix canariensis* Chabaud were already recorded as introduced hosts. Another palm pest, *Rhynchophorus ferrugineus* (Olivier, 1790) (Coleoptera: Curculionidae) was also introduced to Mediterranean Europe and also occurred in Hungary (TALLÓSI 2019). Although *Paysandisia archon* is sensitive to frost (SARTO I MONTEYS & AGUILAR 2005), survival of its immature stages is possible as the palm plants are carried indoors during the winter in Hungary.

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**** <https://www.inaturalist.org/taxa/472794-Paysandisia-archon>

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