



Palm Borer

Paysandisia archon



Paysandisia archon (PAYSAR) - <https://gd.eppo.int>

Fig.1. Adult *Paysandisia archon* female (top) male (bottom) (wingspan can be up to 11 cm) © EPPO courtesy Jean-François

Background

Paysandisia archon (Lepidoptera: Castniidae) is a serious pest of palms that is native to parts of South America and has become established in parts of southern Europe. This species was first recorded in the UK in August 2002, when a large adult moth was observed in a private garden in West Sussex. In 2007, nine live adult *Paysandisia archon* moths were discovered in the atrium of an office building in Kent, these moths had emerged from ornamental *Phoenix canariensis* palms imported from Spain the previous year. Also in 2007, three larvae were found in a nursery in London damaging *Trachycarpus fortunei* palms imported from Italy. In 2021, two individuals were found on the Isle of Wight. This species is occasionally intercepted on palms that are imported into the UK.

Geographical Distribution

Paysandisia archon is native to tropical and subtropical regions of Argentina, Brazil, Paraguay and Uruguay, where it is associated with wild palms. It is suspected that *P. archon* was first introduced to Europe between 1992 and 1998 on *Butia yatay* and *Trithrinax campestris* plants imported from Argentina. It has spread in southern Europe where it has become a serious threat to many ornamental palm species. It was first discovered in Spain (Girona in Catalonia) and France (Var (department) in the Provence-Alpes-Côte d'Azur) in 2001 and has since spread along the northern Mediterranean coast, now found as far east as the Black Sea and as far west as Gibraltar. It has spread further within Spain, France and Italy, and has also been recorded as present in Bulgaria, Croatia, Cyprus, Greece (mainland and Crete), Hungary, and Slovenia. The species has been found and eradicated from Belgium, Czechia, Denmark, Germany, Switzerland and the UK.

Host Plants

Paysandisia archon only attacks members of the palm family (Arecaceae) but feeds on numerous species within the family. In Spain and France, the moth appears to have a large range of palm hosts, including:

Chamaerops humilis (European fan palm), *Livistona chinensis* (Chinese fan palm), *L. decipiens* (ribbon fan palm), *L. saribus* (taraw palm), *Phoenix canariensis* (Canary Island date palm), *P. dactylifera* (date palm), *P. reclinata* (Senegal date palm), *Sabal* spp. (palmettos), *Trachycarpus fortunei* (Chusan palm), *Trithrinax campestris* (Caranday palm) and *Washingtonia filifera* (California fan palm).

Other recorded host species include: *Butia capitata* (jelly palm), *B. yatay* (Yatay palm), *Brahea* spp. (hesper palms), *Erythea armata* (blue palm), *E. edulis* (Guadalupe palm), *Jubaea chilensis* (Chilean wine palm) and *Syagrus romanzoffiana* (queen palm).

Description

Eggs are oblong, 5 mm long, 1.5 mm wide, and cream to pink coloured with longitudinal ridges (Fig. 2). Newly emerged larvae are less than 1 cm long and pink in colour with a light brown head capsule (Fig. 3) and turn white as they develop. The larvae increase in size dramatically, reaching 6-9 cm long by the final larval stage (instar) (Fig. 4). The larva pupates within a spindle-shaped cocoon formed from palm fibres (Fig. 5). Pupae are pale yellow immediately after pupation but turn a reddish-brown colour within a few days (Fig. 5). The adult is a large and conspicuous moth, with a wingspan of 9-11 cm. The forewings are olive brown, with a blackish-brown median band, and the hindwings are orange with a wide black band containing five or six white patches (Fig. 1). The females are significantly larger than the males and are easily recognised by their large ovipositor (egg laying organ).



Fig. 2. *Paysandisia archon* egg © Paola Riolo



Fig. 3. *Paysandisia archon* larva immediately after hatching © Paola Riolo



Fig. 4. Older larva of *Paysandisia archon* © UK Crown Copyright - courtesy of FERA



Fig. 5. *Paysandisia archon* pupa (top) and cocoon (bottom) © Paola Riolo

Biology

Eggs are laid singly on the palm trunk, within fibres near the growing point. Females are thought to lay around 140 eggs each, which is relatively low for this group of moths. Hatching occurs after 12 to 21 days, with eggs hatching earlier at warmer temperatures.

Immediately after hatching, larvae bore into the trunk and new leaves of the palm and begin feeding. Mature larvae move further into the trunk and produce large galleries (tunnels) in the core of the trunk. One palm may host multiple larvae. Larvae overwinter within the palm trunk and may feed for over two years within the palm before pupating.

Larvae form cocoons from palm fibres and pupate within a gallery close to the surface of the trunk. Pupation takes place between mid-March and mid-September, and takes between 43 and 66 days, dependent on temperature. In France, adults are observed from mid-May to September. Adult activity peaks in June and July, where they are especially active on hot days. The males are very territorial and fly repeatedly over small territories, returning to the same perching place. The species is thought to complete its lifecycle over one or two years.



Fig. 6. “Sawdust plugs” ejected at the outside of the gallery by the larva of *Paysandisia archon* © insectariumvirtual.com



Fig. 7. A *Paysandisia archon* cocoon within a gallery within a palm leaf © insectariumvirtual.com



Fig. 8. *Paysandisia archon* larvae and gallery holes within a *Trachycharpus fortunei* palm © Paola Riolo



Fig. 9. Typical damage caused by the larvae of *Paysandisia archon* on a leaf of a *Washingtonia filifera* palm © insectariumvirtual.com

Dispersal and Detection

Paysandisia archon can be introduced to new areas by the movement of palms infested with larvae (including overwintering larvae), pupae or eggs via commercial importation and in passenger luggage. Natural spread could also provide a major route for dispersal of this species, as the adults can fly long distances, with indirect data indicating they can travel at least 25-30 km from where they emerged.

Outside of the adult flight period, it is difficult to detect the presence of *Paysandisia archon*. As the eggs are laid into the fibres of the trunk, larvae burrow within the trunk and the pupae are within cocoons made of palm fibres, these life stages are difficult to observe. During the larval stage, the only sign of infestation may be the presence of plugs of debris (Fig. 6), like sawdust, visible at the outermost extremity of the gallery, but this is not always obvious. Some larvae may tunnel down through the trunk to below ground level where the

feeding damage is not visible. Feeding damage to the leaves in the form of a row of holes in the fanned leaves may be observed but may be mistaken for damage due to other causes (Fig. 9). Heavily infested palms may show dieback or even die.

Symptoms of *P. archon* infestation may appear similar to attack by *Rhynchophorus* sp. red palm weevils.

Economic Impact

Whilst *Paysandisia archon* has not been reported as a damaging pest in its native range, it has caused serious damage and mortality of palms in France, Spain and Italy. Larvae bore galleries through the stem or young leaves, causing characteristic damage (Figs 6 - 9). This results in reduced growth and/or deformation of the crown. Heavily infested palms often die due to the feeding damage or secondary infections introduced into the larval tunnels. Serious damage and plant mortality have been reported in ornamental palm nurseries in southern Europe. For example, in the Languedoc-Roussillon region of France, up to 90% of *Trachycarpus fortunei* palms were lost between 2002 and 2012. *Paysandisia archon* poses a threat to the two palm species native to Europe, *Chamaerops humilis* and *Phoenix theophrasti*, the latter of which is registered on the IUCN Red List of Threatened Species. It could also be a threat to the subtropical species *Phoenix canariensis* which is native to the Canary Islands.

Paysandisia archon could pose a threat to ornamental palms in the UK if introduced. Whilst it is not clear if the species could establish outdoors in the UK, the moth could cause significant damage if an outbreak occurs in a commercial or ornamental glasshouse and could threaten conservation efforts for rare palms in botanic gardens.

Pest Management and Reporting

UK garden centres and nurseries should be aware of the risk of *Paysandisia archon* when purchasing palm trees and where possible source responsibly from stock from pest free areas. UK importers should ensure that palms they purchase and sell comply with current measures and monitor their plants for any signs of infestation.

Suspected outbreaks of *Paysandisia archon* or any other non-native plant pest should be reported to the relevant authority:

For **England and Wales**, contact your local **APHA Plant Health and Seeds Inspector** or the **PHSI Headquarters**, York.

Tel: 0300 1000 313

Email: planthealth.info@apha.gov.uk

For **Scotland**, contact the **Scottish Government's Horticulture and Marketing Unit**:

Email: hort.marketing@gov.scot

For **Northern Ireland**, contact the **DAERA Plant Health Inspection Branch**:

Tel: 0300 200 7847 Email: planthealth@daera-ni.gov.uk

Web: <https://www.daera-ni.gov.uk/topics/plant-and-tree-health>

For additional information on UK Plant Health please see:

<https://planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/>

<https://planthealthportal.defra.gov.uk/>

<https://www.gov.uk/plant-health-controls>

<http://www.gov.scot/Topics/farmingrural/Agriculture/plant/PlantHealth/PlantDiseases>

<https://www.daera-ni.gov.uk>

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November 2024 (Version 3)

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