# Importation of Mature Palms: A Threat to Native and Exotic Palms in Mediterranean Countries?

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1. *Paysandisia archon*: adult moth.

**A large moth, *Paysandisia archon* (Fig. 1), has been discovered recently on the French Riviera as a new pest and appears to be very noxious to palms. It is native to Argentina and Uruguay and was probably introduced into France through the importation of mature plants of *Trithrinax campestris*.**

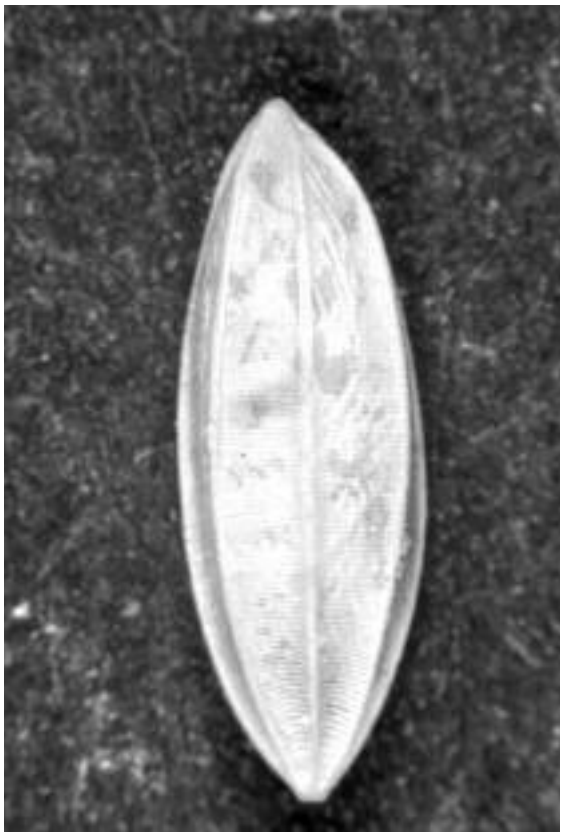
At the beginning of summer 2001, INRA (Institut National de la Recherche Agronomique) in Antibes (France) was alerted by people from the Department of Var that they had a lot of palm trees severely damaged by a "white grub," and some palms had even died. It was the starting point for an official report of a new exotic moth introduced accidentally into France. This beautiful insect – the largest introduced accidentally into Europe – is indeed a serious pest for a great number of palm species.

**Taxonomy**

The scientific name for this moth is *Paysandisia archon* Burmeister; it belongs to the family Castniidae (Lepidoptera), most members of which live in South America.

**Description**

The adult is a beautiful moth, with a large wingspan of 9–11 cm. The fore-wings are olive brown-coloured and the hind-wings are brightly coloured with red, black and white (Fig. 1 ). The antennae are clubbed. Females are a little larger and are easily recognizable by their chitinous ovipositor at the end of the abdomen. The eggs are laid separately; they are oblong (5 mm long), cream-coloured and with longitudinal ribs (Fig. 2). Just after hatching, the larva is pink-coloured and less than 1 cm long, but turns white as it grows. It reaches 6–7 cm at the end of its



2 (above). *Paysandisia archon*: egg. 3 (below). A larva of *Paysandisia archon* in its gallery.

development, looking a bit like a grub, and with four pairs of pseudopods (Fig. 3 ).

**Geographical distribution**

The moth is native to the central region of Argentina and neigboring Uruguay where it lives on palms, *Trithrinax campestris* among other species. *Trithrinax campestris* grows in the wild on the plateau of the central northern part of Argentina (east of Cordoba) where up until the present is very common. However, as shown in Gibbons' paper (2001), this palm (*el Caranday*) seems now to be threatened in its native country. There is a huge need for agricultural land in Argentina, and so *T. campestris* has to be eliminated as land is cleared for fields. For this reason, a great number of them are burned or at best uprooted for commercial purposes. They are exported to other countries, such as in Europe, where they are first put together in the same site before they are sold and spread to other north Mediterranean places.

In France, *Paysandisia archon* is presently localized in the Department of Var, between Toulon and Hyères (Fig. 4) where it has been introduced most probably with imported *Trithrinax* from Argentina. It is also recorded in Spain, in the area of Girona (Catalonia) with the same probable origin (Aguilar 2001). Until now, no record has been officially reported in other Mediterranean countries, although it is likely to be present in Italy as well. It arrived in France a few years ago (probably about 1995) but its presence was not notified at that time and the official record with accurate scientific identification was only made in July 2001 (Drescher & Dufay 2001). With the increasing interest in palms in all the towns of the south of France, it is likely that the dispersal range of this pest will enlarge to other areas of the region in the near future.

**Biology**

Very few data are available on *P. archon* in the literature. The main reason is that it is not considered as a pest in its native country, probably due to the presence of natural enemies (parasites and predators), which limit its populations, but also to the fact that it lives originally on palm trees growing naturally and not on crops. Its life cycle has not been studied in Argentina. Only one author, F. Bourquin, has written a small paper with some biological information on this moth, in an Argentinian journal (Bourquin 1933).

The few observations made in France suggest that the moth has a long cycle of development. The adults are observed from June to September. They are active during the day. All stages of development, from egg to chrysalis have been recorded at the same time, in July. The egg is laid at the basis of the leaf on the stem or in the terminal bud. The larva bores a gallery (Fig. 3) through the stem or through the young leaves, not yet expanded at the stem apex (in the terminal bud), causing characteristic damage (Fig. 5). When several larvae bore simultaneously in the stem, the palm becomes weak (Fig. 6) and can even die. Except for the period when the adults are flying, it is difficult to detect the presence of the pest; at the larval stage the only sign may be the presence of plugs of debris, like sawdust, visible at the outermost extremity of the gallery (Fig. 7). The larva turns into a chrysalis, protected by a cocoon made with palm fibres (Fig. 8), inside the gallery. At the very end of its development, the chrysalis frees itself from the cocoon at the outermost extremity of the gallery, and a new adult moth is born after tearing this envelope. The remains of the chrysalis are often attached to the exit hole of the gallery for a while.

**Damage**

In Argentina, *P. archon* was reported to attack native palms such as *Trithrinax campestris* and *Butia yatay*, as well as occasional exotic species such as *Latania*, *Chamaerops* or *Phoenix canariensis* (Bourquin 1993). In France, the moth appears to have a large range of hosts and can damage many different palms besides *T. campestris*, for example *Chamaerops humilis, Livistona chinensis, L. decipiens, L. saribus, Sabal* spp., *Phoenix canariensis, P. dactylifera, P. reclinata, Trachycarpus fortunei* and *Washingtonia filifera*. This list is probably not exhaustive and will have to be added to following other future observations. In Spain, it has been observed on *Trachycarpus fortunei*, *Phoenix canariensis*, *Washingtonia* spp. and *Chamaerops humilis* (Aguilar 2001).

The damage is observed at different levels of the tree: leaves, rachis and top of the stem. Once hatched, the larva bores towards the heart of the palm and if several larvae are present on the same tree, this can lead to the death of the palm. Big palms can survive if they are not too severely attacked, but small ones or plants in the nursery or in containers are very exposed to attack. It is this ability to feed on a large variety of palm species that makes this pest a real threat to the future of palms in regions of Europe where it has been accidentally introduced.

**Control methods**

Unfortunately since this moth is not a pest in its native country, no control method has been developed. Some chemicals must be tested before


4. Map showing the two main areas of distribution of *Paysandisia archon* in France and Spain.

being allowed to be uses in parks and gardens, but it is not certain how effective they can be in reaching the larva hidden inside the trunk. Biological control (i.e. the use of natural enemies) could be another possibility, safer for the environment, but it needs several years for development.

## Conclusion

As far as we know to date, this pest has been observed in only two limited areas (in France and in Spain), but *Paysandisia* could spread to a much larger region if no severe measures are taken. In France, this pest has been recently included in the

5. Typical damage caused by the larva of *Paysandisia archon* on a leaf of *Washingtonia filifera*.

6 (left). Serious damage to *Trachycarpus fortunei* caused by *Paysandisia archon*. 7 (right). "Sawdust plugs" ejected at the outside of the gallery by the larva of *Paysandisia archon* (damage on *Phoenix canariensis*).

list of noxious organisms submitted for compulsory control measures (Official Journal, February 2002). With the large number of palm species susceptible to its attacks, the moth could seriously threaten the palms that represent a large part of the tourist image of the south of France. The international trade in mature palm trees must be severely limited and controlled to prevent pests from being introduced (other exotic pests have been recently discovered on imported palms in

8. Chrysalis of *Paysandisia archon* extracted from its cocoon.

France and in the soil around their roots), because this practice can lead to severe damage to already established palms. It is the role of palm lovers to be aware of this serious problem and to act in order that the object of their passion can live safely for many years; any observation of new or suspected damage on trees must be notified to experts.

LITERATURE CITED

AGUILAR, L.L. 2001. A new lepidopteran family for the European fauna. SHILAP Rev. Lepid. 29: 86–88.

BOURQUIN, F. 1933. Notas biologicas de la *Castnia archon* Burm. Rev. Soc. Ent. Argentina 24: 295.

DRESCHER, J. AND A. DUFAY. 2001. Un nouveau ravageur des palmiers dans le sud de la France. PHM-Revue horticole 429: 48–50.

GIBBONS, M. 2001. *Trithrinax*, trials and tribulations. Palms 45: 74–79.

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LEPESME, P. 1947. Les insectes des palmiers. P. Lechevalier, 903 p.