



Department
for Environment
Food & Rural Affairs

Plant Pest Factsheet

Red palm weevil

Rhynchophorus ferrugineus



Figure 1. Red palm weevil adult intercepted in the UK on a gourd imported from Sri Lanka © Fera

Background

Rhynchophorus ferrugineus Olivier (Coleoptera: Curculionidae) is a highly invasive pest of palms that can have a significant economic, environmental and social impact when introduced into new geographical areas. It is the most important pest of date palm (*Phoenix dactylifera*) in the world and a serious pest of coconut (*Cocos nucifera*). It is native to southern Asia and Melanesia but since the 1980s it has rapidly expanded its geographical range westwards. It reached Saudi Arabia and the United Arab Emirates in about 1985, spreading throughout the Middle East and into Egypt. In 1994 it was detected in Spain and in 1999 in Israel, Jordan and the Palestinian Authority Territories. It has since spread widely in the Mediterranean region where the two main palm species of concern are date palm and Canary Island date palm (*Phoenix canariensis*), the main crop and ornamental species. It also attacks several other ornamental palms that are regularly imported into Britain, such as chusan palm (*Trachycarpus fortunei*). It has devastated ornamental palms in many areas of the Mediterranean, changing the landscape. The European Commission has introduced emergency measures to prevent the further spread of *R. ferrugineus* within the community.



Figure 2. Red palm weevil larva © Luigi Barraco



Figure 3. Red palm weevil pupa © Luigi Barraco



Figure 4. Red palm weevil cocoon, consisting of tightly woven fibres, removed from the base of a dead palm, China © C. Malumphy



Figure 5. Red palm weevil adult on an adult hand to indicate the size of the beetle, China © C. Malumphy



Figure 6. Red palm weevil adult feeding damage to palm foliage © 2003 International Palm Society



Figure 7. Collapsed palm due to red palm weevil infestation, Italy © V. Martino - NPPO Campania region



Figure 8. Red palm weevil larva (indicated by an arrow) tunnelling inside the stem of a palm, Italy © G. Pesapane - NPPO Campania region



Figure 9. Palm with a broken apex due to red palm weevil infestation, Italy © R. Griffo - NPPO Campania region



Figure 10. Dying and dead Canary Island date palms, Greece © C. Malumphy



Figure 11. Red palm weevil adult killed by an entomopathogenic fungus, China © C. Malumphy



Figure 12. Dying Canary Island date palm, Montenegro © C. Malumphy



Figure 13. Dead and infested palms in a park, Italy © C. Malumphy



Figure 14. Pheromone trap for monitoring red palm weevil, China © C. Malumphy

In 2013, an outbreak of *R. ferrugineus* was found in Brittany, France, in plants imported from Spain. In 2016 there were further findings in France on imported palms, in Normandy

and Auvergne-Rhône-Alps. These findings suggest that, despite emergency measures, the pest is moving in trade. In October 2016 a large number of *R. ferrugineus* larvae and a few adult beetles were confirmed inside a round-leaf fountain palm (*Saribus* (= *Livistona*) *rotundifolia* in Essex. The palm had been imported from the Netherlands in March 2016. The infested palm was destroyed and the surrounding area surveyed by the Plant Health and Seeds Inspectorate. A single live adult *R. ferrugineus* had been previously intercepted in association with a gourd imported from Sri Lanka in 2014.

Geographical Distribution

Rhynchophorus ferrugineus is present in the following regions and countries: **Europe and Mediterranean:** Albania, Algeria, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Jordan, Libya, Malta, Morocco, Palestinian Authority Territories, Portugal, Slovenia, Spain, Tunisia and Turkey. It may also be more widespread in North Africa. **Asia:** Bahrain, Bangladesh, Cambodia, China, Georgia, India, Indonesia, Iran, Iraq, Japan, Jordan, Kuwait, Laos, Lebanon, Malaysia, Myanmar, Oman, Pakistan, Philippines, Qatar, Saudi Arabia, Sri Lanka, Syria, Taiwan, Thailand, United Arab Emirates, Vietnam and Yemen. **Caribbean:** Aruba, Curaçao and Netherlands Antilles. **Oceania:** Australia, Papua New Guinea, Solomon Islands, Vanuatu, Western Samoa.

Host Plants

Rhynchophorus ferrugineus feeds primarily on palms (Arecaeae) although it has occasionally been found feeding on non-palm hosts such as *Saccharum officinarum* (sugar cane). Palm hosts include: *Areca catechu* (betel nut palm), *Arecastrum romanzoffianum* (Queen palm), *Arenga saccharifera* (sugar palm), *A. pinnata* (sugar palm), *Borassus flabellifer* (toddy palm), *Borassus* sp. (palmyra palm), *Brahea armata* (Mexican blue palm), *Butia capitata* (pindo palm), *Calamus merrillii* (rattan), *Caryota cumingii* (fishtail palm), *C. maxima* (giant mountain fishtail palm), *Chamaerops humilis* (dwarf fan palm), *Cocos nucifera* (coconut), *Corypha utan* (Synonyms *C. gebang* and *C. elata*, gebang palm), *C. umbraculifer* (talipot palm), *Elaeis guineensis* (oil palm), *Howea forsteriana* (Kentia palm), *Jubaea chilensis* (Chilean wine palm), *Livistona australis* (cabbage tree palm), *L. decipiens* (ribbon fan palm), *L. chinensis* (Chinese fan palm), *L. saribus* (serdang palm), *L. subglobosa*, *Metroxylon sagu* (sago palm), *Oneosperma horrida*, *O. tigillarum* (nibong palm), *Phoenix canariensis* (Canary Island date palm), *P. dactylifera* (date palm), *P. sylvestris* (Indian date palm or silver date palm), *P. theophrasti* (Cretan date palm), *Roystonea regia* (synonym *Oreodoxa regia*, royal palm), *Sabal umbraculifera* (pygmy date palm), *Saribus rotundifolia* (round-leaf fountain palm), *Trachycarpus fortunei* (Chusan palm) and *Washingtonia* spp. 'Susceptible species' as listed in EU measures are underlined above.

Description

Adults are large, about 35 mm long and 10 mm wide, although they can be up to 42 mm and 16 mm wide (Figs. 1 and 5), with a long rostrum (an elongate projection from the front

of the head), characteristic for the weevils. They are reddish-brown in colour with variable dark markings on the pronotum (section of the body behind the head). Eggs are whitish-yellow, smooth, shiny, cylindrical, with rounded ends, slightly narrower at the anterior end, and about 3 mm long and 1 mm wide. Larvae (Fig. 2) are legless, with a creamy-white body and brown hard head capsule, and grow up to 50 mm in length. The wing cases, legs and other appendages can be seen on the pupa (Fig. 3). Pupation occurs in an elongate oval, cylindrical cocoon made of fibrous strands, about 40 mm in length (Fig. 4). The cocoons are remarkably tough.

Biology

All life stages may be spent inside the host palm. Each adult female deposits between 200 to 300 eggs in separate holes or cavities on the host plant. Eggs hatch in two to five days, and larvae bore into the interior of the palms (Fig. 8), feeding on the soft succulent tissues, discarding all fibrous material. The larval period ranges from 36-78 days (average 55 days) depending on temperature and host species. Pupation occurs in a fibrous cocoon and the adult weevils (Fig. 5) emerge 2-3 weeks after pupation. Thus the life cycle is completed in about 4 months.

Dispersal and Detection

It is very difficult to detect *R. ferrugineus* in the early stages of infestation. Generally, it is detected only after the palm has been severely damaged. Early symptoms of attack include egg laying notches; cocoons inserted into the base of the palms; an eccentric growing crown; holes at the base of cut palms; symptoms resembling those caused by lack of water such as wilting, desiccation and necrosis of the foliage (Fig. 6); tunnelling within the stems and trunk. Larvae and adults destroy the interior of the palm tree, often without the plant showing signs of deterioration unless damage is severe. Hollowing out of the trunk reduces its mechanical resistance, making the plant susceptible to collapse (Figs 7 and 9). In most cases, attack on *Phoenix* and other palms leads to the death of trees whatever their size (Figs 10, 12 and 13). Visual examination allows detection of symptoms but cannot determine if there are larvae and adults present inside the trunk. Pheromone traps (Fig. 14), acoustic detection or infrared systems can be used to detect this pest.

Economic Impact

Rhynchophorus ferrugineus is a major economic pest of coconut palm, date palm, oil palm, sago palm and a range of ornamental palms. Severely attacked plants exhibit a total loss of foliage and rotting of the trunk, which eventually results in the death of the tree. It has proved to be a devastating pest in many parts of the Mediterranean where large numbers of mature palms in urban areas and parks have had to be removed as infested palms may collapse and are a danger to the public. It can also have a detrimental social impact in areas such as the Middle East where the date palm is closely associated with culture and religion.

Advisory Information

UK garden centres and nurseries need to be aware of the risk of *R. ferrugineus* when purchasing palm trees. In 2007, the EU passed emergency measures to reduce the risk of red palm weevil being introduced into the EU and being spread within the EU (2007/365/EU updated by 2007/365/EU). The emergency decision includes a list of 'susceptible plants', i.e. species of plants that are known to be hosts of *R. ferrugineus* (see 'host plants' section above); the measures only apply to palms with a main stem diameter over 5 cm. Any 'susceptible plants' imported from outside the EU must either: come from a country where *R. ferrugineus* is not known to occur OR have been grown in an officially established pest free area OR have been grown within complete physical protection at a registered site where they have undergone official inspections every 3 months and immediately prior to export. Any plants being moved in the EU must have been grown in a member state whether *R. ferrugineus* is not known to occur OR throughout their lives in an official pest free area OR grown for 2 years in a site with complete physical protection and have been inspected by officials every three months. UK importers should ensure that palms they purchase and sell comply with the measures above and monitor their plants for any signs of infestation. The UK is currently seeking Protected Zone status against this pest.

Suspected outbreaks of *Rhynchophorus ferrugineus* 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**, Sand Hutton, York. Tel: 01904 405138

Email: planthealth.info@apha.gsi.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

For additional information on UK Plant Health please see:

<https://secure.fera.defra.gov.uk/phiw/riskRegister/>

<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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