

This short description was prepared in the framework of the EU FP7 project DROPSA - Strategies to develop effective, innovative and practical approaches to protect major European fruit crops from pests and pathogens (grant agreement no. 613678). This pest was listed in the DROPSA alert lists for apple, orange and mandarin and *Vitis* fruit.

Pseudococcus maritimus (Hemiptera: Pseudococcidae)

Fruit pathway: *P. maritimus* is known to infest also the fruit of its host plants and it was intercepted several times on fruits. When mealybug populations are dense, they may enter the calyx ends of fruit, causing contamination problems on processed fruit (Biosecurity New Zealand 2009c). On grapes, overwintered first instar nymphs of *Pseudococcus maritimus* feed at bases of shoots or pedicels of grape clusters. The ovisac, eggs, immature larvae and adults of this species may be on the grapes (Biosecurity Australia 2005).

Other pathways: Plants for planting. Larvae and females feed on leaves; females also wander to shoot forks (Goszczyński and Golan 2011). On any part of plants, incl. leaves, fruit, roots (McKenzie, 1967). Early stages damage the young roots of grapevines before moving up onto the vine to damage shoots, stems and fruit. The eggs overwinter in the soil near grapevine roots (Biosecurity Australia 2011). This species is mainly found on leaves and under bark on trunks (Biosecurity New Zealand 2009c).

Hosts: Highly polyphagous, incl. *Vitis*, *Vaccinium*, *Malus*, *Persea*, *Passiflora*, *Pyrus*, *Rubus*, *Citrus* (Ben-Dov *et al.* 2016); *Diospyros kaki* (Koch and Waterhouse 2000). In Poland, found indoors on *Abutilon striatum*, *Citrus grandis*, *Passiflora auriculata*, *P. quadrangularis*, *S. arboricola*; additionally *Pyrus*, *Prunus armeniaca* are mentioned (Goszczyński and Golan 2011).

Distribution: *North America:* Canada, Mexico, USA; *Asia:* Armenia, Indonesia (Garcia Morales *et al.* 2016), China (Biosecurity NZ, 2009a; Abudujapa and Sun 2007); *South America:* Argentina, Brazil, Chile, Colombia, French Guiana; Caribbean: Guadeloupe, Puerto Rico; *Central America:* Guatemala (Garcia Morales *et al.*, 2016); Puerto Rico; *Europe:* Poland (indoors only, greenhouses, offices) (Goszczyński and Golan 2011).

Uncertain records: Madeira (possibly misidentification) (Garcia Morales *et al.*, 2016): ‘former-USSR’ (CABI CPC). Garcia Morales *et al.* (2016) indicate that the pest seems confined to the New World and has frequently been misidentified as *Pseudococcus affinis*.

Doubtful records: CABI CPC mentions unconfirmed records for Hungary and the Netherlands. The pest is not present in Hungary (Kozar *et al.*, 2013). No record found for the Netherlands.

Damage: *Pseudococcus maritimus* is the primary North American mealybug pest in vineyards (Daane *et al.* 2012). Since the 1970s *P. maritimus* is an increasingly severe pest of pears and apples in the Pacific Northwest. Additionally it is known as a pest of pear and apricot in California. On grapevine, feeding damage is primarily on leaves, and the pest also causes honeydew and sooty moulds on fruit (Biosecurity New Zealand 2009b). *P. maritimus* is one of the five important vineyard mealybug species in Brazil (da Silva *et al.* 2014). Damage also as vector of grapevine leafroll-associated virus-3 (GLRaV-3) (Daane *et al.* 2012, Grasswitz and James 2008). *P. maritimus* is not an important pest of Citrus in Southern China according to Li *et al.* (1997). No other reference was found for Citrus.

Other information: The females are wingless, but mealybugs can disperse by wind within vineyards (Grasswitz and James 2008). Intercepted on table grapes (Biosecurity New Zealand 2009a) and apricot and pear fruit (Biosecurity New Zealand 2009c) to New Zealand. *P. maritimus* was intercepted 29 times between 1995 and 2012 in the USA (Miller *et al.* 2014.). Intercepted on *Citrus* and *Vitis* fruit in Korea, as well as on *Schefflera* (Suh *et al.* 2013). Intercepted on *Malus* fruits from USA to Israel (Dropsa review, 2016). Proposed in answer to the EPPO questionnaire on pests of concern for *Vitis*. Biosecurity New Zealand requires risk mitigation measures for *P. maritimus* for apple and other fruits from USA (Biosecurity New Zealand 2009c).

Impact: High (also as vector)	Intercepted: Yes	Spreading/invasive: Yes
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