EPPO Datasheet: *Gonipterus scutellatus species complex*

Last updated: 2021-10-19

IDENTITY

Preferred name: *Gonipterus scutellatus species complex*
Taxonomic position: Animalia: Arthropoda: Hexapoda: Insecta: Coleoptera: Curculionidae: Gonipterinae
Common names: eucalyptus snout beetle, eucalyptus weevil, gum-tree weevil
view more common names online...
EPPO Categorization: A2 list
view more categorizations online...
EU Categorization: PZ Quarantine pest (Annex III)
EPPO Code: GONPSC

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Notes on taxonomy and nomenclature

This pest has a history of taxonomic confusion (Schröder *et al*., 2021). *Gonipterus scutellatus*, once thought to be a single species, is recognized as part of a cryptic species complex comprising at least eight different species (*G. balteatus*, *G. platensis*, *G. pulverulentus*, *G. scutellatus*, *Gonipterus* sp. n. 1–4) (Mapondera *et al*., 2012; Schröder *et al*., 2021). Three species within the *G. scutellatus* complex are invasive pests: *G. platensis*, *G. pulverulentus* and *Gonipterus* sp. n. 2. *G. scutellatus* has not been recorded outside of its native range (Tasmania).

HOSTS

Many species of *Eucalyptus* have been reported as hosts of *Gonipterus* with varying degrees of susceptibility (Mally, 1924; Tooke, 1955; Richardson & Meakins, 1986; Newete *et al*., 2011). The most susceptible species are *E. camaldulensis*, *E. globulus*, *E. maidenii*, *E. punctata*, *E. robusta*, *E. smithii*, *E. viminalis*, *E. dunnii*, *E. ovata*, *E. urophylla*, and *E. grandis*. Host associations vary between species of *Gonipterus* (Garcia *et al*., 2019; Souza *et al*., 2021; Schröder *et al*., 2021). A recent study in Tasmania found *G. platensis* and *G. pulverulentus* have similar host associations, mainly occurring on *E. ovata* and small numbers of *G. platensis* were recorded from *E. globulus* and *E. viminalis* (Garcia *et al*., 2019). *E. smithii*, *E. grandis*, *E. urophylla* and *E. viminalis* were found to be amongst the most susceptible *Eucalyptus* species for *Gonipterus* sp. n. 2 in South Africa (Newete *et al*., 2011).

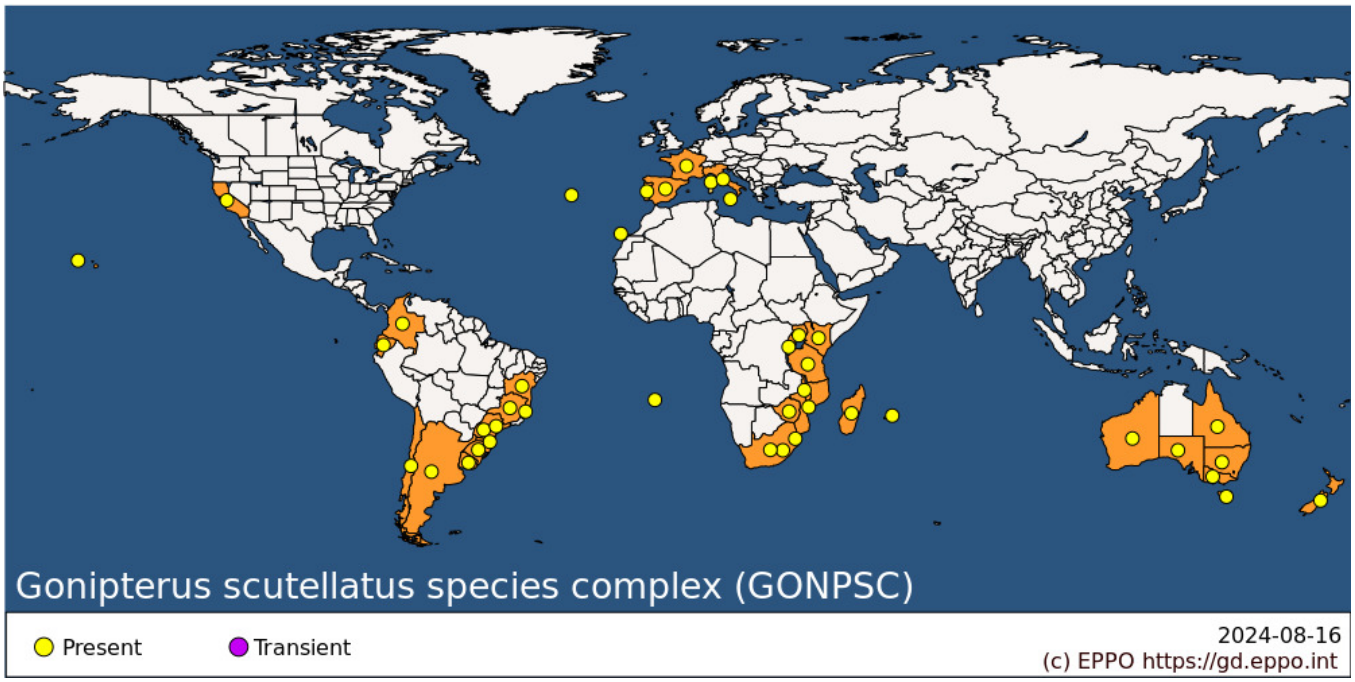
Within the EPPO region *Eucalyptus* spp. are economically important hosts.

Host list: *Eucalyptus amplifolia*, *Eucalyptus amygdalina*, *Eucalyptus benthamii*, *Eucalyptus blakelyi*, *Eucalyptus bosistoana*, *Eucalyptus bridgesiana*, *Eucalyptus camaldulensis*, *Eucalyptus cinerea*, *Eucalyptus conspicua*, *Eucalyptus cornuta*, *Eucalyptus crenulata*, *Eucalyptus dalrympleana*, *Eucalyptus deanei*, *Eucalyptus dunnii*, *Eucalyptus exserta*, *Eucalyptus foecunda*, *Eucalyptus globulus subsp. maidenii*, *Eucalyptus globulus*, *Eucalyptus goniocalyx*, *Eucalyptus grandis*, *Eucalyptus lehmannii*, *Eucalyptus longicornis*, *Eucalyptus longifolia*, *Eucalyptus loxophleba*, *Eucalyptus macarthurii*, *Eucalyptus major*, *Eucalyptus mannifera subsp. maculosa*, *Eucalyptus melanophloia*, *Eucalyptus melliodora*, *Eucalyptus microcorys*, *Eucalyptus microtheca*, *Eucalyptus morrisbyi*, *Eucalyptus nicholii*, *Eucalyptus nitens*, *Eucalyptus obliqua*, *Eucalyptus occidentalis*, *Eucalyptus ovata subsp. ovata*, *Eucalyptus ovata*, *Eucalyptus pauciflora*, *Eucalyptus platypus subsp. platypus*, *Eucalyptus propinqua*, *Eucalyptus pulchella*, *Eucalyptus punctata*, *Eucalyptus radiata*, *Eucalyptus redunca*, *Eucalyptus robusta*, *Eucalyptus rubida*, *Eucalyptus scoparia*, *Eucalyptus smithii*, *Eucalyptus tereticornis*, *Eucalyptus urnigera*, *Eucalyptus urophylla*, *Eucalyptus viminalis*, *Eucalyptus x kirtoniana*

GEOGRAPHICAL DISTRIBUTION

The *G. scutellatus* species complex originates in south-eastern Australia and has spread with its hosts to many parts

of the world. The three invasive species, *G. platensis*, *G. pulverulentus* and *Gonipterus* sp. n. 2 differ in their native and invasive distribution ranges (Mapondera *et al*., 2011; Garcia *et al*., 2019; Schröder *et al*., 2021). In the EPPO region, *G. platensis* is present in Portugal and Spain and *Gonipterus* sp. n. 2 in France and Italy.



EPPO Region: France (mainland, Corse), Italy (mainland, Sicilia), Portugal (mainland, Azores), Spain (mainland, Islas Canárias)
Africa: Eswatini, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Saint Helena, South Africa, Tanzania, Uganda, Zimbabwe
North America: United States of America (California, Hawaii)
South America: Argentina, Brazil (Bahia, Espirito Santo, Minas Gerais, Parana, Rio Grande do Sul, Santa Catarina, Sao Paulo), Chile, Colombia, Ecuador, Uruguay
Oceania: Australia (New South Wales, Queensland, South Australia, Tasmania, Victoria, Western Australia), New Zealand

BIOLOGY

The species belonging to the *G. scutellatus* species complex is of little economic importance in their native range in Australia but are significant pests of *Eucalyptus* in the invasive range. Eggs are attached to leaves in clusters of four to sixteen eggs and covered with a frass excrement to form a capsule. Females mate several times and continue to oviposit throughout a lifetime of about 60 - 91 days. A female produces between 20 and 33 egg capsules in her lifetime. Incubation is temperature dependent and can take one to two weeks to complete. There are four larval stages which are covered in sticky slime that keeps them adhered to the leaves. Larval development takes 4-6 weeks to complete. Adults and larvae feed on leaves. The mature larvae drop to the ground where pupation occurs in cells about 5 cm deep in the soil. Pupation takes 30-40 days to complete. The sex ratio is about 1:1 and females can mate with several males. In the laboratory, adults mated 4-9 days after emergence, and began to lay eggs after a further 13-21 days. Development is temperature dependent and the beetles take 2-3 months to complete the entire life cycle. There are about four generations annually in Mauritius, continuing throughout the year. In South Africa there are 2 to 2.5 generations and overwintering occur in the adult and pupal stage. In Italy two generations are recorded and between 1 and 3 generations occur in Spain.

For further information on the biology of *G. scutellatus* species complex see Mally (1924), Moutia & Vinson (1945), Tooke (1955), Leyva (1969 & 1970), Arzone & Meotto (1978), Santolamazza-Carbone & Rivera 1998, Santolamazza-Carbone *et al*. 2006.

DETECTION AND IDENTIFICATION

Symptoms

The adult beetles feed on the edges of the leaves resulting in a characteristically scalloped appearance. The larvae feed on the epidermis and mesophyll of the young leaves causing tracks the width of the larvae in the leaves and mature larvae will consume entire leaves. Feeding damage results in defoliation of the tree crown, dieback of shoot tips and development of tufts of epicormics. Successive defoliations produce stunting and a stag-headed appearance. Trees may split and die. Adults tend to feed on the leaves and soft bark of young shoots while larval damage occurs on the leaves alone (Moutia & Vinson, 1945; Kevan, 1964; Leyva, 1969; 1970).

Morphology

Eggs

Eggs capsules are grey to brown containing clusters of yellow eggs. An egg capsule contain four to sixteen eggs, attached to the leaves on both surfaces (Mally, 1924; Tooke, 1955). The egg capsules vary in size and measure 1 - 3 mm in length, 1 – 1.5 mm in width and 1 - 2 mm in height (Tooke, 1955).

Larva

The head of the larvae is black and the body is yellowish-green with black shield like spots on each segment and dark lateral stripes. Larvae are covered in a sticky slime (Tooke, 1955. EFSA, 2018).

Adult

A 7.5 - 9.4 mm grey-brown weevil, with a black x-shaped marking on the elytra and a white scutellar stripe, often extending to the head (Tooke, 1955; EFSA, 2018). These markings may fade with the age of the beetle and vary between species.

Detection and inspection methods

Visual inspection of leaf material for the presence of feeding damage, egg capsules or larvae.

Identification up to genus level can be done using morphological characteristics. The morphology of the male genitalia and DNA barcoding techniques are used for species identification (Mapondera *et al*., 2012).

PATHWAYS FOR MOVEMENT

The main pathways of entry are natural spread by flight, trade in *Eucalyptus* timber and trade of plants for planting and cut branches for floral arrangements and hitchhiking (EFSA, 2018). Adults, larvae and eggs may be carried on planting material. Larvae and pupae could be present in accompanying soil. Hitchhiking on apple consignments imported into South Africa from Australia has been suggested as a pathway for movement (EFSA, 2018, citing Mally, 1924; Clark, 1931; Tooke, 1955). In Australia and New Zealand, infestations of apple orchards by adults necessitates the need for control measures before the commodity is exported (EFSA, 2018).

PEST SIGNIFICANCE

Economic impact

In its introduced range, this pest has become an important defoliator of *Eucalyptus* causing significant reduction in wood production and tree death (Tooke, 1955; Williams *et al*., 1951). Damage to *Eucalyptus* plantations have been significantly reduced due to the introduction of the biological control agent *Anaphes nitens* (Tooke, 1955; Hanks *et al* ., 2000). Despite the initial success of the biological control program for this pest it remains an important economic pest with outbreaks sporadically observed in many *Eucalyptus* producing countries (Tooke, 1955; Loch *et al*., 2006;

Reis *et al*., 2012). Defoliation of the upper crown reduces stem growth and can result in merchantable wood loss of up to 86 % over a ten-year growing period (Reis *et al*., 2012). The eucalyptus snout beetle continues to spread and has recently invaded Colombia (Rodas, 2018) and Rwanda (Schröder *et al*., 2021).

Control

The biological control agent *A. nitens* has been released globally as a control measure against the eucalyptus snout beetle. Successful control with *A. nitens* is claimed in France and Italy (Cadahia, 1986). In addition to *A. nitens*, *A. tasmaniae* was released in Chile and *A. inexpectatus* in Portugal and Spain (Mayorga, 2013; Valente *et al*., 2017).

Chemical treatment is not recommended because of low efficacy, adverse environmental effects and increased production cost (EFSA, 2018).

Phytosanitary risk

The *G. scutellatus* species complex is considered a phytosanitary risk to the EPPO region due to its polyphagous feeding habits and economic damage associated with feeding. Severe defoliation of hosts can reduce the volume of wood that can be sold. In the EPPO region, countries such as Spain have large productive *Eucalyptus* plantations. *E. globulus* is the dominant species in northern and north-western Spain.

In the EPPO region, the *G. scutellatus* species complex poses a threat to *Eucalyptus* plantations.

PHYTOSANITARY MEASURES

Phytosanitary measures are in place for the trade of plants. Countries importing propagating material and cut branches of *Eucalyptus* have to ensure the consignment is free from soil and has been subjected to a treatment against *G. scutellatus* species complex, or that it comes from an area where *G. scutellatus* species complex does not occur. Countries may require a phytosanitary certificate for cut branches of *Eucalyptus*.

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ACKNOWLEDGEMENTS

This datasheet was extensively revised in 2021 by Michelle Schröder, Department Zoology and Entomology, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria. Her valuable contribution is gratefully acknowledged.

How to cite this datasheet?

EPPO (2024) *Gonipterus scutellatus species complex*. EPPO datasheets on pests recommended for regulation. Available online. https://gd.eppo.int

Datasheet history

This datasheet was first published in the EPPO Bulletin in 1980, revised in the two editions of 'Quarantine Pests for Europe' in 1992 and 1997, revised again in 2005, as well as in 2021. It is now maintained in an electronic format in the EPPO Global Database. The sections on 'Identity', ‘Hosts’, and 'Geographical distribution' are automatically updated from the database. For other sections, the date of last revision is indicated on the right.

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Co-funded by the European Union