

Host range of *Platypus mutatus* (Chapuis, 1865) (Coleoptera: Platypodidae)

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Abstract

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Platypus mutatus is a pest that affects native and exotic species (e.g., poplars, oaks and pines). The damage it causes results in lower wood yields and quality. Surveys were carried out over four years in the Argentine forest areas to determine the distribution of this pest and its hosts. We found *P. mutatus* in hosts that have not been reported previously: *Acer negundo* L., *Erythrina crista-galli* L., *Eucalyptus dunni* Smith, *Fraxinus excelsior* L., *Grevillea robusta* Acunn, *Quercus palustris* Münchh., *Q. borealis* Michx., *Ligustrum lucidum* Ait., *Liquidambar styraciflua* L., *Melia azedarach* L., *Populus alba* L., *Salix alba* L. and *S. nigra* Marsh. The locations and host plants of *P. mutatus* outside of Argentina are also mentioned. In conclusion *P. mutatus* is widely distributed in Argentina and has a fairly extensive host range.

Additional key words: Ambrosia, Argentina, forest, pest, *Platypus sulcatus*, trap, wood borer.

Resumen

GIMÉNEZ RA, ETIENNOT AE. 2003. Rango de hospederos de *Platypus mutatus* (Chapuis, 1865) (Coleoptera: Platypodidae). Entomotropica 18(2):89-94.

Platypus mutatus es una plaga que afecta tanto especies nativas como exóticas (por ejemplo álamos, robles y pinos). Los daños que produce causan una menor calidad y producción de madera. Durante cuatro años realizamos estudios en bosques argentinos para determinar su distribución así como sus hospederos. Encontramos *P. mutatus* en árboles no reportados previamente: *Acer negundo* L., *Erythrina crista-galli* L., *Eucalyptus dunni* Smith, *Fraxinus excelsior* L., *Grevillea robusta* Acunn, *Quercus palustris* Münchh., *Q. borealis* Michx., *Ligustrum lucidum* Ait., *Liquidambar styraciflua* L., *Melia azedarach* L., *Populus alba* L., *Salix alba* L. y *S. nigra* Marsh. También mencionamos su localización y hospedantes fuera de Argentina. En conclusión *P. mutatus* está extensamente distribuido en Argentina y tiene un amplio intervalo de hospederos.

Palabras clave adicionales: Ambrosia, Argentina, bosque, plaga, *Platypus sulcatus*, taladro de la madera, trampa.

Introduction

Platypus mutatus (Chapuis, 1865) is a Coleoptera (Platypodidae, Platypodinae, Platypodini) native of South America (Wood 1993; Wood and Bright 1993). Throughout the world there are other species of the genus *Platypus* (Herbst 1793) which have one or many hosts (Arnold and Jiracek 1982; Atkinson 1989; Beaver 1972, Beaver 1995; CABI 1987; Cabral et al. 1993; Gray and Wylie 1974).

P. mutatus is a primary pest because it affects only live standing trees and does not affect cut wood or "sick" trees (Allegro 1995). It drills the trunks of live trees and bores internal tunnels that weaken them causing them to break under extreme stress. *P. mutatus* is a serious problem in commercial plantations, especially

in *Populus deltoides* Marshall. Losses are the consequence of a lower yield in volume per unit area due to breakage of trees and damage in the wood. The dark stained tunnels caused by the decay of the "ambrosia" mycelium (Basciagli et al. 1996) prevent attaining the quality standard required for exporting. First and second instar larvae are mycetophagous. The fungus they feed on, generically known as "ambrosia", grows on the tunnel walls bored by *P. mutatus*. Imperfect fungi, *Raffaella santoroii* Von Arx, was identified in *Laurus nobilis*, *Quercus robur*, and *Eucalyptus camaldulensis* tunnels and sawdust produced by this pests action in Argentina (Guerrero 1966).

Unlike other representatives of the genus, *P. mutatus* does not thrive in dead trees or cut wood (Ferreira y Ferreira 1989) because the lack of moisture produces unfavourable conditions for the larvae. When the fungal "ambrosia" dries up, the insects life cycle is interrupted.

The known hosts of *P. mutatus* in Argentina and the distribution are (Figure 1): *Acacia* sp., Leg., Mimosoidea, in Buenos Aires, Corrientes and Misiones Provinces (Fiorentino and Diodato de Medina 1991); *Ailanthus altissima* (Mill) Swingle, Simarubaceae, in La Plata city and Buenos Aires Province (Marelli 1931); *Balfourodendron riedelianum* Engl., Rutaceae, in Buenos Aires, Corrientes and Misiones Prov. (Fiorentino and Diodato de Medina 1991) and Argentina (Santoro 1957 a); *Casuarina cunninghamiana* L., Casuarinaceae, in Buenos Aires, Corrientes and Misiones Prov. (Fiorentino and Diodato de Medina 1991), Entre Ríos Prov. (Hayward 1941) and La Plata city (Marelli 1931); *Cedrela tubiflora* Bart., Meliaceae, in Buenos Aires, Corrientes and Misiones Prov. (Fiorentino and Diodato de Medina 1991) and Argentina (Santoro 1957a). *Citrus* sp., Rutaceae, in Entre Ríos Province (Hayward 1941); *Eucalyptus camaldulensis* Dehnh., Myrtaceae, in Buenos Aires City, José C. Paz (Buenos Aires Prov.), Chabás (Santa Fe Prov.) (Santoro 1962) and Argentina (Santoro 1965, 1957a); *E. tereticornis* Smith., Myrtaceae, in Buenos Aires city, José C. Paz (Buenos Aires Prov.) and Chabás (Santa Fe Prov.) (Santoro 1962); *Eucalyptus* spp., Myrtaceae, in Buenos Aires, Misiones and Corrientes Prov. (Brethes 1908), Misiones, Corrientes and Entre Ríos Prov. (Blanchard 1939), Buenos Aires, Misiones, Corrientes and Tucumán Prov. (Schedl 1939), Buenos Aires, Corrientes and Misiones Prov. (Fiorentino and Diodato de Medina 1991); *Fraxinus* sp., Oleaceae, in Argentina (Santoro 1957a), Buenos Aires, Corrientes and Misiones Prov. (Fiorentino and Diodato de Medina 1991); *Laurus nobilis* L., Lauraceae, in José C. Paz and Castelar in Buenos Aires Prov. (Guerrero 1966); *Magnolia grandiflora* L., Magnoliacea, in Argentina (Maluh 1986); *Malus sylvestris* Mill., Ros., pomoidea, in La Plata city (Buenos Aires Prov.) (Marelli 1931); *Pinus* sp., Pinaceae, in Buenos Aires, Corrientes and Misiones Prov. (Fiorentino and Diodato de Medina 1991); *Platanus x acerifolia* Willd., Platanaceae, in Buenos Aires Prov. (Bascialli and Tuozzo 1993), La Plata city Buenos Aires Prov., (Marelli 1931) and Argentina (Santoro 1965); *Populus deltoides* cv. Caroliniensis Bart., Salicaceae, in Buenos Aires city (Santoro 1963), Buenos Aires City; José C. Paz Buenos (Aires Prov.) and Chabás (Santa Fe Prov.) (Santoro 1962); *Populus deltoides* cv. virginiana Bart., Salicaceae, in José C. Paz (Buenos Aires Prov.), Chabás

(Santa Fe Prov.) (Santoro 1962) and Buenos Aires city (Santoro 1963); *Populus* spp., Salicaceae, in Argentina (Allegro 1990), Misiones, Corrientes and Entre Ríos Prov. (Blanchard 1939), Buenos Aires, Corrientes and Misiones Prov. (Fiorentino and Diodato de Medina 1991) and Rio Negro (Parra 1992); *Populus x euroamericana* Dode-Guinier, Salicaceae, in Argentina (Santoro 1957a) and Chabás (Santa Fe Prov.) (Santoro 1963); *Prunus persica* Batsch., Ros., pomoidea, in Misiones, Corrientes and Entre Ríos Provinces (Blanchard 1939); *Pyrus communis* L., Ros., pomoidea, in La Plata city (Buenos Aires Prov.) (Marelli 1931); *Quercus robur* L., Fagaceae, in Buenos Aires Prov. (Bascialli and Tuozzo 1993) and José C. Paz and Castelar (Buenos Aires Prov.) (Guerrero 1966); Argentina (Santoro 1967); *Quercus* spp., Fagaceae, in Buenos Aires, Corrientes and Misiones Prov. (Fiorentino and Diodato de Medina 1991); *Robinia pseudo-acacia* L., Leg. Papilionoideae, in Argentina (Santoro 1957a); *Salix babylonica* L., cv. Sacramenta, Salicaceae in Buenos Aires City, José C. Paz (Buenos Aires Prov.) and Chabás (Santa Fe Prov.) (Santoro 1962), Buenos Aires city (Santoro 1963) in Delta of Paraná River of Buenos Aires and Entre Ríos Prov., (Ubeda Molina 1979); *Taxodium distichum* (L.) Rich., Taxodiaceae in Argentina (Santoro 1957a); *Tilia moltkei* Spaeth., Tiliaceae: Argentina (De Santis 1978, Maluh 1986), Buenos Aires, Corrientes and Misiones Prov. (Fiorentino and Diodato de Medina 1991); *Ulmus pumila* L., Ulmaceae, in Buenos Aires City; José C. Paz (Buenos Aires Prov.) and Chabás (Santa Fe Prov.) (Santoro 1962); *Ulmus* spp., Ulmaceae, in Argentina (Santoro 1957a).

The knowledge of the host range and the distribution of this pest is very important to get the quality standard required for exporting woods. Other studies are underway to determine the quantity of wood lost by the action of this pest. The lower quality of woods prevents Mercosur (Mercosur 1999) from exporting.

Materials and Methods

In different regions, surveys in forests and individual specimens of trees grown for different purposes was carried out. The method to identify the pest was the detection of the occurrence of holes and sawdust indicating the action of this ambrosia beetle. Holes with imago sawdust, which is the first sawdust to come out of the trees (which is composed of long particles), during the period of colonisation of trees by the adults of the pest, generally from December to February. Holes with larvae sawdust (which is more liquid and granular) can be found all year (Santoro 1957 a, Toscani

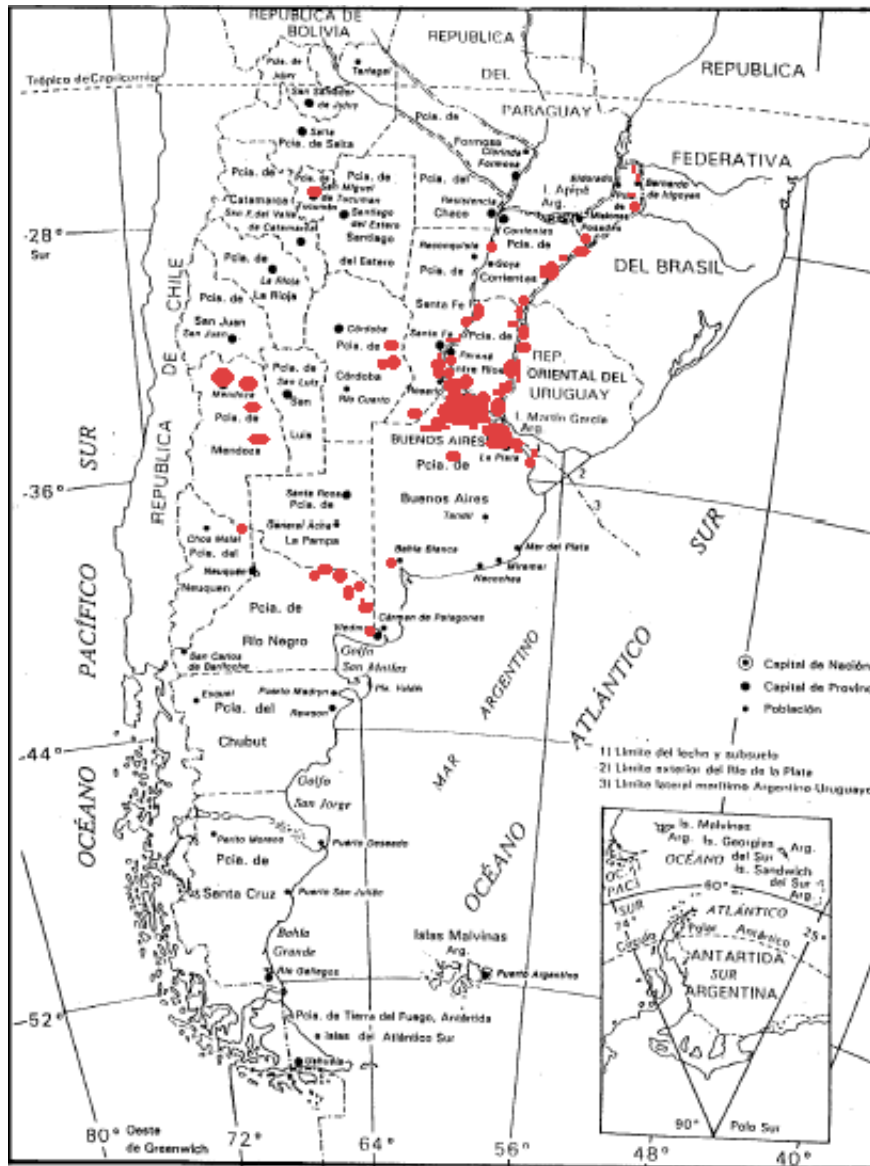


FIGURE 1: Distribution of *P. mutatus* in Argentina. Giménez, R. A.

1991). Larval and imaginal sawdust were collected from the holes where activity of the pest was detected, and later the corresponding granular and longitudinal elements were observed under a magnifying glass (10x), following the detailed description made in poplars and oaks by Santoro (1957a). Furthermore, to check that the activity detected in the holes was due to the target species, traps were placed over the holes to capture emerging beetles (Figure 2). The insects that emerged in spring were captured and observed with a magnifying glass (20x).

Results and Discussion

The following list contains, in alphabetical order, the new host plants of *Platypus mutatus* in temperate and subtropical regions of Argentina (Figure 1):

Acer negundo L., Acereaceae: Buenos Aires city, N and SW of the Great Buenos Aires;

Erythrina crista-galli L., Leg. Papilionoideae: Buenos Aires city, N and SW of the Great Buenos Aires;

Eucalyptus dunni Smith, Myrtaceae: Delta of Paraná River, Prov. Buenos Aires;



FIGURE 2: Capture trap for adults of *P. mutatus*, hand made in plastic material. Giménez, R. A.

Fraxinus excelsior L., Oleaceae: Martín García Island (River Plate);

Grevillea robusta ACunn., Proteaceae: Buenos Aires city, N and SW of the Great Buenos Aires;

Ligustrum lucidum Ait., Oleaceae: Martín García Island (River Plate);

Liquidambar styraciflua L., Platanaceae: Buenos Aires city, N and SW of the Great Buenos Aires;

Melia azedarach L., Meliaceae: Mendoza city;

Populus alba L., Salicaceae: Buenos Aires city, N and SW of the Great Buenos Aires;

Quercus borealis Michx., Fagaceae: Buenos Aires city, N and SW of the Great Buenos Aires;

Quercus palustris Münchh., Fagaceae: Buenos Aires city, N and SW of the Great Buenos Aires;

Salix alba L., Salicaceae: Delta of Paraná River of Buenos Aires and Entre Ríos Prov.

Salix nigra Marsh., Salicaceae: Delta of Paraná River of Buenos Aires and Entre Ríos Prov.

Some hosts are important forest species: *Pinus* spp., *Eucalyptus* spp., *Populus* spp., *Salix* spp., and *Casuarina*

spp., whereas *Quercus* spp., *Fraxinus* spp., *Robinia* spp., *Ulmus* spp. Other hosts are important orchard species (*Malus sylvestris*, *Pyrus communis*, *Prunus persica*, and *Citrus* spp.)

In spite of the many other species of the *Platypus* spp. in the rest of the world, *P. mutatus* has been found only in Argentina, Uruguay (Paullier and Núñez 1991) and Brazil. The hosts found in Brazil are: *Calophyllum brasiliense* Cambessedes, Guttiferae; *Erythrina crista-galli* L., Leguminosae (Pedrosa-Macedo personal communication); *Eucalyptus europphylla* L'Herit., Myrtaceae: Salto, São Paulo (Berti Filho 1981); Anhemí, São Paulo (Zani Filho et al. 1984); Guaíba, Rio Grande do Sul (IPEF 1984); *Eucalyptus robusta* L'Herit., Myrtaceae: Guaíba, Rio Grande do Sul (IPEF 1984). *Eucalyptus* spp., Myrtaceae (Andrade 1961, Pinheiro 1962), Paraná (Pedrosa-Macedo 1993); *Luehea divaricata* Mart., Tiliaceae (Pedrosa-Macedo, personal communication); *Malus sylvestris* Mill., Rosaceae, Pomoideae (Santoro 1957); *Pyrus communis* L., Ros., Pomoideae (Silveira 1957); *Sebastiania commersoniana* (Baillon) Smith and Downs, Euphorbiaceae (Pedrosa-Macedo personal communication); *Vitex megapotamica* (Sprengel) Moldenke, Verbenaceae (Pedrosa-Macedo personal communication). In Uruguay Paullier and Núñez (1991) found this pest in *Pyrus communis* L.

Conclusion

In spite of the many other species of the *Platypus* spp. in the rest of the world, *P. mutatus* has been found only in Argentina, Uruguay and Brazil, we can conclude that *P. mutatus* has a fairly extensive polyphagous host range and are widely distributed in Argentina. The possible presence of this pest in other areas of the country is not discarded, and a study aimed at determining the scope of its dispersion in altitude, should be carried out.

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