The woodwasp Sirex noctilio Fabricius (Hymenoptera: Siricidae), a pest of Pinus species, now established in South Africa

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The woodwasp Sirex noctilio Fabricius (Fig. 1) is endemic to Eurasia and North Africa and almost 76% of its distribution range is in the Mediterranean biotic zone, where it is almost exclusively associated with Pinus species (Spradbery & Kirk 1978). Living trees attacked by S. noctilio in...
Adults of *S. noctilio* are attracted to stressed trees which they kill by injecting a phytotoxic mucus and the symbiotic fungus *Amylostereum areolatum* (Fr.) Boidin into the wood during oviposition (Bedding 1972) (Fig. 2). *Sirex noctilio* larvae feed on the fungus within the wood and pupate just under the bark layer of the tree. *Pinus radiata* is particularly susceptible to *S. noctilio*, and although neither the fungus nor the mucus alone are capable of killing trees, they are lethal in combination (Coutts 1969). *Pinus elliottii* Engelm., *P. patula* Schlecht. et Cham., *P. pinaster* Ait. and *P. taeda* L., which are grown commercially in South Africa, are also recorded as host trees (Browne 1968). Species confirmed thus far as hosts in South Africa include *P. elliottii*, *P. pinaster*, *P. pinus* L. and *P. radiata*.

In April 1994, two disintegrated steel-blue wasps were discovered under the bark of a discarded 44-year-old *P. radiata* log in a clearfelled compartment (C18b) in Tokai Plantation (34.03S 18.25E). The number of distinctive round exit holes in discarded logs revealed that a minimum of 3772 wasps had emerged the previous season. From the number of exit holes in dead, standing trees in the unfelled part of this compartment it was estimated that a further 5000 wasps had emerged. Live *S. noctilio* larvae were extracted from dying *P. radiata* trees in Tokai, La Motte (Franschhoek 33.56S 19.04E), Kluitjeskraal (33.26S 19.07E), Jonkershoek (33.58S 18.56E) and the adjacent plantations of Grabouw and Nuweberg (34.09S 19.02E), all within a 90 km arc around Cape Town. Exit holes from the previous season were also present at Grabouw Plantation. The symbiotic fungus *A. areolatum* was positively identified from logs infested with larvae in Tokai, and wasps emerging in November were confirmed as *S. noctilio*. Voucher material of both the fungus and wasp is housed in the Biosystematics Division, Plant Protection Research Institute, Pretoria, under the following accession numbers: *A. areolatum* – PREM 51842 (culture PPRI 5610), PREM 51843 (culture PPRI 5642), PREM 51877 (culture PPRI 5858); *S. noctilio* –
An. arabiensis complex and extremely rare (Coetzee et al. 1993). Biological control of S. noctilio (Neumann et al. 1987) implies that the wasp had been in the Cape Peninsula for at least two years before its discovery. The recent arrival of S. noctilio is corroborated by the sex ratio of 10.1 males: 1 female (n = 3204) emerging from logs collected in Tokai Plantation, when compared with the ratio of 3 males: 1 female recorded in Australia (Neumann et al. 1987). An abundance of host trees and a scarcity of wasps presumably results in females failing to mate on arrival at a host tree.

In the absence of its natural enemies, S. noctilio is expected to become a major pest in the winter as well as all-year rainfall regions of South Africa due to the Mediterranean climate and the abundance of suitable host trees. Because siricid larvae burrow in wood and the adults are short-lived (5–12 days), S. noctilio is not susceptible to conventional insecticide control (Spradbery & Kirk 1978). A high level of biological control has been attained in Australia through the introduction of the parasitic nematode Deladenus siricidicola Bedding (Neotylenchidae), augmented by four parasitic wasp species (Bedding 1984; Taylor 1976). Trees throughout the southwestern Cape which were infested with S. noctilio larvae were inoculated in May and June 1995 with the virulent Kamona strain (Bedding 1993) of the nematode which was obtained from the Commonwealth Scientific and Industrial Research Organization of Australia. The parasitic wasps will be imported at a later stage.

The fungus was identified by A.P. Baxter (Biosystematics Division of Plant Protection Research Institute, Pretoria) and the wasp by E Kock (Museum für Naturkunde der Humboldt-Universität, Berlin).

REFERENCES


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Survey of anopheline mosquitoes (Diptera: Culicidae) in a malarious area of Swaziland

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In southern Africa, the Anopheles gambiae Giles complex is represented by four species, An. gambiae, An. arabiensis Patton, An. quadrimannulatus Theobald and An. merus Dönitz, with An. gambiae being extremely rare (Coetzee et al. 1993). Anopheles gambiae and An. arabiensis are efficient vectors of malaria parasites whereas An. quadrimannulatus is a zoophilic and exophilic species (Gillies & De Meillon 1968). Anopheles merus has not been implicated in malaria transmission in South Africa (Sharp et al. 1984).

Larval sites of the various species have been described from South Africa (Gillies & Coetzee...