

Flight Period of *Phaenops knoteki* and *Acanthocinus reticulatus*¹

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ABSTRACT

The flight period of *Phaenops knoteki* (Coleoptera: Buprestidae) was extended from the end of May until the middle of August and that one of *Acanthocinus reticulatus* (Coleoptera, Cerambycidae) from middle of June until middle of September.

Introduction

Phaenops knoteki Rtt. (Coleoptera, Buprestidae) and *Acanthocinus reticulatus* Razm. (Coleoptera, Cerambycidae) are secondary bark-boring insects of fir trees. These insects are known from infestations to degraded fir forests, mainly of the southern regions of Greece (Kailidis 1966, Kailidis and Georgevits 1968). However, their importance in earlier epidemic was limited and, in any case, much smaller than that of the various scolytid species (Kailidis and Markalas 1988).

The severe drought of 1988 led to an extensive outbreak of bark-boring insects in 1989 even to the best grown fir forests of the country (Kailidis and Markalas 1990, Markalas 1992). The main insects during this epidemic were *P. knoteki* and *A. reticulatus* whereas the scolytids *Pityokteines spinidens*, *P. curvidens*, *P. vorontzowi* and *Cryphalus piceae* were found in very low population densities (Markalas 1989, 1991).

The existence of *P. knoteki* and *A. reticulatus* at great numbers in 1989 gave us the chance to study their flight periods.

Material and Methods

In order to study the flight period of the two insects mentioned above, log sections received from attacked fir trees at the University Forest of Pertouli had been used. The forest of Pertouli is a natural, selective forest of hybridogenous fir (*Abies alba* x *A. cephalonica*) located in Central Greece at 1,100-1,600 m altitude.

During the epidemic of 1989 more than 13,000 trees of a diameter bigger than 12 cm had died (Markalas 1992). On 2nd of June 1989 14 dying fir trees were cut down at random in various areas of the forest. From the middle of each tree a 60 cm long log sample was received. All log sections were enclosed into dark boxes with a size of 40x40x100 cm and were kept under a roofed outdoor shelter. Each box had four holes of 2.5 cm diameter to each one of which was adjusted a transparent cylindrical jar 5x6.5 cm in size. The adult insects emerging from the attacked log sections were gathered into the jars from which they were collected every 5 days.

Results and Discussion

On June 2nd 1989, the day on which the trees were felled down, it was observed that there were a few exit holes of *P. knoteki* meaning that its flight had already started. In the laboratory the emergence continued until the 20th of August (Fig. 1). However, most of the insects emerged from the middle of June to the end of July. The flight period of *A. reticulatus* started a

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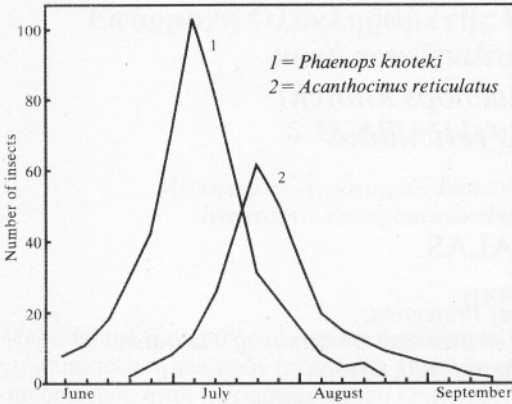


FIG. 1. Flight period of *Phaenops knoteki* and *Acanthocinus reticulatus* in 1989.

bit later (20th of June) and lasted until the 15th of September, with a peak period from early July up to middle of August.

The log sections remained enclosed in the boxes for one more year. During the second flight period (1990) only adults of *P. knoteki* emerged. In general, its flight period was the same with that of the previous year. However, due to the relatively small number of insects the flight curve is not drawn. The percentage of *P. knoteki* emerged in the second year was 19% of the total number of insects.

In summer 1989 a large number of adults of the two insect species emerged in the forest from the dying fir trees. However, the improvement of the physiological condition of the trees has not allowed the epidemic to continue in the next year. Therefore, it was not made possible in 1990 to find even a few trees attacked by the two species. Thus, the flight period for a second year could not be studied.

However, irrespective of this, it seems that the results obtained during 1989 coincide with the few reports available for Greece. Kailidis and Georgevits (1968) had reported that they found adult insects of *P. knoteki* in the forest of Parnitha (Attiki) during June and July, whereas adults of *A. reticulatus* were found in the forest of Pertouli during July and August (Kailidis and Georgevits 1971).

References

- Kailidis, D.S., 1966. Schädlinge der Griechischen Tanne (*Abies cephalonica*) auf stark erodierten Standorten. Anz. f. Schädlingskde 39: 81-85.
 Kailidis, D.S. and R. Georgevits. 1968. Bark-beetle out-

break on fir on Parnis mountain (observations 1962 - 1966). Min. Agric., For. Serv., For. Res. Inst., Bull. No. 20, 64 pp.

Kailidis D.S. and R. Georgevits. 1971. Insects of *Abies* (Biology, Importance, Control). Min. Agric., For. Serv., For. Rest. Inst., Bull. No. 38, 82 pp.

Kailidis, D.S. and S. Markalas. 1988. Dürreperioden in Zusammenhang mit sekundärem Absterben und Massenvermehrungen rindenbrütender Insekten in den Wäldern Griechenlands. Anz. f. Schädlingskde, Pflanzenschutz, Umweltschutz 61: 25-30.

Kailidis, D.S. and S. Markalas. 1990. Dryness and the most destructive secondary bark beetle epidemic on fir in Greece. Ecotopia 8: 38-41.

Markalas, S. 1989. Bark-boring beetles of fir and their significance to the necrosis of greek fir forests. Proc. of the «Necrosis of fir forests», Tripolis 5-6 Dec. 1989.

Markalas, S. 1991. Attack density of bark-boring insects on dying fir trees during the epidemic of 1989. Proc. 4th Nat. Entom. Meeting (in press).

Markalas, S. 1992. Site and sand factors related to mortality rate in a fir forest after a combined incidence of drought and insect attack. Forest Ecology and Management 47: 367-374.

KEY WORDS: Flight period, *Phaenops knoteki*, *Acanthocinus reticulatus*.

Περίοδος Πτήσης των Εντόμων *Phaenops knoteki* και *Acantocinus reticulatus*

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ΠΕΡΙΛΗΨΗ

Τα έντομα *Phaenops knoteki* Rtt. (Col., Buprestidae) και *Acanthocinus reticulatus* Razm. (Col., Cerambycidae) χαρακτηρίστηκαν ως τα σημαντικότερα μεταξύ αυτών που βρέθηκαν να προσβάλλουν την ελάτη σ' όλη την Ελλάδα κατά την εκτεταμένη νέκρωση του έτους 1989. Από το μέσο του κορμού 14 νεκρούμενων δέντρων ελάτης του Πανεπιστημιακού Δάσους Πετρουλίου κόπηκε από ένα κορμοτεμάχιο μήκους 60 εκατ. Όλα τα κορμοτεμάχια εγκλωβίστηκαν σε ειδικά κιβώτια από μοριόπλακες, τοποθετήθηκαν σε υπαίθριο υπόστεγο και τα εξερχόμενα απ' αυτά τέλεια έντομα συλλέγονταν σε τακτά χρονικά διαστήματα. Η περίοδος πτήσης του *P. knoteki* διήρκεσε από τα τέλη Μαΐου έως τα μέσα Αυγούστου, ενώ του *A. reticulatus* από τα μέσα Ιουνίου έως τα μέσα Σεπτεμβρίου.