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First record of a seed-beetle on *Leucaena leucocephala* in West Africa

by Alex Delobel and Clarence Dan Johnson

In December 1994, *Leucaena leucocephala* (Lam.) de Witt seed samples collected in Hann, a suburb of Dakar, did not show any sign of insect infestation. In December 1996, however, a sample of about 50 seeds collected in the same area yielded three specimens of *Acanthoscelides macrophthalmus* (Schaeffer), a bruchid (Coleoptera: Bruchidae) with a distribution in the New World from the southwestern United States to Honduras (Johnson, 1983). In January 1998, a sample of 979 seeds (50 pods) showed an infestation rate by the bruchid of 67%, with minimum infestation rate per pod 26%, and maximum 100%. One or two seed-beetles developed in a single seed. After completing their larval and pupal development within the seed, adults bored a circular hole through the seed coat and emerged. When emergence occurred before pod dehiscence, a second hole was made in the pod wall.

Bruchid larvae and pupae were affected by the Hymenopterous parasitoid *Anisoptemomalus* sp. (Pteromalidae), with a parasitism rate of almost 40%. An

unidentified species of *Eurytoma* (Hymenoptera: Eurytomidae) was also recorded. *A. macrophthalmus* eggs were parasitized by an unidentified species of *Uscana* (Hymenoptera: Trichogrammatidae), a common parasitoid of bruchids which glue their eggs to the tegument of pods or seeds in Africa (Delobel, 1989, Huis et al., 1990).

L. leucocephala pods are tardily dehiscent, and the seeds are mainly disseminated by small rodents and the wind when in pod valves. They are often found in large amounts under host trees. *Acanthoscelides macrophthalmus* (Schaeffer), *A. mankinsi* Johnson, *A. suramerica* Johnson, *Sator pruininus* (Horn) and *S. limbatus* (Horn) feed in *L. leucocephala* seeds in the New World (Bridwell 1918; Johnson 1983, 1984, 1990, personal observation; Hughes & Johnson 1996). Most of these bruchid species are distributed from northern South America to the USA. Only *A. suramerica* is known from South America.

In spite of the apparent facility with which seed-beetles might be dispersed by the trade of seeds, only two of the estimated 750 known New World bruchids (Kingsolver, 1990) had been until recently able to cross the Atlantic and establish in Africa: *Zabrotes subfasciatus* Horn and *Acanthoscelides obiectus* Say, which have become worldwide plagues of stored beans (*Phaseolus vulgaris*) and were probably introduced into Africa via Europe. The recent introduction in South Africa of seed-beetles for the control or containment of introduced leguminous trees considered as "aggressive" has greatly increased that number: *Algarobius prosopis* (Le Conte) and *Neltemius arizonensis* (Schaeffer) have been successfully introduced against South American mesquites (*Prosopis* spp.) (Coetzer & Hoffmann, 1997). According to Nesar (LEUCNET News 3), permission to release *Acanthoscelides macrophthalmus* was recently applied for by the Plant Protection Institute in Pretoria to control *L. leucocephala*.

Until recently *L. leucocephala* has no known seed predator in Africa (Tybirk, 1991). Two hypotheses may explain the presence of *A. macrophthalmus* in the Dakar area. First, the beetle may have been introduced purposely as a biocontrol agent with a view to stabilize *Leucaena* stands in Senegal. This is rather unlikely, as *Leucaena* does not appear to be usually invasive, and to the best of our knowledge, no introduction program exists here. A second hypothesis would be an accidental introduction of infested seeds from Latin America, possibly by a private individual, but more likely by a local institution in charge of reforestation. This is all the more likely as sanitation measures to ensure that seed shipment are free from insects (see Hughes, LEUCNET News 3) may not be 100% efficient, and as emerging *A. macrophthalmus* are quite capable of re-infesting mature seeds: our laboratory

experiments have shown that stored seed stocks will be completely destroyed within a few months if left unprotected.

It must be clear that because a given plant, or form of a plant may be considered as invasive in an area and useful in another, the introduction of limiting insects should be considered with utmost caution, especially in fragile Sahelian ecosystems. The discovery of *A. macrophthalmus* in Senegal* stresses the need for strict and efficient quarantine programs, so that unwanted situations might be avoided. In the present case, the question of whether biocontrol of *Leucaena* would be desirable in Senegal (and in other parts of Western Africa, by the way) has become obsolete before being raised, which is certainly not satisfactory. Numerous seed samples collected from a wide variety of Leguminous trees, both local and introduced, did not harbor *A. macrophthalmus*, indicating that the beetle was probably strictly host-specific and therefore luckily not a threat to native Mimosoideae.

A. macrophthalmus appears to be presently restricted to a limited number of locations in the Dakar area. It is completely absent from Eastern Senegal (D. Bauwens, PRONASEF, personal communication). However, in view of the high infestation rates observed, it may be assumed that the beetle will spread rapidly to other regions, in spite of limitations imposed by local parasitoids, particularly *Anisopteromalus* sp.

* A species of *Acanthoscelides* was reared in 1996 from *Leucaena* sp. Seeds in Northern Queensland (Jones, LEUCNET News 3).

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Contact:

Dr A. Delobel, Laboratoire Orstom/ITA de Protection des stocks, B.P. 2765, Dakar, Sénégal. Email: alex.delobel@orstom.sn

Prof C.D. Johnson, Department of Biological Sciences, Northern Arizona University, Flagstaff AZ 86011, USA.