

# SURVEY AND EVALUATION OF POTENTIAL NATURAL ENEMIES OF *ANOPLOPHORA GLABRIPENNIS* AND *A. CHINENSIS*

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## Abstract

A survey was attempted to find possible new associations between introduced *Anoplophora* spp. and natural enemies from the European fauna. We report here the first results of this survey and of the evaluation of these potential natural enemies based on both field and laboratory tests.

### 1. Natural enemies of *Anoplophora chinensis* in Italy:

For the first time in early 2002, at Parabiago, we found a gregarious egg parasitoid of CLB as hibernating larvae in unhatched host eggs. The new species was described by Delvare et al. (2005) as *Aprostocetus anoplophorae* n. sp. (Hym: Eulophidae).

#### 1.1. *Aprostocetus anoplophorae* n. sp. (Hym.:

**Eulophidae):** At Parabiago, Italy, we determined that the parasitoid activity begins in late June - early July, and both phenologies of the host and of the parasitoid are closely synchronized. Sentinel host plants infested with CLB eggs were attractive for *A. anoplophorae* whereas those infested with ALB eggs were not. However, one ALB egg was found to be attacked by a Chalcid. Molecular methods were used to help in identifying the female specimen found in the ALB egg. Results showed that the female specimen could be assigned to the species *A. anoplophorae*. More field and laboratory tests would be required to precise the degree of specificity of *A. anoplophorae* towards CLB and ALB, and to determine to what extent the susceptibility of ALB to it can be enhanced.

#### 1. 2. *Spathius erythrocephalus* Wesmael (Hym.:

**Braconidae):** In early July 2004, in the field, at Parabiago, 7 newly hatched CLB larvae in a sentinel host plant (*Acer negundo*), were attacked by *S. erythrocephalus*. In the laboratory, fertilized *S. erythrocephalus* females aged 5 to 42 days old were able to successfully attack both ALB and CLB hosts. At 22 °C, their progeny in *Anoplophora* hosts developed (from egg laying through adult

emergence) in 30 days. Longevity of *S. erythrocephalus* females and males was  $48.7 \pm 4.8$  days, and 42 days, respectively. The ability of *S. erythrocephalus* females to detect and to attack very early stages of the targets is noteworthy. Further evaluation of the new associations *S. erythrocephalus* - *Anoplophora* spp. is being considered.

**2. *Sclerodermus* spp. (Hym.: Bethyridae):** In the laboratory, host acceptance and host suitability were studied by rearing *Sclerodermus abdominalis* (SA), *Sclerodermus* sp. SC1, and *Sclerodermus* sp. SC4 on various host species, in small plastic containers. *S. abdominalis* paralyzed and parasitized small hosts as *P. rufipes* and *P. testaceus*, and small larvae of ALB as well, but it was less effective in neutralizing big larvae of ALB. More successful attacks of big ALB larvae were performed by groups of *Sclerodermus* females. A study of the search rate of a host by SC1 and SC4, using living rooted cuttings of *Salix* sp. inoculated with big larvae of *Lamia textor* (Col.: Cerambycidae) showed that SC4 females performed better than SC1 females in reaching and paralyzing a host. However, in the wet galleries bored under the bark of living plants the preservation of the attacked hosts was poor. The species of *Sclerodermus* tested may be more effective against cerambycids attacking dying or dead trees or branches where they find a dry habitat. However, more tests on the search rate of SC1 and SC4 are being planned using young larvae of ALB in living plants.

## References

Delvare, G., M.-C. Bon, F. Hérard, C. Cocquempot, M. Maspero, and M. Colombo. 2004. **Description of *Aprostocetus anoplophorae* sp. n. (Hymenoptera, Eulophidae), a new egg parasitoid of the invasive pest *Anoplophora chinensis* (Förster) (Coleoptera, Cerambycidae).** Ann. Soc. Entomol. Fr., 40 (3-4): in press.