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# *ALTICA AENESCENS* (WEISE, 1888) (COLEOPTERA : CHRYSOMELIDAE) : A NEW FLEA BEETLE FROM BELGIUM AND HOW TO DISCRIMINATE IT FROM *ALTICA LYTHRI* AUBÉ, 1843

by

VERDYCK PETER (1), DE BRUYN, L. (1), HULSELMANS, J. (1), SCHEIRS, J. (1) and TIMMERMANS, J.-P. (2)

(1) Evolutionary Biology Group, Department of Biology
(2) Laboratory of Cell Biology and Histology, Department of Morphology
University of Antwerp (RUCA),
Groenenborgerlaan 171, B-2020 Antwerpen, Belgium

## SUMMARY

*Altica aenescens* (WEISE, 1888) is recorded for the first time from Belgium. A comparison is made between the morphological characteristics of *A. aenescens* and the closely related *Altica lythri* AUBÉ, 1843, especially in what concerns the SEM morphology of the male genitalia.

*Key words : Alticinae, Altica sp.*, characterisation, male genitalia

## INTRODUCTION

From the genus *Altica* (Coleoptera : Chrysomelidae) 13 species are known in Northern Europe (LUCHT, 1987), including several groups of sibling species (KEVAN, 1962 ; KRÁL, 1966 ; PHILLIPS, 1979).

KRÁL (1966) gives a detailed overview of the nomenclatural and systematic confusion within the species-complex *A. aenescens* (WEISE, 1888), *A. lythri* AUBÉ, 1843 and *A. ampelophaga* (GUÉRIN, 1859). All are larger species (> 4 mm), without strongly pronounced humeral cali and with two longitudinal keels on the ventral part of the aedeagus. Correct identification of these species is only possible after studying the male genitalia (KRÁL, 1966 ; MOHR, 1966) and from a knowledge of the host plants. *A. aenescens* is a northern species (KRÁL, 1966) feeding on *Betula sp.*. *A. lythri*, which is a very common species in Belgium, feeds on *Epilobium sp.* and *Lythrum salicaria*. *A. ampelophaga* feeds on *Vitis sp.* (KRÁL, 1966) and has a more southern distribution.

DERENNE (1963) only reports *A. lythri* from Belgium. LUCHT (1987) mentions the species from the Benelux, but not from which country.

## MATERIAL AND METHODS

Material belonging to the complex discussed by KRÁL (1966), was found in a malaisetrap and two pitfall traps, placed in the nature reserve « Groot Schietveld » (Brasschaat, FS.08), during the month of May 1989, in a habitat dominated by *Calluna vulgaris* and *Erica tetralix*, with several forest patches of *Betula pendula* and *Myrica gale*. Additional animals were caught on *Betula pendula*, using a sweepnet. This material was compared with animals caught on *Epilobium hirsutum* in Deurne.

For identification of the *Altica* species the genitalia were dissected and mounted on aluminium stubs with double sided Scotch tape, sputtercoated with gold and examined with a Phillips Scanning Electron Microscope 515, at an accelerating voltage of 20 kV. The total width (broadest part elytra) and length (frons-apical suture elytra) of the beetles were measured using a Wild Censor (accuracy 0.005 mm) attached to a Wild M5 binocular microscope.

## RESULTS

The specimens caught on *Betula sp.* and those found in the malaisetrap were identified as *A. aenescens* (WEISE, 1988), a species new to Belgium. In the malaisetrap 3 males and 9 females were caught. The material swept from *Betula* consisted of 2 males and 34 females. The specimens caught on *Epilobium hirsutum* (7 males and 11 females) were identified as *A. lythri.* Identification is based on study of the male genitalia and knowledge of the hostplant.

All external morphological characters used by Král (1966) to distinguish between *A. aenescens* and *A. lythri*, overlap in variability. In most cases the body coloration of *A. aenescens* shows a violet faint on a dark blue colouration, which is not present in *A. lythri.*

The body lengths (tl) of males and females of the two species do not differ significantly (Mann-Withney U test) (Table 1). Both for males and for females pronotum width (pw) differs significantly between species (Mann-Withney U test, $p < 0.05$) (Table 1).

For a correct identification, a study of the genitalia is necessary. The genitalia of all male specimens were studied using SEM. We give a diagnosis and a clear description of the male genitalia of *A. aenescens* and *A. lythri*, illustrated with SEM pictures. The aedeagi of both species are subtruncate and nipple-shaped at the apex (Fig. 1). Ventrally two longitudinal keels are present. There are no visible differences in the basal foramen. In both species the median apical part on the dorsal side (Fig. 1 : 2, 5) is divided into three subparts. Ventrally both (Fig. 1 : 1, 4) have lateral depressions at the apices.

TABLE 1

Basic statistics of the body measurements. — lythri, *Altica lythri*; aenes, *Altica aenescens*; m, male; f, female; char., character measured; tl, total body length; pw, pronotum width; n, number of animals measured; min., minimum length; max., maximum length; st.dev.; standard deviation; M-W U test, results Mann-Withney U test.

| species | sex | char. | n | min. | max. | mean | st.dev. | M-W U test |
|---|---|---|---|---|---|---|---|---|
| lythri | m | tl | 7 | 4.175 | 4.600 | 4.407 | 0.148 | U = 11.500 |
| aenes. | m | tl | 5 | 4.150 | 4.925 | 4.605 | 0.336 | n.s. |
| lythri | f | tl | 10 | 4.700 | 5.400 | 5.103 | 0.229 | U = 45.000 |
| aenes. | f | tl | 10 | 4.700 | 5.500 | 5.085 | 0.257 | n.s. |
| lythri | m | pw | 7 | 2.075 | 2.250 | 2.150 | 0.066 | U = 3.500 |
| aenes. | m | pw | 5 | 2.150 | 2.450 | 2.305 | 0.115 | $p < 0.05$ |
| lythri | f | pw | 10 | 2.275 | 2.600 | 2.465 | 0.087 | U = 23.500 |
| aenes. | f | pw | 10 | 2.325 | 2.800 | 2.553 | 0.128 | $p < 0.05$ |

The aedeagus of *A. aenescens* (Fig. 1 : 4, 5, 6) is parallel-sided and does not broaden at the apex. Both in dorsal and ventral view the aedeagus of *A. lythri* (Fig. 1 : 1, 2, 3) broadens towards the apex.

In ventral view the aedeagus of *A. aenescens* (Fig. 1 : 4) has subapical depressions on both sides proceeding zones of lateral striae which become shorter and fainter and finally disappear halfway along the aedeagus. There is a small median groove that runs for a quarter of the length of the aedeagus starting just behind the apex. Two slender, deep and slightly curved depressions divide the apical third into three zones. In *A. lythri*, in ventral view (Fig. 1 : 1) the subapical depression is also present on both sides, but is deeper and longer than in *A. aenescens*. This depression also proceeds zones of lateral striae, but in this species they are much more strongly developed and extend over half the length of the aedeagus.

In dorsal view the aedeagus of *A. aenescens* (Fig. 1 : 5) has a large median depression at the apex. Between half and three quarters along the aedeagus there is a zone with moderately developed transverse undulations. In *Altica lythri* (Fig. 1 : 2) the zone of transverse undulations is also present, but the central part of the median apical zone is relatively smaller than in *A. aenescens*.

In lateral view the aedeagus of *A. aenescens* (Fig. 1 : 6) is straight and robust. In *A. lythri* (Fig. 1 : 3) the aedeagus is slender (less robust) in lateral view, with

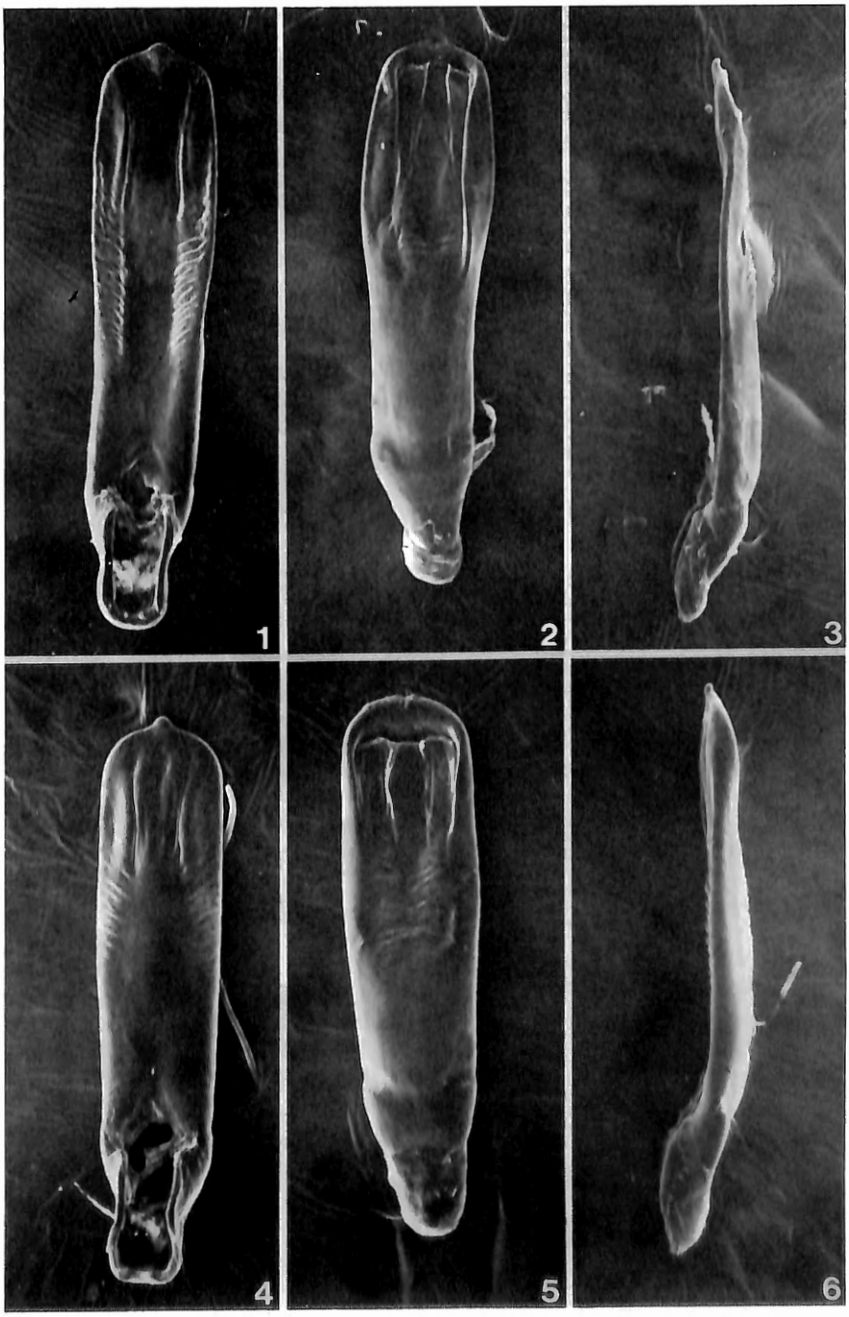


Fig. 1. — Aedeagus *Altica lythri* : 1 : ventral view. 2 : dorsal view. 3 : lateral view. — Aedeagus *Altica aenescens* : 4 : ventral view. 5 : dorsal view. 6 : lateral view.

small lateral margins. The end of the foramen has a « turned-up nose »-like appearance. In *A. aenescens* this uptilting is not as conspicuous.

The spermatheca of both species is very variable and lack species-specific differences. Both belong to the natural group in which the stem of the spermathecal tube is short (KEVAN, 1962).

## DISCUSSION

*A. aenescens* and *A. lythri* are very closely related. Intraspecific variation of these species is large. This agrees with PHILLIPS (1979) who stated that several morphological characters used to segregate the British *Altica* species are in fact unreliable because of intraspecific variation.

As both species feed on very different hostplants, the hostplant is a reliable means of identification. The male genitalia of the two species show morphological differences and indicate that the animals feeding on the two hostplants, are good biological species. Further research should certainly include a study of the genetic isolation of these species.

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