

SCANNING ELECTRON MICROSCOPY DESCRIPTION OF ADULT OF *ANTHICUS FLORALIS* L. (COLEOPTERA-ANTHICIDAE), A STORAGE PEST

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ABSTRACT

This paper illustrates the morphology of *Anthicus floralis* L. adult in scanning electron microscopy. Images of head, thorax, abdomen and their appendages are presented. These details are useful in identification of this small pest affecting various agricultural seed species, also being common in haystack refuses, manure heaps and hotbeds; it was also detected in some products imported from Europe, such as dried fruit, cocoa beans and wheat; conversely, it migrated in new globe areas, such as Jamaica, Hispaniola, Puerto Rico, St. Croix, Guadeloupe and Grenada. The paper intends to add some more details for proper identification of its adult.

Key words: *Anthicus floralis*, adult morphology, scanning electron microscopy (SEM)

INTRODUCTION

Anthicus floralis L. was primarily recorded as a storage pest by Donisthorpe (1987); its first description is due to Hinton (1945).

In some Eastern European countries it is often present in sunflower seed stores : in Yugoslavia (Vukasovic et al., 1966), Bulgaria (Atanasov, 1974) and Romania (Beratlief and Iliescu, 1997), as well as in the Virgin Islands (Pollock and Ivie, 1996).

This paper is designed to reveal particular morphological traits for proper identification of the adult.

MATERIALS AND METHODS

Specimens for study have been metallized by catode gold powdering in a 250 Å thick layer, in argon atmosphere at 4°C, using a vacuum-metallizing equipment SEM-Coating Unit E 5100.

Samples have been examined under a SEM instrument Stereoscan 250 Cambridge Instruments-type.

RESULTS

The adult body is elongate, slightly depressed: its dorsal surface is covered with sparsely fine, short subrecumbent setae. The overall body colour is shining, pale to dark-brown, sometimes nearly black, the basal area of elytra, prothorax, antennae and legs definitely paler; ant-like facies. Length is 2.9 - 3.5 mm, and 0.98 - 1.26 mm wide in its broadest part, the basal third.

HEAD

Head is deflexed, strongly compressed, 0.8 mm wide and 0.25 mm high (Figure 1), narrow at base, surface with moderately deep punctures, coarse between punctures with dense, more or less parallel, oblique or longitudinal microsculpture, and rare, irregularly dispersed subrecumbent setae.

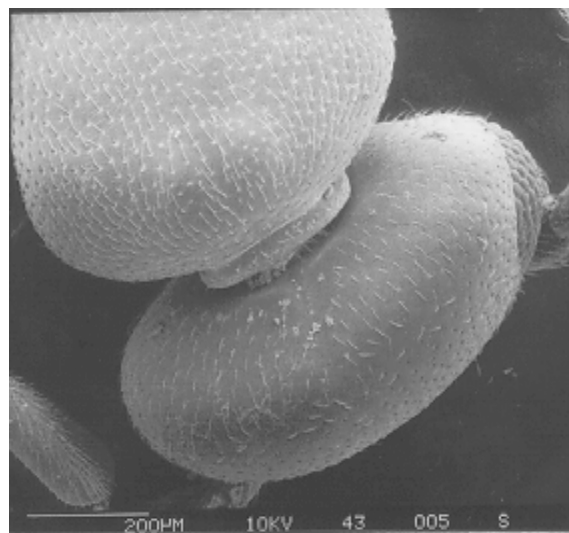


Figure 1. Deflexed head, strongly compressed

Antennae in front of eyes (Figure 2), fili-form, 11-segmented scape larger, conical, next

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5 segments with enlarged apex, segments 7-10 squarish, and the last elongated and pointed, all covered with rigid, erect pillosity; 1.28 - 1.34 mm long.

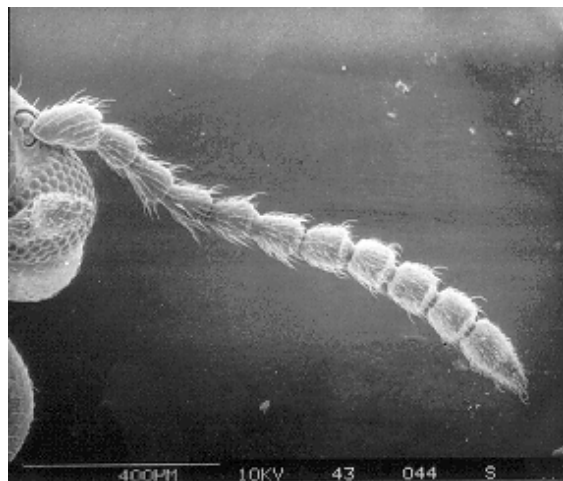


Figure 2. Filiform antenna in front of eyes, 11-segmented

Eyes are large, entire, coarsely faceted, posticous and bellow the antennae. Sparse, rigid setae scattered among facets (Figure 3).

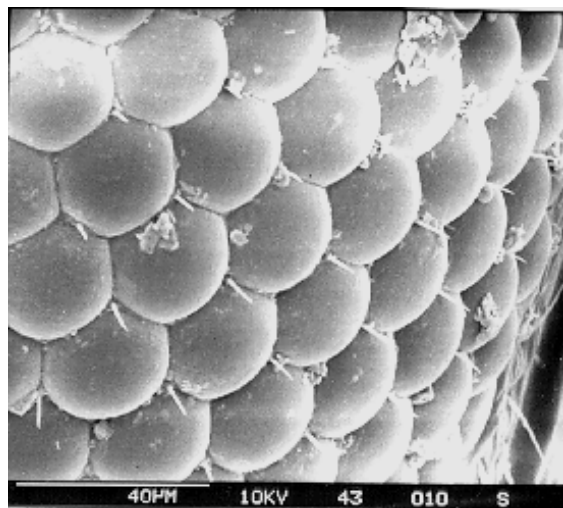


Figure 3. Eyes coarsely faceted with sparse rigid setae among facets

Mouth parts (Figure 4). Suture of clypeus with obsolete frons; anterior edge of labrum very broadly rounded, surface moderate sparsely punctate, apically strongly pectinate; mandibles bilobed; maxillary palpus 5-seg-

mented, the apical segment is hatchet shaped (Figure 5).



Figure 4. Mouth parts with heavy obsolete frons, bilobed mandibles



Figure 5. Maxillary palpus 5-segmented, the apical segment hatchet-shaped

THORAX

Pronotus with short, narrow apical neck, its width being $\frac{3}{8}$ of head diameter (Figure 6); apically with a narrow, conspicuous collar; at its broadest point, which is across the apical fifth is longer (0.73 mm) than broader (0.68 mm), evenly convex except for a small, low gibbosity on each side of middle at apical fifth; procumbent hairs emerge sparsely from pits (Figure 7); triangular scutellum with 0.13 mm

base and 0.08 mm height, with scarce, long procumbent setae (Figure 8).

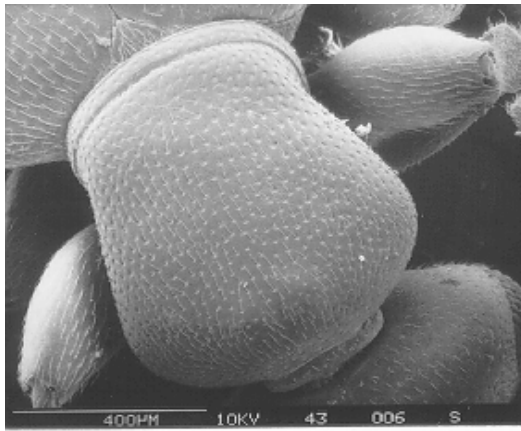


Figure 6. Pronotal apical narrow collar

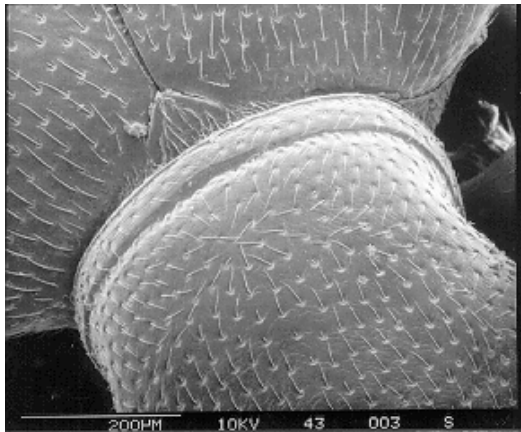


Figure 7. Pronotum with procumbent sparse hairs emerging from pits

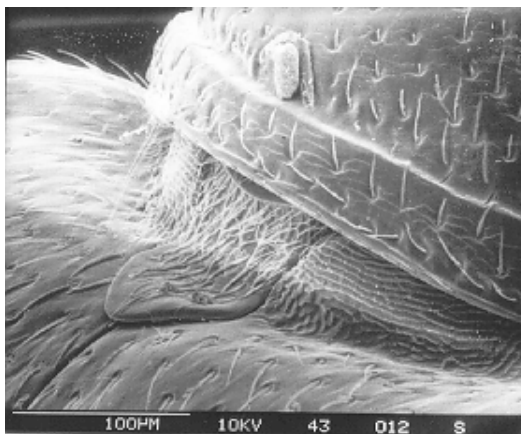


Figure 8. Triangular scutellum on hind pronotal collar

Elytra nearly three times as long as pronotum, and completely cover the abdominal tergites; elytral base with definite shoulders, its

width nearly two times larger than pronotal base. Surface without carinae or striae, with punctures not constituting rows, slightly coarser on basal half of disk, becoming distinctly finer towards the apex; a finely impressed line parallel to suture on apical half of elytra bears punctures and hairs arranged in an unique row (Figure 9).

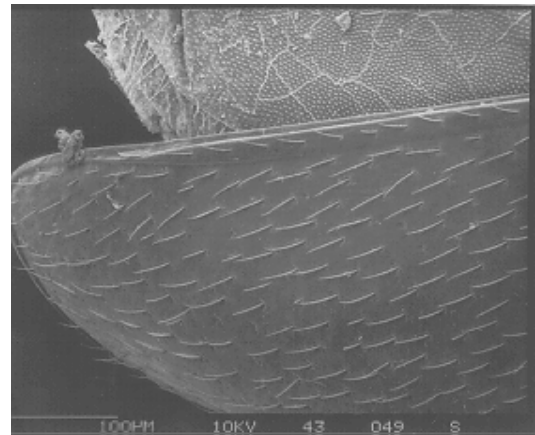


Figure 9. Elytral surface without carinae or striae; elytral suture with punctures and hairy rows

Hind wings with dense, regularly arranged, erected, triangular, white, opaque structures, 3.8/µm high on average (Figure 10).

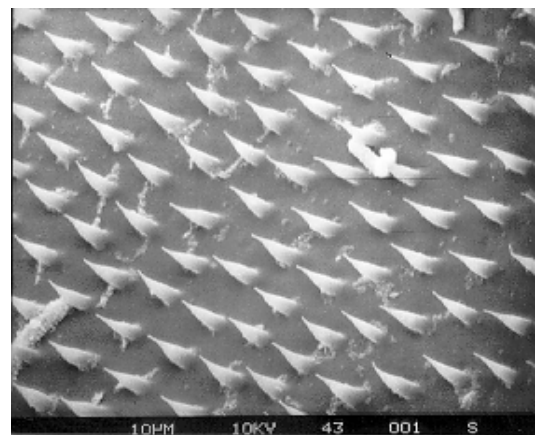


Figure 10. Hind wings with opaque white triangular structures

Legs. The fore coxae are conical and prominent; fore coxal cavities are open behind; hind coxae are but slightly prominent (Figure 11); fore- and mid-tarsi 5-segmented, while

hind-tarsi are 4-segmented; claws are simple, dilated at base (Figure 12).

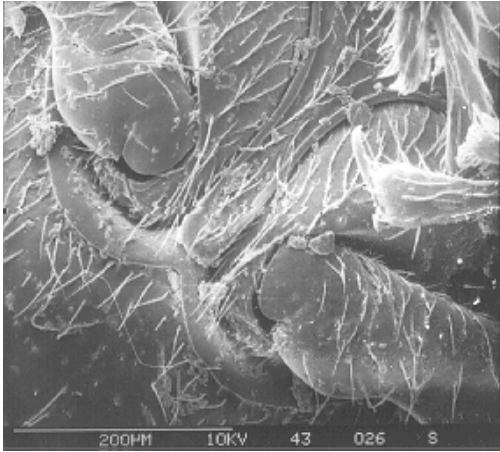


Figure 11. Fore coxae conical and prominent; fore - and mid tarsi 5-segmented



Figure 12. Tarsal claws simple, dilated at base

ABDOMEN

The abdomen has 6 visible, connate sternites, with slight sutures (Figure 13), not prominently microsculptures, with sparse punctures from which procumbent hairs emerge (Figure 14).

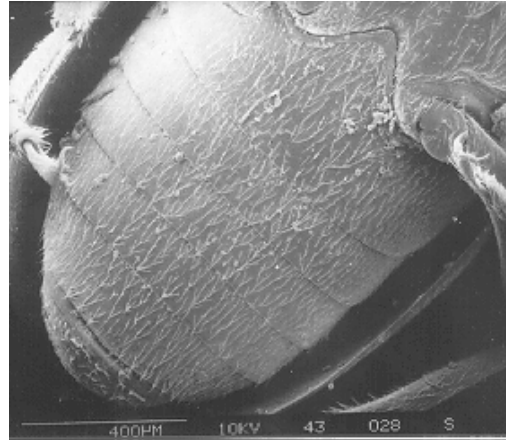


Figure 13. Abdomen with 6 visible, connate sternites with slight sutures, without microsculpture

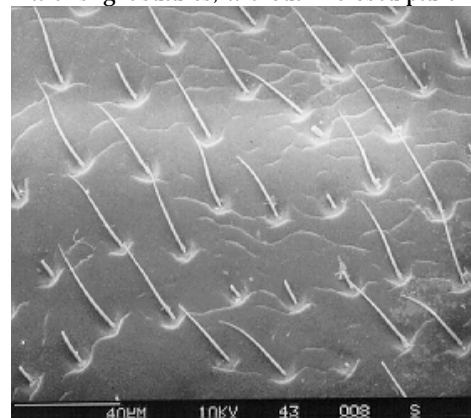


Figure 14. Sternites with sparse punctures, from which procumbent hairs emerge

CONCLUSIONS AND DISCUSSION

Family *Anthicidae* is a group of phytophagous beetles including 1,700 species, most of these being found in decaying vegetation. Hinton (1945) revealed occurrence of a reduced number of species in the Palaearctic area (Europe and Asia), some of these being certainly pests of stored seeds of decayed plant materials, while Pollok and Ivie (1996) described a series of *Anthicidae* in the Isles of the Atlantic Ocean, neighbouring Cuban Isles as Jamaica, Hispaniola, Puerto Rico, Guadeloupe and Grenada.

Scanning Electron Microscopy should be a suitable tool for proper identification of adults of these species.

SEM microscopy also provided accurate description in identity of storages pests, such as: the Angoumois grain moth (*Sitotroga cerealella* Oliv.) (Beratliet, 1979), and the Mediterranean flour moth (*Anagasta kuehniella* Zell.) (Beratliet, 1980), according their egg chorion sculpture.

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