

# Sexing adults of the strawberry blossom weevil, *Anthonomus rubi* (Col., Curculionidae)

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**Abstract:** Of several previously reported methods for sexing the strawberry blossom weevil, the presence of thorns on the intermediary coxae of males is the most convenient and unambiguous. Uniform pitting on the dorsal elytra of females provides the possible selective pressure for male thorn development.

## 1 Introduction

The strawberry blossom weevil, *Anthonomus rubi* (Col., Curculionidae), is a serious pest of strawberry throughout Europe (POPOV, 1996; CROSS and EASTERBROOK, 1998). Components of the male-produced aggregation/sex pheromone have recently been identified and tested in the field (INNOCENZI et al., 2001). During this work it was necessary to sex the weevils trapped, in order to determine the nature of the pheromone and investigate seasonal differences in responsiveness of males and females. Dissection of genitalia is extremely time-consuming and a quicker method was required.

Several studies have reported sexual dimorphism in *Anthonomus* species including tergite structure (AGEE, 1964) and metatibial mucrone morphology (ELLER, 1995). For British and European Anthonominae, rostrum length, rostrum and tibiae curvature, tarsal claw proportions, tergite structure and antennal position have all been reported as possible distinguishing features (FOWLER, 1891; HOFFMAN, 1954; MORRIS, 1977; DUAN et al., 1999). In the male of *Anthonomus rubi*, FOWLER (1891) reported all tibiae to be slightly curved, whereas JARY (1932) reported a difference in the number of abdominal segments and rostrum curvature. BALACHOWSKY and MESNIL (1935) attributed a powerful thorn to each of the intermediary 'hips' of male *A. rubi*, as did HOFFMAN (1954), although MORRIS'S review of British Anthonominae (MORRIS, 1977) made no mention of this male-specific character despite listing sexually dimorphic characters for other congeneric species.

The aim of this study was to assess which of the sexually dimorphic characters reported previously in the strawberry blossom weevil was the most practical and reliable as a sexing method.

## 2 Materials and methods

The weevils examined in this study had been caught between May and August 1999 using sticky traps with an additional coating of polybutene sticky (Oekotak; Oecos, Kimpton, UK), baited with various synthetic pheromone blends. After removing the glue with hexane, the weevils were stored in 70% ethanol before examination with a standard binocular microscope at 64× magnification. Scanning electron micrographs were obtained using a Jeol JSM-5310LV scanning microscope (Jeol Ltd., Welwyn Garden City, UK), operated in low vacuum (21 Pa) in back-scattered electron mode (20 kV accelerating voltage, working distance 18 mm). Image acquisition was carried using an Oxford Instruments Isis 300 with Autobeam software (Oxford Instruments, High Wycombe, UK).

Individuals were examined qualitatively for each of the potentially sexually dimorphic structures reported previously. Twenty individuals of each sex were examined. Confirmation of sex was carried out by inspection of the genitalia.

## 3 Results and discussion

Differences in antennal position and tibiae curvature between the sexes were observed on occasions, although intrasexual differences in these features made discrimination unreliable. Similarly, rostrum length, which was greater in the female, was confounded by large-bodied males possessing long rostrums. One possible discriminating feature which has not been previously reported is the ratio of the rostrum length to the rest of the body. In the female, this ratio was noticeably greater, and was often used as a precursory sexing tool. In order to utilize this method, however, a number of individuals must be co-aligned under the microscope. JARY'S description (JARY, 1932) of differences in tergite numbers was not confirmed.