

Description of an aberration in the female genitalia of the butterfly *Maniola jurtina*

This note describes and illustrates an aberration observed in the genitalia of a female *Maniola jurtina* from Amsterdam, The Netherlands. The specimen had two bursae copulatricae which both contained spermatophores. In external characters, size of genital apparatus and shape of ovipositor lobes it corresponded to a normal specimen of the species. Signa were absent in both bursae.

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Introduction

Butterflies of the genus *Maniola* Schrank (Lepidoptera: Nymphalidae, Satyrinae) are known for their large morphological variation, within single populations as well as continent wide (Ford 1945, Thomson 1973). Given the overlap in wing patterns, habitat selection and geographic distribution of various *Maniola*-species, in certain cases can only be determined on morphology of the genitalia, specimens can only be identified on morphological characters of the genitalia. Comparative research on the structure of the genital apparatus in different *Maniola*-species is therefore essential.

While studying variation in the genitalia for population



Figure 1. *Maniola jurtina* in the field. Photograph: Jan van Arkel/Foto Natura.

Maniola jurtina in het veld.

Andrea Grill¹ & Rob de Vos²

¹Institute for Biodiversity and Ecosystem Dynamics
Faculty of Science
University of Amsterdam
P.O. Box 94766
1090 GT Amsterdam
grill@science.uva.nl

²Zoological Museum Amsterdam
Plantage Middenlaan 64
1018 DH Amsterdam

genetics in the genus *Maniola* we found an aberrant a female *M. jurtina* Linnaeus collected in Frankendael, Amsterdam, in July 2002. This individual possesses two bursae copulatricae, an aberration that has never been described in *M. jurtina* before.

Maniola jurtina (figure 1) is one of the most common butterflies in The Netherlands. It can be observed regularly in most larger parks in the centre of Amsterdam, provided that parts of the meadows are not reaped. The butterflies fly mainly from late June to late July on flower-rich meadows between bushes and trees, often close to water. At the time of collection, early July 2002, females of *M. jurtina* were observed rather commonly whereas males were becoming scarce. This indicates that the emergence of the species in The Netherlands had already begun about a month earlier.

Dissection and photography of the *M. jurtina* specimen from Amsterdam

Like many other butterfly species, *M. jurtina* is protandric: males emerge about one or two weeks before females. Prior to dissection the abdomen of the specimen was separated from the rest of the animal and soaked in a 10% potassium hydroxide (KOH) solution for approximately 15 hours. KOH dissolves the hard chitinous structures of the abdomen, so that it can be dissected without breaking the genitalia. In order to photograph the preparation it was dyed with chlorazol black. To stabilize the samples for photography, they were positioned laterally in a small drop of ethanol (30%), flattened between two glass lids. They were photographed under the microscope (magnification 25x).



Figure 2. Wing characters of the aberrant *Maniola jurtina*: **a** upperside forewing, **b** underside forewing, **c** upperside hindwing, **d** underside hindwing. Photo: Andrea Grill.

Vleugelkenmerken van het afwijkende bruin zanddoogje Maniola jurtina: a bovenzijde voorvleugel, *b* onderzijde voorvleugel, *c* bovenzijde achtervleugel, *d* onderzijde achtervleugel.

Description of the aberration

External characters (figure 2): length of forewings (from base at costa to the apex, without fringes) 22.6 mm; wings show the common pattern of a normal *M. jurtina* on upper- and underside.

Genitalia (figures 3a, b): size of genital apparatus and shape of ovipositor lobes as to be expected in normal *M. jurtina* (e.g. Thomson 1973). Two bursae and two ducti bursae. Size and length of first ductus bursae comparable to other individuals of the same species. Second bursa smaller and ductus bursae shorter. Both bursae shaped normally, not deformed or atrophied; signa absent in both. Both bursae contain a spermatophore.

Discussion

Aberrations in the genital apparatus and wing patterns are not uncommon in Lepidoptera. In the genus *Maniola*, for example, a gynandromorph *M. telmessia* (Zeller) from the Greek island of Fourni has been described by Olivier & Coutsis (1990). That specimen was an almost bilateral gynandromorph. It had male and female parts of the genital apparatus, and left wings were entirely female whereas the right wings were entirely male.

The *M. jurtina*-specimen described in this paper possesses the normal characteristics of a female *M. jurtina* in wing pattern and size, only the genitalia are aberrant. To our knowledge, a female nymphalid butterfly with two bursae copulatrixes has never been reported elsewhere. Consequently, we suppose that what we observe here is indeed a very rare aberration. However, such records remain mostly of anecdotal interest. As these divergent individuals are mostly sterile, they usually have no evolutionary influence on the gene

pool of a population. Notably, in the case of the Amsterdam *M. jurtina*, both bursae contained spermatophores and were therefore presumably fertilized. It is not out of question that the butterfly would have laid fertilized eggs and produced viable offspring if it would not have ended up in our net.

References

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Samenvatting

Beschrijving van een afwijkend vrouwelijk geslachtsorgaan van het bruin zanddoogje *Maniola jurtina*

Vlinders uit het genus *Maniola* staan bekend om hun grote morfologische variatie. In 2002 werd in Frankendael, Amsterdam, in het kader van een studie naar de variatie van de genitaliën en vleugeltekening binnen dit genus een aantal exemplaren van het bruin zanddoogje (*Maniola jurtina*) verzameld. In juli werd een afwijkend vrouwtje gevangen dat twee complete bursae copulatrixes bleek te bevatten. Bovendien zat in beide een spermatofoor. Dit kan erop wijzen dat beide bursae ook fertiel waren. Zover nu bekend moet dit een uitzonderlijk zeldzame afwijking zijn waarvan nooit eerder melding is gemaakt.

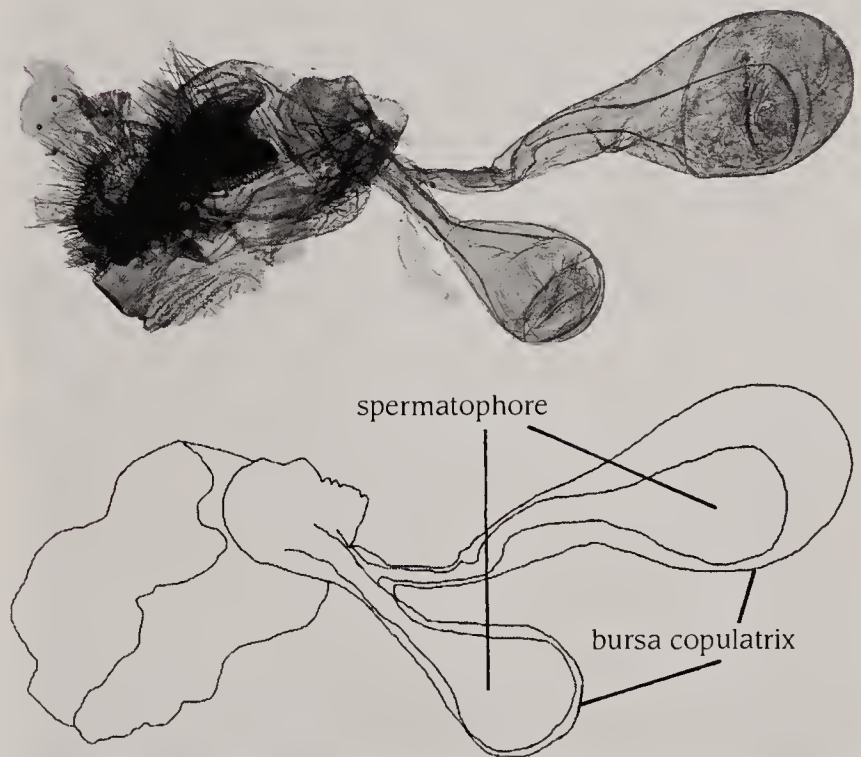


Figure 3. Genitalia of the aberrant female *Maniola jurtina* from Frankendael, Amsterdam, **a** showing two *bursae copulatrixes*. Photograph: Jan van Arkel, **b** the two *bursae* with the spermatophores inside. Illustration: Andrea Grill

Genitaal van het afwijkende vrouwtje bruin zanddoogje Maniola jurtina uit Frankendael in Amsterdam a met twee bursa copulatrixes, b de twee bursae met de spermatoforen.