

## A FIRST CASE OF GYNANDROMORPHISM IN *STENOPTERUS ATER* (LINNAEUS, 1767) (COLEOPTERA, CERAMBYCIDAE)

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ABSTRACT: We describe here the first case of gynandromorphism in *Stenopterus ater* (Linnaeus, 1767). The case refers to one specimen bearing typically male and female features on its right and left sides respectively, therefore representing a case of complete lateral gynandromorphism.

KEY WORDS: Coleoptera, Cerambycidae, *Stenopterus ater*, chimeric, gynandromorph, Italy.

*Stenopterus* Illiger, 1804 is a western Palaearctic genus (mostly circum-Mediterranean), including nine species distributed from Turkmenia and northern Iran to Portugal and from Central Europe (chiefly xerothermic localities) to Jordan and south-western Morocco. Three species are known to occur in Italy: *S. flavicornis* Küster, 1846, *S. rufus rufus* (Linnaeus, 1767) and *S. ater* (Linnaeus, 1767); the latter may be easily recognized by the first segment of antennae longitudinally furrowed on the outer side, antennae and legs partly or entirely black and the different shape of male genitalia (Sama, 1995). *S. ater* is a Western-Mediterranean species, widespread and chiefly common from North Africa to southern France and Italy; local in central Europe (Slovakia) and Balkans, southward to the southern Greece (Peloponnese); unknown in Bulgaria, its occurrence in Hungary, Romania and Crimea needs confirmation (Sama, 2002). In Italy it is recorded from all regions except Trentino-Alto Adige (Sama, 1988; Pesarini & Sabbadini, 1994; Hellrigl, 2010). Its larval development occurs in dead dry wood of branches of nearly all broadleaf trees and bushes. In Italy it is recorded on *Carpinus*, *Ostrya*, *Pistacia*, *Ceratonia*, *Robinia*, *Ficus*, *Ulmus* and others (Sama, 1988, 2002). Adults feed on various flowers, frequently on Umbellifers, from May to September. Morphologically they reach 6-14 mm in length, with pronounced sexual dichroism: elytra are typically yellow-brown in male and completely black in female. Please refer to Sama (1985) for the revision of the genus.

We present here the discovery of a gynandromorphous specimen of *Stenopterus ater* Linnaeus, 1767), taking into consideration that within the family Cerambycidae only three cases of gynandromorphism have ever been documented (Narita et al., 2010).

### MATERIALS AND METHODS

One specimen of the longhorn beetle *Stenopterus ater* (Cerambycidae) with evident gynandromorphous features was collected by one of the authors (M.P.) in San Damiano d'Asti (44°50'06,54"N, 8°04'02,66"E) (Piedmont, Italy) on 4 April 1996 on the inflorescence of an umbellifer. The previous identification, carried

out with a stereomicroscope (Motic SMZ-168) using Pesarini's identification keys (Pesarini & Sabbadini, 1994) was definitively confirmed by the third author. The specimen has partly been damaged during collection and dissection: the left antenna has the last seven joints glued, the two segments missing, the median and the posterior legs, broken during dissection, have been glued.

## DISCUSSION

The specimen, which is 8 mm in length and has female genitalia, is characterized by complete lateral gynandromorphism (Fig. 1-3), bearing typically male and female features on its right and left sides respectively. The right part of body shows longer antenna, elytron yellow-ochraceous and shorter than the last abdominal tergite, legs ochraceous except the clubs of all femora and apices of tibiae and tarsi. The left side of body has shorter antenna (the left antenna is two last segments missing), elytron uniformly black and about as long as the last abdominal tergite, femora and tibiae completely black.

Gynandromorphism is an infrequently-occurring abnormality in which phenotypically male and female parts are present in a single individual. It occurs during the embryonic phase of development and can be expressed either as bilateral asymmetry or mosaic areas. There are several causes of individual gynandromorphism: loss or damage to sexual chromosomes, binucleated egg, and infections due to *Wolbachia* (a frequent endosymbiont in insects) (Narita et al., 2010).

Cases of gynandromorphism are found in various insect groups and are particularly evident in species with pronounced sexual dimorphism and dichroism (Narita et al. 2010). Within the family Cerambycidae examples of gynandromorphism have been reported in *Ergates faber* (Linnaeus, 1760), *Stictoleptura rubra* (Linnaeus, 1758) and *Rhagium (Megarhagium) mordax* (De Geer, 1775) which were described by Balazuc (1952), Weber (1913) and Starzyk (1984) respectively.

Considering that our specimen is laterally gynandromorphous, it is plausible that this abnormality might be due to abnormal embryonic development through the retention of the polar body inside the egg, resulting in two nuclei that were subsequently both fertilized.

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Figure 1. Gynandromorphous specimen of *Stenopterus ater* (Linnaeus, 1767), current status; photograph taken after dissection.



Figure 2. Gynandromorphous specimen of *Stenopterus ater* (Linnaeus, 1767), photograph taken before dissection (dorsa) view) (photo M. Dutto).



Figure 3. Gynandromorphous specimen of *Stenopterus ater* (Linnaeus, 1767) , photograph taken before dissection (lateral view) (photo M. Dutto).