

NOTA / NOTE

New teratological record in Carabidae (Insecta: Coleoptera)
from Tunisia.Samir Ghannem^{1,2}, Sonia Zrelli¹ & Moncef Boumaiza¹

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Abstract: A new case of binary heterodynamic schistomely in an antenna of a specimen of the genus *Licinus* Latreille, 1802 (Coleoptera, Carabidae) is described, being the first record of this kind of teratology from Tunisia.

Key words: Coleoptera, Carabidae, *Licinus*, antennal binary schistomely, Tunisia.

Resumen: Nuevo caso teratológico en Carabidae (Insecta: Coleoptera) de Túnez. Se describe un nuevo caso de esquistomelia binaria heterodinámica en una antena de un ejemplar del género *Licinus* Latreille, 1802 (Coleoptera, Carabidae), siendo el primer registro de este tipo de teratología para Túnez.

Palabras clave: Coleoptera, Carabidae, *Licinus*, esquistomelia antenal binaria, Túnez.

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Introduction

The word teratology is derived from the Greek "τέρας", meaning "monster" (Shawn & Luiz, 2010). However, in modern biological usage, this term refers to the study of malformations, defects, and abnormalities (Shawn & Luiz, 2010). Nichols (1989) defined teratology as "the study of structural abnormalities, especially monstrosities and malformations". Balazuc (1948, 1951, 1955, 1958, 1969) lists the knowledge of teratologies in several groups of insects, makes new observations and provides new data and a systematized nomenclature for the various malformations, allowing later researchers to deal with this interesting aspect of the biology of insects through a systematized study (Castro Tovar et al., 2014). Therefore, the works above mentioned are the basis for the modern study of teratology in insects. Additional discussions can be found in Dallas (1927), Cappe de Baillon (1927), Puissegur & Bonadona (1973). It is important to consider the etiology of malformations, but is not always possible to know their origin. Balazuc (1948) considered four different types of teratologies, caused by: 1) genetic abnormalities; 2) constitutional deficiency in the embryonic development; 3) irregularity in the development caused by external physical or chemical agents; and 4) phenomena associated to parasitism. In any case, these events are capable of modifying the normal anatomic structure of an arthropod, giving as a result a more or less "monstrous copy".

Antennal morphological aberrations are well defined and specified by Balazuc (1948) and Green (1953), but there are no precise data about the frequency of their occurrence in Carabidae (Ortuño & Vique, 2007).

While organizing the collection of the first author in the Faculty of Sciences of Bizerte, University of Carthage, where the specimen is stored, we came across the first known case in Carabidae reported from Tunisia.

Results

Material examined: Tunisia: Ichkeul National Park, 16.I.2013, 1 ex., Samir Ghannem leg.

Description: The specimen here reported was identified as *Licinus punctatulus* (Fabricius, 1792). This carabid presents a binary heterodynamic schistomely on the right antenna (Fig. 1) which displays an anomaly affecting the ninth and the tenth antennomere, which are swollen and the basis of the tenth antennomere is bifurcated.

It is interesting to speculate on the probable cause of such anomaly. A simple mechanical pressure does not seem to be a reasonable explanation, although the pressure was in the early stages. In this case the antenna abnormality lies in some unusual influence during embryonic period. In comparison to teratological reports for some other insect groups, those for the Carabidae are rather infrequent but diverse. Examples of these reports are presented in Table 1.

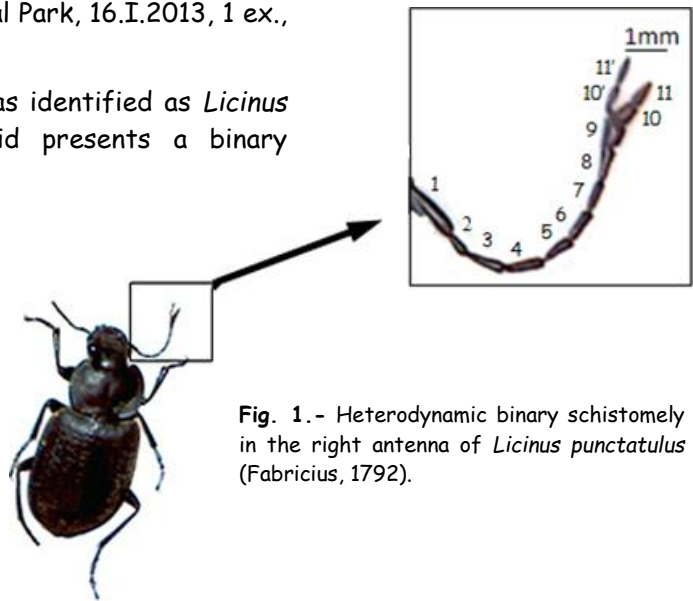


Fig. 1.- Heterodynamic binary schistomely in the right antenna of *Licinus punctatulus* (Fabricius, 1792).

Table 1.- Examples of teratology in Carabidae.

Species	Affected parts	References
<i>Carabus (Archicarabus) nemoralis</i> Muller, 1764	Maxillary palpus	Ferreira (2011)
<i>Carabus (Chrysocarabus) lineatus</i> Dejean, 1826	Antenna	Ortuño & Vique (2007)
<i>Lamprias cyanocephalus</i> (Linnaeus, 1758)	Antenna	Ortuño & Vique (2007)
<i>Amara (Amara) montivaga</i> Sturm, 1825	Mesotarsus	Ortuño & Vique (2007)
<i>Elaphrus (Elaphrus) riparius</i> (Linnaeus, 1758)	Protarsus	Ortuño & Vique (2007)
<i>Agonum viduum</i> (Panzer, 1797)	Antenna	Ortuño & Vique (2007)
<i>Carabus melancholicus</i> Fabricius, 1798	Mesotarsus	Ortuño & Vique (2007)
<i>Haptoderus amaroides</i> (Dejean, 1828)	Head	Ortuño & Vique (2007)
<i>Bembidion (Notaphus) varium</i> (Olivier, 1795)	Head	Ortuño & Vique (2007)
<i>Iberotrechus bolivari</i> (Jeannel, 1913)	Pronotum	Ortuño & Vique (2007)
<i>Trechus barratxinai</i> Español, 1971	Elytron	Ortuño & Vique (2007)
<i>Stenolophus mixtus</i> (Herbst, 1784)	Antenna	Ortuño & Vique (2007)
<i>Pterostichus melanarius</i> (Illiger, 1798)	Pronotum	Huruk (2008)
<i>Carabus (Hadrocarabus) lusitanicus</i> F. ssp. <i>brevis</i> (Dejean, 1826)	Antenna	Ortuño (1987)
<i>Steropus globosus</i> (Fabricius, 1792)	Leg	Ortuño & Zaballos (1988)
<i>Agonum sexpunctatum</i> (Linnaeus, 1758)	Leg	Ortuño & Zaballos (1988)
<i>Anisodactylus heros</i> (Fabricius, 1801)	Leg	Ortuño & Zaballos (1988)
<i>Poecilus kugelanni</i> (Panzer, 1797)	Antenna	Ortuño & Zaballos (1988)
<i>Carabus (Hadrocarabus) macrocephalus</i> (Dejean, 1826)	Antenna	Ortuño & Zaballos (1988)

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