

A teratological case in antenna of *Nysson tridens* Gerstäcker, 1867 (Hymenoptera: Crabronidae)

İlyas Can¹, Alexander B. Ruchin²

1 Department of Biology, Tokat Gaziosmanpaşa University, Tokat, 60250, Türkiye

2 Joint Directorate of Mordovia State Nature Reserve and National Park “Smolny”, Saransk, 430005, Russia

Corresponding author: İlyas Can (ilyascan41@gmail.com)

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Abstract

A case of asymmetry and hypertrophy on the right antenna in the kleptoparasite wasp *Nysson tridens* Gerstaecker, 1867 is described from Russia. This is the first antennal teratology in the family Crabronidae (Hymenoptera).

Keywords

Crabronidae, *Nysson tridens*, antennal teratology, asymmetry, hypertrophy

Introduction

The Crabronidae family consists of small to medium-sized wasps that live solitary and prey on larvae and adults of insects and spiders. Because of their biology, some family members are important agents in the biological control of pests (Bohart and Menke 1976; Ruchin and Antropov 2019; de Deus et al. 2021).

Teratology is the study of malformations (Asiain and Márquez 2009). The problem of teratology in insects was largely debated by Balazuc (1948, 1958, 1969), who provided a classification of and terminology for different morphological anomalies found in this group of arthropods.

Many anomalies were described in the Hymenoptera order and their terminology was created by Balazuc (1958). Some cases have described symphysoceria or fusions of antennomeres and hypertrophy in antennal articles from various families like Braconidae and Vespidae (Balazuc 1958), Scelionidae (Safavi 1968; Popovici et al. 2014), Platygasteridae (Popovici et al. 2014), and Diapriidae (Comério et al. 2015). Although various anomalies affecting wing venation have been described in genera belonging to Crabronidae (Can 2022), no teratological cases affecting antennae have been reported in the family.

This study aims to present a new teratological example observed in the antennal parts of a male individual of *Nysson tridens* from the Crabronidae family.

Materials and methods

A male specimen with antennal teratology was collected from the European part of Russia in 2023 with Malaise Trap. The examined specimens have been deposited in the collections of the Entomology Research Laboratory, Department of Biology, Tokat Gaziosmanpaşa University (Tokat, Türkiye). The photographs of the specimens were taken using a Leica M205C stereomicroscope controlled by the Leica Application Suite 3 software. The acquired images were then processed with Helicon Focus software. The antennomeres are abbreviated A1–A13 starting from the scape.

Results

This paper reports a teratological male of *Nysson tridens* (Fig. 1a) collected in July 2023 in the Kadomsky District, Ryazan Oblast (24°16'27.7" S / 48°25'19.3" W), Russia. In normal specimens, the number of antennomeres is 13 (Fig. 1b). While the specimen shows the normally formed left antenna, the right exhibits an anomaly affecting antennomeres 4, 5, 6, and 7. Antennomeres 4, 5, 6, and 7 are asymmetric; when viewed from the right angle antennomere 4 has an apical portion that is longer and fused with antennomere 6 and antennomere 5 is reduced to the plate between antennomere 4 and 6 (Fig. 1c). Antennomeres 6 and 7 with hypertrophy (Figs. 1d and 1e).

Discussion

The new anomaly described in this work is the first teratology known in the group of Hymenoptera, the family Crabronidae. The observed anomaly comes from a specimen collected in the wild, so the specimen's status in its pre-adult stages is

unknown. As in most teratology described in wasps, we do not know the genetic or ontogenetic origin of the observed cases.

The importance of antenna morphology in classifying male individuals in the *Nysson* has been highlighted in some studies (de Beaumont 1965). Differences such as indentation or curvature in the last antenna segment, enlargement of the basal 2nd and 3rd antenna segments, and variation in the size of the antenna segments are important in helping species identification (Bitsh et al. 1997). The case detected in this study is an anomaly that is different from the above-mentioned morphological features of male *Nysson* members.

There are probably additional teratological cases in Crabronidae among entomological collections, but these may have gone undetected or have not received sufficient attention. However, this phenomenon may be of most importance to entomologists, as anomalies can lead to problems of taxonomic identification at various levels (species, genus, or even family). With this new teratological case described in *Nysson*, the number of teratology cases published for this family increases, and identifying such teratological cases will help generate interest among researchers and prompt further research.

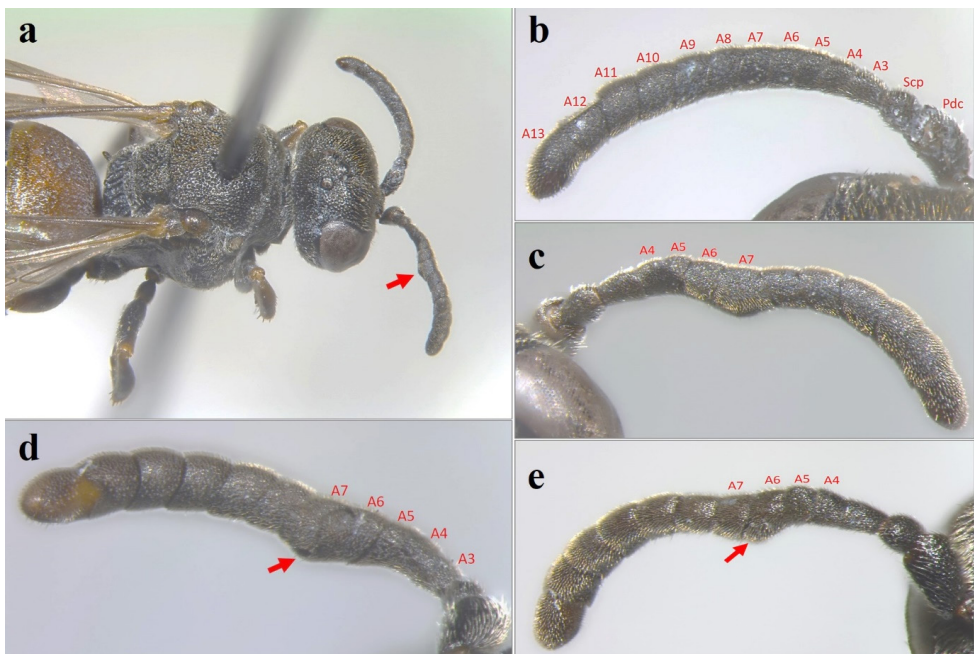


Figure 1. Teratological specimen of *Nysson tridens* ♂. a) habitus in lateral view, dorsal view of teratological specimen; b) normal left antenna; c) teratological right antenna (right sided view); d) teratological right antenna (ventral view); e) teratological right antenna (left sided view).

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