

## Short note

# *Carnus hemapterus* (Diptera: Carnidae) – an unusual parasite on European Roller from Romania

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**ABSTRACT.** An uncommon host-parasite relationship is presented: *Carnus hemapterus* Nitzsch, 1818 (Diptera: Carnidae) parasiting fledgling of *Coracias garrulus* Linnaeus, 1758. This host association has hitherto not been recorded from the territory of Romania.

**Keywords:** *Carnus hemapterus*, *Coracias garrulus*, parasites, juvenile birds

## Introduction

Carnidae, also known as bird flies or filth flies, is a family of flies (Diptera: Acalypratae) with altogether 57 species recorded in Europe [1]. The larvae are saprophagous, developing in decayed organic matter of animal origin, excrement, or carrion. Adults usually occur on or near the breeding substrates of the larvae. Several species are associated with birds' nests; *Carnus hemapterus* Nitzsch, 1818 is particularly specialized, with larvae developing in nest debris and adults feeding semiparasitically on skin secretions or even on the blood of nestlings [2,3]. This species typically occurs in the nests of juvenile owls, falcons, rollers, bee-eaters, and starlings (for review of host birds see [2,4]). Females give birth to larvae that live within the nest and feed on organic debris, and the pupae also overwinter there. Adults, which emerge in spring, are fully winged to be able to fly to host's nests. When they settle on nestlings, their wings break off and they spend rest of life as apterous

creatures on their hosts [5]. The emergence of imagoes is synchronized to the hatching of host nestlings in the subsequent year. They prefer larger juveniles within the nest [6].

## Material examined

*Carnus hemapterus* Nitzsch, 1818 (Fig. 1)

### Published records from Romania: [7–9]

Notes: There are only a few records of this ectoparasitic fly in Romania. The oldest one dates back to 1907, when one individual of *C. hemapterus* was collected from a juvenile saker falcon (*Falco cherrug* Gray, 1834) in Malcoci, Tulcea county [7]. After 90 years, in July 1997, 10 specimens were collected from 4 juvenile of bee-eaters (*Merops apiaster* Linnaeus, 1758), in Frătești, Giurgiu county [8]. The third record comes from Valea village (Mureș county), where 14 specimens were collected in 25. May 2002 from 3 juvenile of Common buzzard (*Buteo buteo* Linnaeus, 1758) from the same nest [9]. The adult of *C. hemapterus*



Figure 1. The wingless female of *Carnus hemapterus* Nitzsch, 1818 collected from fledgling *Coracias garrulus* Linnaeus, 1758 (scale bar: 1 mm)

reported in this paper represent the fourth record of the species for Romania.

**New faunistics record:** Romania, Biruinta, 43°59'37.9"N 28°31'28.8"E, 38 m a.s.l., 12.7.2023,



Figure 2. The fledgling of European roller *Coracias garrulus* Linnaeus, 1758 (documentary photograph)

1 ♂, host: *Coracias garrulus* Linnaeus, 1758 (fledgling) (Fig. 2).

Notes: In the territory of Romania, this parasite has hitherto not been recorded on this host.

The here recorded female appeared to be wingless but still carried the basal parts of wings (Fig. 1), because the majority of the them was broken off. The enlarged abdomen indicates a gravid specimen, with fully developed eggs. These apterous adult flies live only on the nestlings before and during the development of the plumage and disappear later on [8,10,11].

## Conclusions

According to Roulin et al. [12], infestations by *C. hemapterus* appear to be rather harmless for the host juveniles. But on the other hand, the faeces and blood remains from these ectoparasitic flies can contaminate the eggshell surface of host birds, and increase the chance of embryo death [13,14]. Also, Robitzky [15] and Hoi et al. [16] found that very heavy infestation of young birds with *C. hemapterus* may have a negative impact on breeding and development nestlings of falcons and European bee-eaters respectively. Based on this data, it is obvious that only the massive parasite infestation may have an effect on the development of the host bird.

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