

BRIEF COMMUNICATION

Open Access



# The moose throat bot fly *Cephenemyia ulrichii* larvae not found developing in roe deer

Petra Heikkinen, Marja Isomursu and Antti Oksanen\*

## Dear editor,

In 2008, we published a report on *Cephenemyia ulrichii*, the moose (*Alces alces*) throat bot in roe deer (*Capreolus capreolus*) [1]. The identification was based on morphology of two 3rd instar larvae of around 50 seen in a spring hunted roe deer buck shot in Kirkkonummi, Finland. The morphological characteristics utilized in species identification as *C. ulrichii* were especially spines irregularly placed on the anterior dorsal side, while those of *C. stimulator* and *C. trompe* are in regular rows similar to those on the ventral surfaces. The only deviation we could find from the previously published characteristics [2] was the smaller size, about 26–27 mm long, while those of *C. ulrichii* typically reach a length of 40 mm.

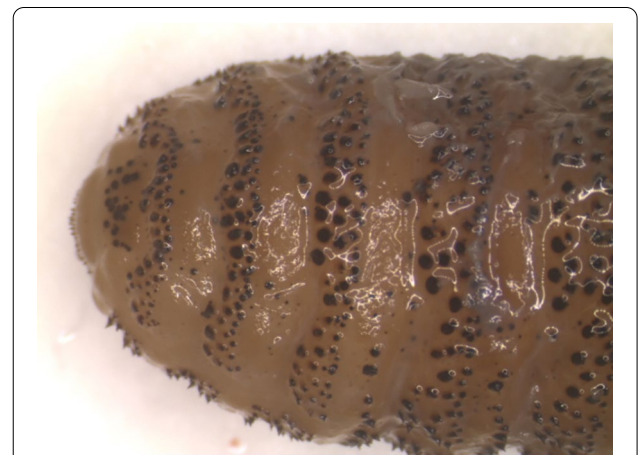
Because there have been a number of reports of throat bots from roe deer in Finland in the last few years, and some of them have genetically been positively identified as *C. stimulator* (unpublished), we took the remaining (third) larva from the original sample and performed limited morphological analysis, which showed the morphology was consistent with the other two larvae previously identified as *C. ulrichii* with irregularly located spines on the anterior dorsal side (Fig. 1). In addition, we performed PCR and subsequent sequencing of the CO1 gene, which unequivocally proved the larva to be *C. stimulator*, not *C. ulrichii*.

The discrepancy between morphological and genetic diagnoses shows that morphological characteristics of *Cephenemyia* spp. 3rd instar larvae are not unambiguous.

Fortunately, genetic analyses are easily performed now, unlike just 15 years ago.

To our knowledge, no further reports on *C. ulrichii* in roe deer have been published since our initial, hereby cancelled, one in 2008. We then concluded: “Generally, all *Cephenemyia* species are very host specific and thereby also well adapted to their hosts.” This is even truer than we then had reason to believe.

*Cephenemyia stimulator* has since been documented in Skåne, Southern Sweden, in 2012 [3].



**Fig. 1** Dorsal anterior view of the *Cephenemyia stimulator* larva collected 2007, analyzed 2022

\*Correspondence: Antti.Oksanen@ruokavirasto.fi

Animal Health Diagnostic Unit (FINPAR), Finnish Food Authority, Oulu, Finland



### Author contributions

PH carried out the molecular genetic studies and the sequence alignment. AO drafted the manuscript. All authors read and approved the final manuscript.

### Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

### Declarations

#### Competing interests

The authors declare that they have no competing interests.

Received: 17 December 2022 Accepted: 19 December 2022

Published online: 30 December 2022

### References

1. Nilssen AC, Isomursu M, Oksanen A. The moose throat bot fly *Cephenemyia ulrichii* larvae (Diptera: Oestridae) found developing in roe deer (*Capreolus capreolus*) for the first time. *Acta Vet Scand.* 2008;50:14. <https://doi.org/10.1186/1751-0147-50-14>.
2. Zumpt F. *Myiasis in Man and Animals in the Old World*. London: Butterworth Co; 1965.
3. Molander M. Rådjurets nässtyng *Cephenemyia stimulator* (Diptera: Oestridae) påträffat i Skåne: En ny plåga för de svenska rådjuren a first Swedish record of the roe deer botfly *Cephenemyia stimulator* (Diptera: Oestridae). *Entomologisk Tidskrift.* 2013;134:69–75 (ISSN 0013-886x).

### Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Ready to submit your research? Choose BMC and benefit from:

- fast, convenient online submission
- thorough peer review by experienced researchers in your field
- rapid publication on acceptance
- support for research data, including large and complex data types
- gold Open Access which fosters wider collaboration and increased citations
- maximum visibility for your research: over 100M website views per year

At BMC, research is always in progress.

Learn more [biomedcentral.com/submissions](https://biomedcentral.com/submissions)

