

# Urogenital myiasis caused by *Lucilia sericata* (Diptera: Calliphoridae) in a domestic rabbit in Italy

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## Summary

The report describes a case of urogenital myiasis in a domestic rabbit *Oryctolagus cuniculus* L. (Lagomorpha: Leporidae) caused by *Lucilia sericata* (Meigen; Diptera: Calliphoridae) in region Emilia-Romagna (Northern Italy). The case, occurring in June 2018, is the first one involving *L. sericata* as an agent of myiasis in a domestic rabbit in Italy. Species identification was based on morphological investigations of males through identification keys. The rabbit developed the urogenital myiasis as a consequence of chronic enteritis causing an accumulation of faeces in the perianal and perineal region.

## Introduction

Myiasis is commonly defined as a form of parasitism of vertebrates (including humans) by larvae of Diptera actively feeding on live or dead host tissue (Zumpt 1965). According to the anatomical localization, it is classified as auricular, cutaneous, gastrointestinal, nasopharyngeal, ophthalmic and urogenital (Hall and Smith 1993, Scholl *et al.* 2009, Francesconi and Lupi 2012) or on the basis of parasite-host relationship as accidental, facultative or obligatory (Hall and Smith 1993, Scholl *et al.* 2009). In domestic rabbits, several cases of traumatic myiasis have been reported worldwide – mostly caused by species of the family Calliphoridae (Bisdorff and Wall 2006, Cousquer 2006, Druce 2015). This report describes a rare case of urogenital myiasis in a domestic rabbit diagnosed in Northern Italy.

## Case report

A 6-year-old privately-owned female rabbit, *Oryctolagus cuniculus* L. (Lagomorpha: Leporidae),

owned in Alfonsine (Ravenna, Emilia-Romagna, Northern Italy) and affected by chronic enteritis, was brought on 19 June 2018 to the local veterinary clinic. During examination, the veterinarian detected an infestation by dipteran larvae in the vaginal vestibulus (Figure 1). No lesions were apparently visible on the mucosa. After taking photographs of the infestation site, the veterinarian mechanically removed the larvae, collecting a total of 18 live larvae and prescribed a therapy with antibiotics (enrofloxacin) to treat the enteritis. The larvae were stored in a plastic test tube sealed with a clean cotton cloth. The larvae,  $9.36 \pm 0.62$  mm long, were brought to the laboratories of the Department of Life Sciences and Biotechnology, University of Ferrara (Ferrara, Italy) for morphological investigations. Three larvae were killed by quick immersion in hot water (about 90 °C), fixed and stored in 80% ethanol. The other larvae were reared to adults in plastic boxes containing about 90g of ground beef, at  $25 \pm 2$  °C 50% relative humidity and a 16/8 (L/D) photoperiod. Once reached the adult stage, torpor was induced into



**Figure 1.** Urogenital myiasis in a domestic rabbit by *Lucilia sericata*. Genital region showing the vaginal vestibulus with dipteran larvae. The inset shows a detail of the genital opening with dipteran larvae.

flies by exposure to CO<sub>2</sub>. Each fly was placed in an individual test tube, killed by exposure to - 20 °C and stored in a freezer. Species identification was based on morphology of males examined under a Nikon SMZ 800 stereomicroscope (Nikon Instruments Europe, Amsterdam, The Netherlands), using the identification key of Szpila (Szpila 2012). Based on morphological investigations according to identification keys, the species causing the myiasis was identified as *Lucilia sericata* (Meigen; Diptera: Calliphoridae).

## Discussion

This is the first case of myiasis by *L. sericata* ever reported in a rabbit in Italy.

Myiasis by *L. sericata* have been reported in rabbits in other European countries, such as Netherlands (Leegwater-van der Linden 1976), Austria (Hinaidy and Niebauer 1979, Hinaidy and Frey 1990) and United Kingdom (Bisdorff and Wall 2006, Turner et al. 2018), and also in Turkey (İpek and İpek 2012) and USA (Hall 1979). In United Kingdom *L. sericata* is recognized by veterinarians as the species

most frequently causing myiasis in rabbits, with devastating and sometimes fatal consequences (Turner et al. 2018). In Italy, *L. sericata* has been described as an agent of myiasis in cats (Principato and Cioffi 1996, Pezzi et al. 2015, Pezzi et al. 2017), dogs (Principato and Cioffi 1996, Bonacci and Brandmayr 2016) and humans (Majocchi 1920, Dutto et al. 2010, Berlot and Calderan 2017, Dutto and Vanin 2018).

Only another case of myiasis in a rabbit has been reported to date in Italy, involving another species of the genus *Lucilia*, *Lucilia caesar* L. (Principato and Cioffi 1996). The myiasis was localized in the auricular region. A third species of the genus, *Lucilia eximia* (Wiedemann) was reported as agent of myiasis in rabbits in Brazil, causing myiasis in the perineal region (Moretti and Thyssen 2006).

For egg laying, females of *L. sericata* are attracted by soiled hair and skin (Cousquer 2006). In domestic rabbits, accumulation of faeces and urine in the perineal region may attract dipteran females and contribute to develop myiasis (Druce 2015). A case of debilitation by *Pasteurella multocida* (Proteobacteria: Pasteurellaceae) with accumulation of faeces in the perineal region has been described as causing urogenital myiasis in the vulva ('vulvomyiasis') of a rabbit in Austria (Hinaidy and Niebauer 1979). Post-partum problems may also underlie urogenital myiasis (Hall 1979). Urogenital myiasis can be classified as external or internal (Francesconi and Lupi 2012); in the case reported here, the condition favouring the development of external urogenital myiasis was chronic enteritis leading to faeces accumulation around the anus. Although all larvae were mechanically removed and a systemic antibiotic therapy was applied, the debilitated rabbit died after two days.

Myiasis are serious parasitic diseases whose prevention involves proper management of hygiene and animal health (Choe et al. 2016). The case of myiasis by *L. sericata* described here in a domestic rabbit in Italy emphasizes the need for synergies between veterinarians and entomologists, not only for a correct identification of the species and for a proper therapy, but also to develop suitable and effective educational programs aimed to pet owners.

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