

Editöre mektup / Letter to Editor

The first report of *Oxyspirura mansoni* (Spirurida: Thelaziidae) in a long-legged buzzard (*Buteo rufinus*) in Türkiye

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^a 0000-0002-8533-387X^b 0000-0002-0086-8294**D**ear Editor,

The *Oxyspirura* genus, belonging to the Spirurida order Thelaziidae family, typically parasitizes the eyes of various bird species and comprises around 70 species. Among them, *Oxyspirura* (*O.*) *mansoni*, *O. petrowi*, and *O. pusillae* have been reported in domestic and wild birds in North America (Yazwinski and Tucker, 2008). Of these, *O. mansoni* has a global distribution in many tropical and subtropical countries and is a well-known eye worm in poultry, especially domestic chickens (Schwabe, 1951; Islam et al., 1995; Santoyo-De-Estéfano et al., 2014). This species settles on the corneal surface, beneath the third eyelid, in the conjunctival sac, and in the nasolacrimal duct in their hosts (Rodríguez-Tovar, 2008; Yazwinski and Tucker, 2008).

The development of *O. mansoni* is indirect. The eggs laid by adult females in the eye pass through the nasolacrimal ducts to the pharynx, are swallowed, and then excreted in the feces. These eggs are taken up by intermediate hosts, such as cockroaches (*Pynoscclus surinamensis*), where infective larvae develop in about 50 days for the final hosts. When birds ingest these cockroaches carrying infective larvae, they become infected. The infective larvae are released in the gizzard of the birds, migrating towards the eye through the esophagus and pharynx via the nasal lacrimal ducts (Rodríguez-Tovar, 2008; Yazwinski and Tucker, 2008).

Clinical signs of infection in birds include eye irritation, conjunctivitis, and swelling of the third eyelid. Infected birds often scratch their eyes, leading to the formation of an inflammatory fluid causing the eyelids to adhere. Over time, eye worms can cause inflammation of the eyelids, tearing, keratitis, corneal opacity, and visual impairment. If not treated properly, the eye pupils can be completely destroyed (Rodríguez-Tovar, 2008). Parasites are removed with forceps after local anesthesia is applied to the eyes, and levamisole is highly effective in treatment (Tinar, 2011).

In this study presented from Hatay Province, the first case of *O. mansoni* in a Long-legged Buzzard (*Buteo rufinus*) in Türkiye is reported.

During the examination of a Long-legged Buzzard brought to the Hatay Mustafa Kemal University Wildlife Rescue and Rehabilitation Center with a complaint of injury, a total of 7 nematodes were found beneath the third eyelid. The nematodes, collected with forceps by the clinician, were preserved in 70% ethanol for microscopic examination. The obtained parasites were kept in lactophenol for two days for clarification. After clarification, digital cameras attached to a light microscope (Olympus BX53, Olympus DP72) and a stereomicroscope (Leica MC170 HD, Leica M165 C) were used for morphological identification, photography, and description. The diagnosed parasites were preserved in 5% glycerin + 70% ethanol. Microscopic examination revealed that 4 of them were female, and 3 were male. Using the relevant literature (Rommel, 1904; Soulsby, 1982; Tinar, 2011) as a guide, the parasites were diagnosed as *O. mansoni*.

According to the literature, the females of *O. mansoni* are 12-19 mm long and the males 10-16 mm. In this study, males were 10-13 mm long (mean 11.5 mm) and maximum 330-340 µm wide (mean 335 µm); females were 14-16 mm long (mean 15 mm) and maximum 400-430 µm wide (mean 415 µm) (Fig.1-a). The cuticle of this parasite, with a thread-like body structure, is smooth and straight. The pharynx is hourglass-shaped (Fig.1-b). While the tails of males are curled inward, those of females are straight (Fig. 1-a). Males have two unequal spicules at the posterior end. The left spicule, cylindrical in shape, is thin and long, while the right spicule is thick and short (Fig. 1-c). In females, the vulva is located at the posterior end. The size of the developed eggs with embryos is 50-65x40-45 µm (Fig.1-d). In addition, some morphological features were used to distinguish *O. mansoni* from the other eyeworms reported in birds (*O. petrowi*, and *O. pusillae*). These: *O. petrowi* has an undivided buccal capsule and a cervical ala. *Oxyspirura pusillae* has a gubernaculum in males and a cuticularized thickening of the vulva in the females (Pence, 1972; Biswas et al. 2021)

No clinical signs or pathological disorders caused by the parasite were observed in the bird's eye during the physical examination.

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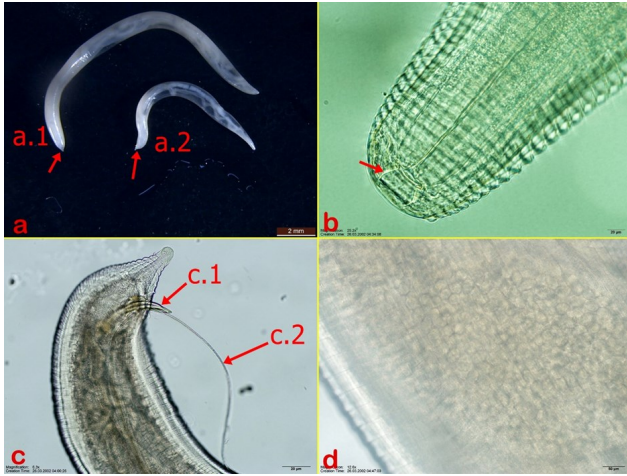


Fig. 1. a) *Oxyspirura mansoni* female (♀) (a.1) and male (♂) (a.2), b) Hourglass-shaped pharynx, c) Left spicule in males (c.2) and right spicule (c.1), d) Eggs with developed embryos in females (1d).

Oxyspirura mansoni has been reported in various bird orders, including Anseriformes, Falconiformes, Galliformes, Columbiformes, Passeriformes, Strigiformes, Piciformes, and Accipitriformes (Rommel, 1904; Schwabe, 1951; Rodriguez-Tovar, 2008; Santoyo-De-Estéfano et al., 2014). This species, which is more frequently detected in chickens (Islam et al., 1995; Santoyo-De-Estéfano et al., 2014; da Silva et al., 2016; da Silva et al., 2018; Biswas et al., 2021), have also been reported in other avian species such as turkey, duck, pheasant, grouse, guinea fowl, peacock, dove, sparrow, quail, pigeon, hawk, and owl (Schwabe, 1951; Tolgay, 1973; Rodriguez-Tovar, 2008; Yazwinski and Tucker, 2008). Although studies describing parasites of the *Oxyspirura* genus in wild birds are limited, most of them are outdated. *Oxyspirura mansoni* has been detected in raptors such as Northern Harrier (*Circus hudsonius*) and Fulvous Owl (*Strix fulvescens*) (Rodriguez-Tovar, 2008). To the best of our knowledge, there is no study reporting *O. mansoni* in a Long-legged Buzzard (*Buteo rufinus*).

In this case, *O. mansoni* parasites were detected in the eye of a Long-legged Buzzard in Hatay, representing the first report of this species in Türkiye.

Data on the prevalence and pathological effects of oxyspiruriasis caused by eye worms in wild birds, both globally and in Türkiye, are limited. Further research, particularly in regions with high wild bird mobility such as Hatay, is needed to obtain more information about this parasitic disease.

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Conflict of Interest: The authors declare that there is no actual, potential or perceived conflict of interest for this article.

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