

# Save your tears: eye secretions of a Ringed Kingfisher fed upon by an erebid moth

Ivan Sazima<sup>1</sup>

<sup>1</sup> Museu de Zoologia, C.P. 6109, Universidade Estadual de Campinas, CEP 13083-970, Campinas, SP, Brazil.

<sup>1</sup> Corresponding author: isazima@gmail.com

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**ABSTRACT:** Bodily fluids and secretions of birds are fed upon by flying insects, the best-known example being the worldwide blood-feeding mosquitoes. Much less known are the Neotropical mucus-feeding stingless bees, and the Malagasy tear-feeding moths. Herein I illustrate and briefly comment on a night-roosting Ringed Kingfisher female whose tears were fed upon by an erebid moth in the Colombian Amazon. The moth perched on the bird's neck and fed on the secretions in the anterior upper corner of the eye. Careful checking of night-roosting birds probably will disclose additional cases of Neotropical bird species sought by tear-feeding moths.

**KEY-WORDS:** *Megaceryle torquata*, lachryphagy, Erebidae, Colombia, Neotropics.

## INTRODUCTION

Bodily fluids and secretions of birds are fed upon by several types of flying insects, the best-known example being the worldwide blood-feeding mosquitoes (Griffing *et al.* 2007, Burkett-Cadena *et al.* 2014), no doubt due to these insects' role as pathogen vectors. Much less known are the Neotropical mucus-feeding stingless bees (Lobato *et al.* 2007, Sazima 2015), or the Malagasy tear-feeding erebid moth (Hilgartner *et al.* 2007). Since lachryphagous moths are mostly recorded exploiting mammals (Bänziger 1972, 1990, Büttiker *et al.* 1996, Plotkin & Goddard 2013), the Malagasy case study piqued my interest about moths feeding on eye secretion of birds.

## METHODS

I searched public online photo archives for any additional evidence of moths feeding upon bird tears. I found only one record (<http://www.projectnoah.org/spottings/32518118>), a blog featuring four photos of a night-roosting kingfisher whose eye secretions were fed upon by a moth. I contacted the author, Dan Doucette, who kindly gave permission to make available his record to the scientific community. Herein I illustrate and briefly comment on this remarkable example, seemingly the first record of such relationship for South America.

## RESULTS

A night-roosting Ringed Kingfisher (*Megaceryle torquata*) female was recorded on 04 December 2012 at 21:47h in the area of Leticia (04°12'19"S, 69°55'58"W), department of Amazonas in Colombia, Northwestern South America (D. Doucette pers. comm.). The kingfisher roosted on a branch above a tributary of the Marañon River, a moth perched on the left side of the bird's neck (Figure 1). A closer approach disclosed an erebid moth (*Azeta melanea*) with its proboscis tip inserted under the nictitating



**FIGURE 1.** A night-roosting female Ringed Kingfisher (*Megaceryle torquata*) in the Amazonian Colombia, with an erebid moth (*Azeta melanea*) perched on left side of the bird's neck (yellow asterisk). Photo: ©Dan Doucette.



**FIGURE 2.** A night-roosting female Ringed Kingfisher (*Megascops asio*) with an erebid moth (*Azeta melanea*) feeding on its eye secretions. The moth has its proboscis tip inserted under the nictitating membrane. Photo: ©Dan Doucette.

membrane at the upper corner of the bird's eye (Figure 2), presumably feeding upon secretions that lubricate the ocular area (tears). It was not possible to establish the degree of disturbance the moth might cause to the bird, as this latter was on the alert due to the approaching observer.

## DISCUSSION

The present record of a Ringed Kingfisher with an erebid moth feeding on its eye secretions seems to be the first substantiated instance of a bird exploited by a lachryphagous moth in the Neotropics. To the best of my knowledge, the previous and only published record of birds exploited by a tear-feeding moth are two Malagasy passerines, the sylviid warbler *Newtonia brunneicauda* and the thrush *Copsychus albospectus* (Hilgartner *et al.* 2007). The main difference between the Malagasy and Neotropical records is that the Malagasy moth (*Hemiceratoides hieroglyphica*) was large relative to the passerine birds, and perched on the bird's upper side of the neck and the back (Hilgartner *et al.* 2007). These authors related the position of the moth to its proboscis size, which is about half the size of the insect (Hilgartner

*et al.* 2007). On the other hand, the proboscis of the Neotropical moth *Azeta melanea* is about the same size of the insect (present paper), which presumably allow it to exploit larger birds such as kingfishers and to perch on various parts of the head and neck of the bird host to feed on tears.

Seeking salts and moisture, besides proteins, are among the possible explanations for erebids and other tear-feeding moths to exploit vertebrate eyes, including those of birds (Bänziger 1990, Hilgartner *et al.* 2007, Plotkin & Goddard 2013, present paper). Lachryphagy probably evolved several times among Lepidoptera, since this habit is found in unrelated moth and butterfly groups (Plotkin & Goddard 2013).

Birds exploited by tear-feeding moths may actually be a rare phenomenon, as these insects feed mostly on the secretions and fluids of mammals (Bänziger 1972, 1990, Büttiker *et al.* 1996, Plotkin & Goddard 2013). If this holds true, it would partly explain the scarcity of records of moths feeding on birds (Hilgartner *et al.* 2007, present paper). On the other hand, this scarcity may be due to lack of attention of professional biologist to this phenomenon or, conversely, spotting a moth perched on a night-roosting bird may be a difficult task in the field. Nevertheless, I suppose that a careful checking of birds

at night roosts will reveal additional cases of Neotropical bird species sought by tear-feeding moths.

Understanding this peculiar relationship between birds and moths would certainly benefit from substantiated records made by amateur naturalists, photographers, filmmakers, and citizen scientists. The role citizen scientists may play in the expansion of knowledge about organisms and their interactions in nature, *i.e.* natural history, should be stimulated and supported by professional biologists (see convincing argumentation in Tewksbury *et al.* 2014).

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