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Cover Photo by Peter Smetacek of a *Salassa mizorama* Moth

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BUTTERFLIES FEEDING ON HUMAN BLOOD: FIRST OBSERVATION FROM INDIAN REGION

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Reviewer: Peter Smetacek
Key Words: Assam, North-east India, feeding behaviour, Lycaenidae, Hesperiidae, attractants, odour.

Abstract: The first case of Indian butterflies feeding on human blood is reported from Assam.

Introduction

Adult butterflies obtain nutrition and mineral supplements from nectar and pollen of flowers, overripe fruits, tree sap, human perspiration, excreta (faeces, scat, dung, droppings and urine), decaying flesh of dead animals, and puddle on mud (Wynter-Blyth, 1957; Boggs & Jackson, 1991; Plotkin & Goddard, 2013; Kehimkar, 2016; Bodri, 2018). A Nymphalid butterfly, *Dryas iulia* (Fabricius, 1775) has also been reported to feed upon tears (lacryphagy) of caimans (de la Rosa, 2014). In the tropical region many nocturnal moths (largely males) belonging to Pyralidae, Erebidae, Geometridae, Thyatiridae, Notodontidae, and Sphingidae, were reported to feed on wounds and lachrymal fluid from the eyes of large mammals, including humans (Krenn, 2010). In Lepidoptera, only adult male *Calyptra* moths (ten out of seventeen described species) are well-known for blood-feeding or hematophagy. These moths pierce the skin, with the help of proboscis and then suck the blood from the host mainly from large mammals, including humans (Snyder, 2016).

Previously, butterflies feeding on human blood was only reported from Bavaria, Germany during July 2007, where two Nymphalidae butterflies *Erebia ligea* (Linnaeus, 1758) and *Erebia pronoe* (Esper, 1780) were observed to feed on fresh blood from a woollen sock (Blood feeding butterflies 5362.JPG., 2018). From the Indian sub-region, no butterflies have been reported to feed upon blood. Especially, members of Lycaenidae and Hesperiidae have never been observed to feed upon blood. Here we report for the first time blood feeding by two Lycaenidae butterflies *Neopithecops zalmora* (Butler, [1870]) and *Jamides alecto* (C. Felder, 1860); and one Hesperiidae butterfly *Odontoptilum angulata* (C. & R. Felder, 1862) from North-eastern region of India.

The Panbari Reserve Forest (26°36'N & 93°30'E) is protected under the Kaziranga National Park and the Reserve forest comes under the Golaghat and Karbi Anglong districts of Assam. The average elevation of this Reserve forest is ranges from 80- 360m. The undisturbed semi-evergreen forest and forest streams of this reserve provide suitable habitat for butterflies. This reserve forest is home to 116 of Lycaenidae (Gogoi, 2015) and 137 species of Hesperiidae (Gogoi, 2013).

Observation

During a butterfly survey in Panbari Reserve Forest on 7.x.2014 at about 12:30 pm we observed two individuals of Lycaenidae

butterfly *N. zalmora* and *J. alecto* were come to feed on fresh blood, which had flowed onto the first author's shoe (Fig 1 & 2). Due to leech bites on legs, the shoes were soaked in blood and for this reason, the shoes were taken off and places by a forest trail while we rested. Butterflies that were attracted to the blooded shoes were observed to feed on the blood for about five minutes, and then we moved on along the forest trails in search of butterflies. After that, at about 1:00 pm we observed another Hesperiidae butterfly *O. angulata* come to feed on the blood of the second author's leg. At first, it had been fluttering around the second author's body, then it finally settled on the bleeding wound on his leg) (Fig 3).

Discussion

In Lepidoptera, blood feeding by the *Calyptra* moths was hypothesised as a salt acquisition strategy, to increase their mating success (Zaspel *et al*. 2011). Here, in case of our present observation we can assume that, to acquire salt and sugar, these butterflies came to feed on blood. As the blood contains sodium and sugar, which are known to be important for butterflies. Other than sodium and sugar, blood also contains essential minerals like calcium, magnesium, potassium, iron, zinc, copper, etc. But no experiment has been carried out, to find out mineral preference of butterflies other than sodium and sugar of blood.

According to Otis *et al.* (2006), the butterflies at a puddling site attract other butterflies for puddling at that site. But how the first butterfly is attracted to the puddling site remains a mystery. Recently, Inoue *et al*. (2019) hypothesized that odours emitted from the decaying materials such as ammonia, hydrogen sulphide and organic acids may serve as attractants for butterflies to puddling sites. Many butterflies use floral scents or fermentation odour to locate flowers and overripe fruits (Ômura & Honda, 2009; Sourakov *et al.* 2012). But how they locate an animal or a human being with bleeding wounds or simply the blood to feed upon is still unknown to us. Studies show that the blood odour component trans-4,5-epoxy-(E)-2-decenal (TED) produces behavioural responses in large predators, which acts as an attractant (Pettersson *et al.* 2018). It is not known whether the odour of blood serves as an attractant for butterflies. The butterflies observed feeding on blood in the present note were previously known only to feed on nectar and damp soil patches, not on decaying flesh or other animal sources of minerals (Wynter-Blyth, 1957). If they were attracted to fresh blood, then they can obviously digest it, too. Therefore, feeding on blood by these butterflies may prove as a significant observation to carry out further investigation on the natural history of such butterflies, as well as feeding preferences among the Papilionoidea.

References

Blood feeding butterflies 5362.JPG. 2018. Wikimedia Commons, the free media repository. Retrieved 21:17, October 31, 2019 from https://commons.wikimedia.org/w/index.php?title=File:Blood_feeding_butterflies_5362.JPG&oldid=312000195.

Bodri, M. S. 2018. Puddling Behavior of Temperate Butterflies: Preference for Urine of Specific Mammals?. *The Journal of the Lepidopterists' Society* 72(2): 116-121.

Boggs, C.L. & L.A. Jackson. 1991. Mud puddling by butterflies is not a simple matter. *Ecological Entomology* 16: 123–127

de la Rosa, C. L. 2014. Additional observations of lachryphagous butterflies and bees. *Frontiers in Ecology and the Environment* 12(4): 210-210.

Gogoi, M.J. 2013. Notes on some skipper butterflies (Lepidoptera: Hesperiidae) from Panbari Forest and its adjoining areas, Kaziranga-Karbi Anglong, upper Assam, India. *Journal of Threatened Taxa* 5(13): 4759–4768.

Gogoi, M.J. 2015. Observations on lycaenid butterflies from Panbari Reserve Forest and adjoining areas, Kaziranga, Assam, northeastern India. *Journal of Threatened Taxa* 7(15): 8259–8271.

Inoue, T. A., F. Yukuhiro, T. Hata, S. I. Yamagami & F. Yokohari. 2019. Ammonia as a puddling site-marshaling substance for Japanese *Papilio* butterflies. *Chemoecology* 29(4): 1-12.

Kehimkar, I. 2016. *Butterflies of India*. Bombay Natural History Society, Mumbai, pp xii+ 528.

Krenn, H. W. 2010. Feeding mechanisms of adult Lepidoptera: structure, function, and evolution of the mouthparts. *Annual Review of Entomology* 55: 307-327.

Ômura, H. & K. Honda. 2009. Behavioral and electroantennographic responsiveness of adult butterflies of six Nymphalid species to food-derived volatiles. *Chemoecology* 19:227–234.

Otis, G.W., B. Locke, N.G. McKenzie, D. Cheung, E. MacLeod, P. Careless & A. Kwoon. 2006. Local enhancement in mud-puddling swallowtail butterflies (*Battus philenor* and *Papilio glaucus*). *Journal of Insect Behavior* 19: 685–698.

Pettersson, H., M. Amundin & M. Laska. 2018. Attractant or Repellent? Behavioral Responses to Mammalian Blood Odor and to a Blood Odor Component in a Mesopredator, the Meerkat (*Suricata suricatta*). *Frontiers in Behavioral Neuroscience* 12: 152.

Plotkin, D. & J. Goddard. 2013. Blood, sweat, and tears: a review of the hematophagous, sudophagous, and lachryphagous Lepidoptera. *Journal of Vector Ecology* 38 (2): 289-294.

Snyder, J. L. 2016. Investigations on the vampire moth genus *Calyptra* Ochsenheimer, incorporating taxonomy, life history, and bioinformatics (Lepidoptera: Erebidae: Calpinae). Open Access Thesis. 897.

Sourakov, A., A. Duehi & A. Sourakov. 2012. Foraging behavior of the blue Morpho and other tropical butterflies: the chemical and electrophysiological basis of olfactory preferences and the role of color. *Psyche* (2012): 1–10.

Wynter-Blyth, M.A. 1957. Butterflies of the Indian Region. The Bombay Natural History Society, Bombay, India, 523pp.

Zaspel, J. M., S. J. Weller & M. A. Branham. 2011. A comparative survey of proboscis morphology and associated structures in fruit-piercing, tear-feeding and blood-sucking moths in the subfamily Calpinae (Lepidoptera: Noctuidae). *Zoomorphology* 130: 203- 225.

Fig.1: *Neopithecops zalmora*

Fig.2: *Jamides alecto*

Fig.3: *Odontoptilum angulata*