BioOne COMPLETE

Local Polyphagy in Theope lycaenina Bates, 1868 (Riodinidae: Nymphidiini)

Author: Freitas, André Victor Lucci

Source: The Journal of the Lepidopterists' Society, 65(4) : 264-265

Published By: The Lepidopterists' Society

URL: https://doi.org/10.18473/lepi.v65i4.a7

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://complete.bioone.org/journals/The-Journal-of-the-Lepidopterists'-Society on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

Journal of the Lepidopterists' Society
65(4), 2011, 264–265

LOCAL POLYPHAGY IN *THEOPE LYCAENINA* BATES, 1868 (RIODINIDAE: NYMPHIDIINI)

Additional key words: *Azteca*, immature stages, host-plants, myrmecophily, Theopeina

The genus *Theope* Doubleday, 1847 comprises 77 species occurring from central Mexico to Northern Argentina (Hall 1999, 2008; Jauffret & Jauffret 2009). Life histories have been described for only about of 12% of the species in the genus (Hall 1999, 2002; Kaminski 2006). All known larvae are myrmecophilous, and nearly always associated with ants of the genus *Azteca* Forel (Dolichoderinae) (DeVries et al. 1994; DeVries 1997; Hall 1999; but see Kaminski 2006 for *Theope thestias* Hewitson, 1860 being facultatively tended by several Formicinae and Myrmicinae). Reported larval host plants for the genus *Theope* include thirteen plant families (DeVries et al. 1994; Hall 1999; Kaminski 2006; Beccaloni et al. 2008; Janzen & Hallwachs 2010).

The present paper reports additional food plant records for a population of *Theope lycaenina* Bates, 1868 (Fig. 1A) and larval feeding behavior in a coastal locality in Southeastern Brazil. Observations were carried out in the region of the Praia da Fazenda, in the Nucleo Picinguaba of the Serra do Mar State Park, in Ubatuba municipality, Sao Paulo State (23°21'S, 44°50'W), from 2004 to 2007 (always in January), and July 2010. Most observed larvae were brought to the laboratory and reared to adults for species identification. Ant vouchers are deposited in the following Brazilian museums: Museu de Zoologia da USP, Sao Paulo, and Museu de Zoologia da Unicamp, Campinas. Adult vouchers of the butterfly are deposited in the Museu de Zoologia da Unicamp, Campinas.

In January 2004, two larvae were observed feeding on an unidentified Sapindaceae vine, tended by workers of *Azteca chartifex* Forel, 1896 (Fig. 1B), which lived in a large carton nest on a tall nearby tree. In 2005 to 2007, eight additional larvae were observed, always using the same host plant species, and likewise tended by *A. chartifex* ants. In July 2010, an intensive 10 days search was done on three additional plants (distant more than 10 m from each other) that each harbored a colony of *A. chartifex*, which were easily found by the presence of carton nests and by the large number of ant workers patrolling the whole plants. Each of these plants also harbored larvae of *T. lycaenina*, including *Andira fraxinifolia* Benth. (Fabaceae) (on which three third instars were found), *Morus nigra* L. (Moraceae) (one second instar) and *Malvaviscus arboreus* Cav. (Malvaceae) (two first instar and one third instar). The last two plant families are also new plant family records for *Theope*, and these new records increase to four the number of families used by this species in the study area, and to eight the number of plant families used by *T. lycaenina* over its range (Beccaloni et al. 2008; L. A. Kaminski pers. comm.). In all cases the larvae, including the small first instars, always were observed being tended by at least two *Azteca* workers (Fig. 1B). No larvae were ever found on neighboring host-plants of the same species that had no ants present. In *A. fraxinifolia*, two third instars were observed on the surface of dead twigs consuming the superficial tissues.

Results strongly suggest that larvae of *T. lycaenina* are highly dependent on *Azteca* ants to develop and grow, confirming the pattern observed for most known species in the genus *Theope*. In addition, by using hosts belonging to four different plant families in a single place, *T. lycaenina* can be considered locally polyphagous. Since the presence of larvae is apparently highly correlated with the presence of *Azteca* ants, it is

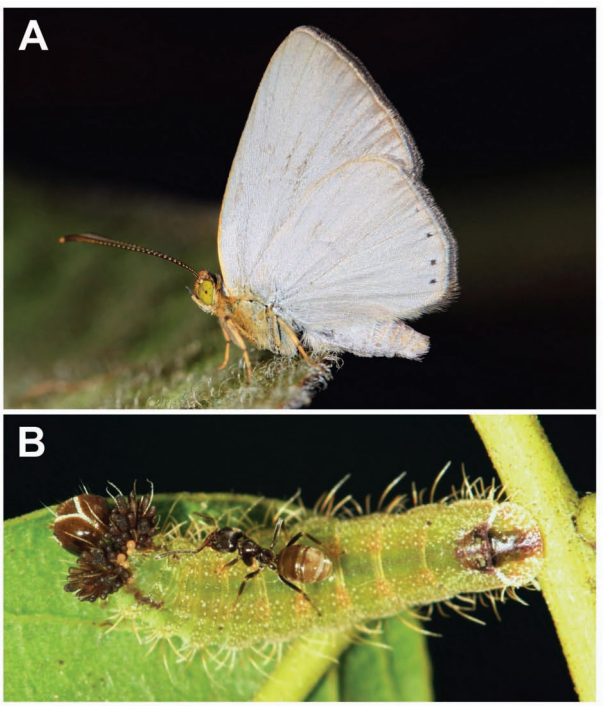


FIG. 1. A, Adult male *Theope lycaenina*. B, Last instar larva of *Theope lycaenina* tended by one worker of *Azteca chartifex* (photos by Lucas Kaminski).

Downloaded From: https://complete.bioone.org/journals/The-Journal-of-the-Lepidopterists'-Society on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

possible that polyphagy in *T. lycaenina* is mediated by the presence of particular ant taxa, similar to what has been proposed for other myrmecophilous riodinids (DeVries et al. 1994; DeVries 1997; Hall & Harvey 2001; Kaminski 2008). Also, the behavior of feeding on dead plant tissues could be an additional factor that promotes polyphagy in this species, because they would be less selective by specific secondary substances of their host plants. These observations reinforce the idea that ant presence can be a major factor influencing host plant choice in species with obligate symbiotic associations (e.g., DeVries et al. 2004; Kaminski 2008).

ACKNOWLEDGEMENTS

Lucas A. Kaminski, Curtis Callaghan, Luisa L. Mota, Carla Penz, Keith Willmott and Niklas Wahlberg made useful com- ments on the manuscript. Rogério R. Silva identified the *Azteca* species and Curtis Callaghan identified the *Theope* species. This research was supported by the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP, 04/05269-9), CNPq (300282/2008-7), and the National Science Foundation (DEB- 0527441).

LITERATURE CITED

BECCALONI, G.W., S. K. HALL, A. L. VILORIA & G. S. ROBINSON. 2008. Catalogue of the hostplants of the Neotropical butterflies / Catálogo de las plantas huésped de las mariposas Neotropicales. *In*: m3m - Monografias Tercer Milenio, Vol. 8. S.E.A., RIBESCYTED, The Natural History Museum, Instituto Venezolano de Investiga- ciones Científicas, Zaragoza.

DEVRIES, P. J. 1997. The butterflies of Costa Rica and their natural his- tory. Vol. II. Riodinidae. Princeton University Press, Princeton, New Jersey.

DEVRIES, P. J., B. CABRAL & C.M. PENZ. 2004. The early stages of *Apodemia paucipuncta* (Riodinidae): myrmecophily, a new caterpillar ant-organ and consequences for classification. MPM Contri- butions in Biology and Geology, (102):1-13.

DEVRIES, P. J.,, I. A. CHACON & D. MURRAY. 1994. Toward a better understanding of host use biodiversity in riodinid butterflies (Lepidoptera). Journal of Research on the Lepidoptera 31: 103–126.

HALL, J. P. W. 1999. A revision of the genus *Theope*: Its systematics and biology (Lepidoptera: Riodinidae: Nymphidiini). Gainesville, FL Scientific Publishers. vii +. 127 pp.

———. 2002. Phylogeny of the riodinid butterfly subtribe Theopeina (Lepidoptera: Riodinidae: Nymphidiini). Systematic Entomology 27: 139-167.

———. 2008. *Theope* revisited: A synopsis of new discoveries, with the description of three new species (Lepidoptera: Riodinidae: Nymphidiini). Proceedings of the Entomological Society of Wash ington 110:144-158.

HALL, J. P. W. & D. J. HALL. 2001. A phylogenetic analysis of the Neotropical riodinid butterfly genera *Juditha, Lemonias, Thisbe* and *Uraneis*, with a revision of *Juditha* (Lepidoptera: Riodinidae: Nymphidiini). Systematic Entomology 26: 453-490.

JANZEN, D.H. & W. HALLWACHS. 2010. Dynamic database for an inventory of the macrocaterpillar fauna and its food plants and parasitoids of Area de Conservacion Guanacaste (ACG), northwestern Costa Rica (nn-SRNP-nnnnn voucher codes) <http://janzen.sas. upenn.edu>

JAUFFRET, P. & J. C. JAUFFRET. 2009. Description de quatre espèces nou- velles de *Theope* Doubleday, 1847 originaires du Brésil et du Paraguay. Description de la femelle de *T. minialba* Gallard, 2006. (Lepidoptera : Riodinidae : Nymphidiini). (11ème note). Lambillionea, 109 (2) : 155-164.

KAMINSKI, L. A. 2006. História natural e morfologia dos estágios imaturos de *Theope thestias* Hewitson, 1860 (Lepidoptera, Riodinidae) com ênfase na mirmecofilia. MSc Dissertation. Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil.

———. 2008. Polyphagy and obligate myrmecophily in the butterfly *Hallonympha paucipuncta* (Lepidoptera: Riodinidae) in the Neotropical Cerrado Savanna. Biotropica 40: 390-394.

ANDRÉ VICTOR LUCCI FREITAS, *Departamento de Biologia Animal e Museu de Zoologia, Instituto de Biologia, Universidade Estadual de Campinas, C.P. 6109, CEP 13083-970, Campinas, São Paulo, Brasil; email: baku@unicamp.br*

Received for publication 2 October 2010; revised and accepted: 1 June 2011

Downloaded From: https://complete.bioone.org/journals/The-Journal-of-the-Lepidopterists'-Society on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use