

First Host Plant Record for *Thaeides muela* (Lepidoptera, Lycaenidae: Theclinae: Eumaeini)

Authors: Vargas, Héctor A., and Duarte, Marcelo

Source: Florida Entomologist, 97(1) : 288-290

Published By: Florida Entomological Society

URL: <https://doi.org/10.1653/024.097.0142>

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.

FIRST HOST PLANT RECORD FOR *THAEIDES MUELA* (LEPIDOPTERA, LYCAENIDAE: THECLINAE: EUMAEINI)

HÉCTOR A. VARGAS^{1,*} AND MARCELO DUARTE²

¹Departamento de Recursos Ambientales, Facultad de Ciencias Agronómicas, Universidad de Tarapacá, Casilla 6-D, Arica, Chile

²Museu de Zoologia, Universidade de São Paulo, Avenida Nazaré 481, Ipiranga, 04263-000 São Paulo, SP, Brazil

*Corresponding author; E-mail: havargas@uta.cl

Information on host plants of lepidopterans is extremely important for a comprehensive understanding of the ecology and evolution of these insects (Robbins & Aiello 1982). Although a renewed interest in the biology and systematics of Neotropical Lycaenidae is evident in recent literature (Duarte et al. 2001; 2005; Robbins & Busby 2008; Duarte & Robbins 2010; Silva et al. 2011; Bächtold et al. 2013; Kaminski et al. 2013; Robbins & Glassberg 2013), their host plants remain insufficiently known.

About 50 butterfly species have been recorded from the arid landscapes of northern Chile (Peña & Ugarte 1996). In addition to their low diversity, life histories of these butterflies are scarcely documented. Host plant records are available for the larvae of some species (Benyamini 1995; Peña & Ugarte 1996; Vargas & Parra 2009; Vargas 2012, 2013), but remain undocumented for many representatives of this fauna, despite that an adequate knowledge of these relationships is critical to understand the distribution and abundance of the butterflies inhabiting these extremely arid environments (Vargas & Lamas 2011; Vargas & Benítez 2013).

Thaeides Johnson, Kruse & Kroenlein, 1997 (Lepidoptera, Lycaenidae, Theclinae, Eumaeini) is a poorly known montane Neotropical genus composed of 5 valid species (Robbins 2004). *Thaeides theia* (Hewitson, 1870) is the most widespread species of the genus, ranging from southeastern Mexico to Bolivia and southeastern Brazil (Warren et al. 2012). In Colombia it has been found occasionally on hilltop landscapes of the western and eastern Andes (Prieto & Dahners 2006; Salazar 2010). Despite the broad geographic range of *T. theia*, its trophic relationships remain unknown.

Thaeides muela (Dyar, 1913) is the only representative of the genus in Chile (Peña & Ugarte 1996), where records indicate that it is restricted to the northernmost area of the country at about 3,500 m asl (Johnson 1992; Benyamini 1995; Peña & Ugarte 1996), a region characterized by a tropical xeric bioclimate (Luebert & Plischoff 2006). The species also occurs in Ecuador and Peru (R. K. Robbins in litt. 15 Oct 2013).

The behavior and life history of *T. muela* remain largely unknown. The only information

available is based on notes of this butterfly lingering around *Baccharis* (Asterales: Asteraceae) bushes (Benyamini 1995), and among *Escallonia angustifolia* K. Prest (Escalloniales: Escalloniaceae) and *Baccharis santelisis* Philippi along the Chilean range (Peña & Ugarte 1996). Benyamini (1995) suggested that eventual locations of this hairstreak and other rarely collected Lycaenidae might be discovered through detection of certain frequently sympatric and more common indicator species, such as *Pyrgus bocchoris trisignatus* (Mabille, 1876) (Hesperiidae) and *Teriocolias zelia andina* Forbes, 1928 (Pieridae). In addition, Peña & Ugarte (1996) indicated that even though adults may be found relatively easily during certain months of the year, their rapid flight pattern complicates field observation.

In Dec 2009, as part of a preliminary survey of lepidopteran larvae associated with the native vegetation, one florivorous lycaenid larva was found eating actively on an inflorescence of the native shrub *Baccharis alnifolia* Meyen & Walp. in the neighboring area of the Zapahuira village, Parinacota Province, in the northern Chilean Andes. The larva was transported to the laboratory in a plastic vial, where additional inflorescences of the plant were periodically offered until pupation, which occurred approximately 12 days after collection. A male adult emerged in Jan 2010, and was identified as *T. muela*, based on the original description and specimens deposited at the National Museum of Natural History, Washington, DC, USA. Additional larvae eating on the inflorescences of *B. alnifolia* were collected in Aug 2011 and Nov 2012 in 2 other localities of Parinacota Province: Putre and Socoroma. Five adults were obtained from this laboratory rearing.

Baccharis alnifolia is the first host plant recorded for *T. muela*. Moreover, the present paper is also the first to mention the host plant and florivory for the genus *Thaeides*. Apparently florivory is a widespread feeding behaviour among larvae of Neotropical Eumaeini (Silva et al. 2011). Interestingly, only 4 host plant records for Neotropical Lycaenidae involving the highly diversified genus *Baccharis* were available, all these in Eumaeini: *Baccharis punctulata* DC for *Rekoa palegon* (Cramer, 1780) (Monteiro 1991), *Bac-*

charis sp. for *Rekoa malina* (ex-larvae; adults deposited at Universidade Federal do Paraná/UFPR, Curitiba, Brazil), *Baccharis dracunculifolia* DC for *Laothus phydela* (Hewitson, 1867) (unpublished manuscript of C. M. Biezanko kindly lent by O.H.H. Mielke, UFPR), and *Baccharis latifolia* (Ruiz et Pav.) Pers. for *Rhamma arria* (Hewitson, 1870) (Bodner 2011).

Silva et al. (2011) indicated that most of the florivorous Eumaeini of the Brazilian Cerrado are polyphagous or oligophagous. Furthermore, polyphagy can be encouraged in ecosystems where plant reproduction is facilitated by climatic conditions throughout the year (Monteiro 1991). *Baccharis* is well represented along the Andes. Unfortunately, no data are available about the specificity of larval host use by *T. muela*. Thus, additional studies will be necessary in order to determine the host range of this poorly known Neotropical hairstreak along the arid landscapes of the northern Chilean Andes.

An accurate determination of the host range is an important aspect for ecological studies of Lycaenidae (Bächtold et al. 2013). There are few records of Asteraceae as host plants for larvae of Eumaeini, a subject discussed at length by Fiedler (1991). It is remarkable to note that Asteraceae, one of the largest groups of angiosperms, is still rarely cited as host plants for these butterflies (a comparison with nymphalid butterflies is possible in Beccaloni et al. 2008). Fiedler (1991) suggests that the lycaenids may have diversified by keeping their primary association with certain plant groups (mainly representatives of Asterales) and by sporadically using unrelated taxa with chemical similarities. As pointed out by Fiedler (1991), it is also possible to think that the larvae of other families and subfamilies of butterflies may have occupied many potential niches in the most recent angiosperm taxa (e.g. Asteraceae), and that has prevented the wider use of these plants as larval host plants of Lycaenidae.

Association of lycaenid larvae and/or pupae with ants, i.e. myrmecophily, is a widespread phenomenon among Lycaenidae that ranges from facultative to obligate (Fiedler 1991, 1995). Generally myrmecophilous larvae possess functional glandular organs (Ballmer & Pratt 1991; Fiedler 1995). None of the 6 larvae collected in this survey was attended by ants in the field. Unfortunately, functional nectary glands were not searched on these larvae. Thus, additional samplings and field observations are needed to verify if myrmecophily is involved in the life history of *T. muela*.

Vouchers will be deposited in the Museo Nacional de Historia Natural de Santiago, Santiago, Chile (MNNC) and in the Colección Entomológica de la Universidad de Tarapacá, Arica, Chile (IDEA).

Material Examined

CHILE: Parinacota, one male: Zapahuira, Parinacota, Chile, I-2010, H. A. Vargas coll., ex-larva on *Baccharis alnifolia* inflorescence, XII-2009 (MNNC). One male: Putre, Parinacota, Chile, IX-2011, H. A. Vargas coll., ex-larva on *Baccharis alnifolia* inflorescence, VIII-2011 (MNNC). Three males, 1 female: Socoroma, Parinacota, Chile, XII-2012, H. A. Vargas coll., ex-larva on *Baccharis alnifolia* inflorescence, XI-2012 (IDEA).

We are grateful to Annette Aiello, André V. L. Freitas, Konrad Fiedler and Robert K. Robbins for valuable comments and suggestions on a preliminary version; and to Mariana Lazzaro-Salazar for proof reading this manuscript. This study was partially supported by the project DGI-9710-13, Dirección General de Investigación, Universidad de Tarapacá. The research on Neotropical Lepidoptera, conducted by the second author, has been supported by Fundação de Amparo à Pesquisa do Estado de São Paulo (grants 2002/13898-0, 2009/11159-5, 2011/50225-3, and 2012/02444-0), Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq grant 563332/2010-7 – SISBIOTA/ Rede Nacional de Pesquisa e Conservação de Lepidópteros), and Pró-Reitoria de Pesquisa da Universidade de São Paulo (Projeto 1). The work of the second author has also been supported by a CNPq fellowship (process number 305905/2012-0).

SUMMARY

The native shrub *Baccharis alnifolia* Meyen & Walp. (Asterales: Asteraceae) is recorded as the first larval host plant known for the Neotropical hairstreak *Thaides muela* (Dyar, 1913) (Lepidoptera, Lycaenidae, Eumaeini), based on field samplings performed on the western slopes of the northern Chilean Andes.

Key Words: Andes, Asteraceae, *Baccharis*, caterpillar, florivory

RESUMEN

El arbusto nativo *Baccharis alnifolia* Meyen & Walp. (Asterales: Asteraceae) es mencionado como el primer registro de planta hospedera para la mariposa neotropical *Thaides muela* (Dyar, 1913) (Lepidoptera, Lycaenidae, Eumaeini), sobre la base de colectas efectuadas en la vertiente occidental de los Andes del norte de Chile.

Palabras Clave: Andes, Asteraceae, *Baccharis*, florivoría, larva

REFERENCES CITED

- BÄCHTOLD, A., ALVES-SILVA, E., AND DEL-KLARO, K. 2013. Lycaenidae larvae feeding on *Peixotoa parvi-*

- flora* (Malpighiaceae) in a semi-deciduous forest in southeastern Brazil. *J. Lepid. Soc.* 67(1): 65-67.
- BALLMER, G. R., AND PRATT, G. F. 1991. Quantification of ant attendance (myrmecophily) of lycaenid larvae. *J. Res. Lep.* 30(1-2): 95-112.
- BECCALONI, G. W., VILORIA, A. L., HALL, S. K., AND ROBINSON, G. S. 2008. Catalogue of the hostplants of the Neotropical butterflies. Monografías Tercer Milenio. Vol. 8. S.E.A., RIBES-CYTED, The Natural History Museum, Instituto Venezolano de Investigaciones Científicas, Zaragoza, Spain.
- BENYAMINI, D. 1995. Synopsis of biological studies of the Chilean Polyommataini (Lepidoptera, Lycaenidae). *Rep. Mus. Nat. Hist. Univ. Wisconsin (Steves Point)* 52: 1-51.
- BODNER, F. 2011. Caterpillar communities on shrubs in the montane forest zone of southern Ecuador, PhD Dissertation, University of Vienna. URL: http://othes.univie.ac.at/15967/1/2011-04-05_0448250.pdf
- DUARTE, M., ALMEIDA, G. L. DE, CASAGRANDE, M. M., AND MIELKE, O. H. H. 2001. Notes on the last instar larva and pupa of *Hemiargus hanno* (Stoll) (Lepidoptera, Lycaenidae, Polyommatainae). *Rev. Brasileira Zool.* 18(4): 1097-1105.
- DUARTE, M., AND ROBBINS, R. K. 2010. Description and phylogenetic analysis of the Calycopidina (Lycaenidae, Theclinae, Eumaeini): a subtribe of detritivores. *Rev. Brasileira Entomol.* 54(1): 45-65.
- DUARTE, M., ROBBINS, R. K., AND MIELKE, O. H. H. 2005. Immature stages of *Calycopis caulonia* (Hewitson, 1877) (Lepidoptera, Lycaenidae, Theclinae, Eumaeini), with notes on rearing detritivorous hairstreaks on artificial diet. *Zootaxa* 1063: 1-31.
- FIEDLER, K. 1991. Systematic, evolutionary, and ecological implications of myrmecophily within the Lycaenidae (Insecta: Lepidoptera: Papilionoidea). *Bonn. Zool. Monogr.* 31: 1-210.
- FIEDLER, K. 1995. Lycaenid butterflies and plants: is myrmecophily associated with particular hostplant preferences? *Ethol. Ecol. Evol.* 7(2): 107-132.
- JOHNSON, K. 1992. Genera and species of the Neotropical "elfin"-like hairstreak butterflies (Lepidoptera, Lycaenidae, Theclinae). *Rep. Mus. Nat. Hist. Univ. Wisconsin (Steves Point)* 22: 1-35.
- KAMINSKI, L. A., MOTTA, L. L., AND FREITAS, A. V. L. 2013. Life history of *Porthoecla ravus* (Druce) (Lepidoptera: Lycaenidae), with discussion on the use of Annonaceae by Eumaeini butterflies. *An. Soc. Entomol. France (N.S.)* 48(3-4): 309-312.
- LUEBERT, F., AND PLISCOFF, P. 2006. Sinopsis bioclimática y vegetal de Chile. Editorial Universitaria, Santiago, Chile.
- MONTEIRO, R. F. 1991. Cryptic larval polychromatism in *Rekoa marius* Lucas and *R. palegon* Cramer (Lycaenidae: Theclinae). *J. Res. Lep.* 29(1-2): 77-84.
- PEÑA G., L. E., AND UGARTE, P. A. J. 1996. Las mariposas de Chile. The butterflies of Chile. Editorial Universitaria, Santiago, Chile.
- PRIETO, C., AND DAHNERS, H. W. 2006. Eumaeini (Lepidoptera: Lycaenidae) del cerro San Antonio: dinámica de la riqueza y comportamiento de "hilltopping". *Rev. Colombiana Entomol.* 32(2): 179-190.
- ROBBINS, R. K. 2004. Lycaenidae. Theclinae. Tribe Eumaeini, pp. 118-137 *In* G. Lamas [ed.], Checklist: Part 4A. Hesperioidea-Papilionoidea. *In* J. B. Heppner, J. B. [ed.], Atlas of Neotropical Lepidoptera. Volume 5A. Association for Tropical Lepidoptera, Scientific Publishers, Gainesville, FL.
- ROBBINS, R. K., AND AIELLO, A. 1982. Foodplant and oviposition records for Panamanian Lycaenidae and Riodinidae. *J. Lepid. Soc.* 36(2): 65-75.
- ROBBINS, R. K., AND BUSBY, R. C. 2008. Phylogeny, taxonomy and sympatry of *Timaeta* (Lycaenidae: Theclinae: Eumaeini): an Andean montane forest endemic. *Tijdschr. Entomol.* 151: 205-233.
- ROBBINS, R. K., AND GLASSBERG, J. 2013. A butterfly with olive green eyes discovered in the United States and the Neotropics (Lepidoptera, Lycaenidae, Eumaeini). *Zookeys* 305: 1-20.
- SALAZAR, J. A. 2010. Noticias sobre seis raras especies de licénidos colombianos y descripción de una nueva especie de *Brevianta* Johnson, Kruse & Kroenlein, 1997, para la cordillera occidental (Lepidoptera: Lycaenidae: Eumaeini). *Bol. Cient. Mus. Hist. Nat. (Universidad de Caldas)* 14(1): 189-202.
- SILVA, N. P., DUARTE, M., DINIZ, I. R., AND MORAIS, H. C. 2011. Host plants of Lycaenidae on inflorescences in the central Brazilian cerrado. *J. Res. Lep.* 44: 95-105.
- VARGAS, H. A. 2012. First host plant record for *Teriocolias zelia andina* Forbes (Lepidoptera: Pieridae) and evidence for local specialization. *Neotrop. Entomol.* 41(6): 524-525.
- VARGAS, H. A. 2013. Use of a native and an exotic Malvaceae by the little known skipper *Pyrgus bocchoris trisignatus* (Mabille) (Hesperiidae) in northern Chile. *J. Lepid. Soc.* 67(3): 225-226.
- VARGAS, H. A., AND PARRA, L. E. 2009. Prospección de lepidópteros antófagos asociados a *Acacia macracantha* Willd. (Fabaceae) en el norte de Chile. *Rev. Brasileira Entomol.* 53(2): 291-293.
- VARGAS, H. A., AND LAMAS, G. 2011. First record of *Phoebis argante chincha* Lamas (Lepidoptera, Pieridae) in Chile. *Rev. Brasileira Entomol.* 55(3): 445-446.
- VARGAS, H. A., AND BENITEZ, H. A. 2013. Egg phenology of a host-specialist butterfly in the western slopes of the northern Chilean Andes. *Neotrop. Entomol.* 42(6): 595-599.
- WARREN, A. D., DAVIS, K. J., STANGELAND, E. M., PELHAM, J. P., AND GRISHIN, N. V. 2012. Illustrated list of American butterflies. <http://butterfliesofamerica.com> (accession date: 25-01-2013).