

NEW RECORDS OF LARVAL HOSTPLANTS FOR ITHOMIINAE BUTTERFLIES (NYMPHALIDAE)

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ABSTRACT

Seventeen new records of larval hostplants are given for Ithomiinae butterflies (Lepidoptera: Nymphalidae) in southeastern Minas Gerais, and one in Brasília, DF. At the present state of knowledge, generalizations about larval feeding habits of these insects may be premature.

Key words: butterflies, hostplants, Ithomiinae, Minas Gerais State, *Solanum*.

RESUMO

Novos registros de plantas hospedeiras das larvas de borboletas Ithomiinae (Nymphalidae)

Dezessete novos registros de plantas hospedeiras das larvas são relatados para borboletas Ithomiinae (Lepidoptera: Nymphalidae) no sudeste de Minas Gerais e um em Brasília, DF. No atual estágio de conhecimento, generalizações sobre os hábitos alimentares das larvas desses insetos podem ser prematuras.

Palavras-chave: borboletas, Ithomiinae, Minas Gerais, plantas hospedeiras, *Solanum*.

INTRODUCTION

The subfamily Ithomiinae (Lepidoptera: Nymphalidae) includes about 50 genera and 300 species of Neotropical butterflies (Mielke & Brown, 1979; Brown & Freitas, 1994). Larvae of these butterflies feed on plants in the Apocynaceae, Gesneriaceae, and especially Solanaceae, particularly on the huge genus *Solanum* (Drummond & Brown, 1987).

Although *Solanum* L. is a cosmopolitan genus, more than half of its 1,500-2,000 species are concentrated in the Neotropics (Hunziker, 1979). Minas Gerais State, southeastern (SE) Brazil, is rich in *Solanum* species and is the center of distribution of some species-group (see Whalen, 1984; Carvalho, 1996). According to Eiterer *et al.* (1996 and work in process) and Carvalho (1996) there are at least 51 species of *Solanum* considered native to SE Minas Gerais.

Drummond & Brown (1987) compiled records of larval hostplants for Ithomiinae, especially from localities where these butterflies have been objects of active research. Additional records have appeared in the past years (e.g., for larvae feeding

on *Solanum*: DeVries, 1987 [5 records]; Costa, 1991 [3]; Brown, 1992 [5]; Brown & Freitas, 1994 [6]), but Drummond & Brown (1987) [DB hereafter] remains the more complete source of host-plant records for Ithomiinae.

Here I present new records of larval hostplants for Brazilian ithomiine butterflies (i.e., 18 interactions between six species of butterflies and 13 species of *Solanum*). I also draw attention to that, at the present state of knowledge, generalizations about ithomiine larval use of *Solanum* species may be premature.

MATERIAL AND METHODS

Records were obtained during fieldwork in the Reserva Biológica do Poço D'Anta, Reserva Biológica de Santa Cândida, and the "Morro do Imperador", Juiz de Fora, Minas Gerais (21°45'S, 43°20'W), except for one record obtained in the Reserva Ecológica do Roncador (IBGE), Brasília, Distrito Federal (15°50'S, 47°50'W).

I consulted Brown (1992) for identification of butterflies. Plants were identified by comparison

with specimens in the herbarium of the Universidade Federal de Juiz de Fora (CESJ).

To measure the inclusiveness of DB's database, I made a list of the 42 species of *Solanum* (excluding cultivated) mentioned as larval hostplants for Brazilian ithomiine butterflies by those authors and compared it with a list of 50 species of *Solanum* (excluding *S. americanum*; see below) that occur in SE Minas Gerais, according to Eiterer *et al.* (1996 and work in process) and Carvalho (1996).

RESULTS AND DISCUSSION

Table 1 includes 18 new records of larval hostplants obtained for six species of ithomiine butterflies. It is important to note that: (1) *Solanum lycocarpum* and *S. palinacanthum* are two widely distributed species, but are frequently confused with related species, in particular *Solanum grandiflorum* Ruiz et Pav. and *S. aculeatissimum* Jacq., respectively. Apparently, this is the reason that these species were not mentioned in DB. Brown (1987),

TABLE 1
New records¹ of larval hostplants² for ithomiine butterflies.

<i>Dircenna dero celtina</i> (Burmeister) <i>Solanum scuticum</i> (r)
<i>Hypothesis ninonia daeta</i> (Boisduval) <i>Solanum cernuum</i> (fr) ³ <i>S. cinnamomeum</i> (fp) <i>S. decorum</i> (f) <i>S. leucodendron</i> (fp) <i>S. piluliferum</i> (r)
<i>Mechanitis</i> sp. (<i>M. l. lysimnia</i> and/or <i>M. p. casabranca</i>) <i>Solanum velleum</i> (f)
<i>Mechanitis lysimnia lysimnia</i> (Fabricius) <i>Solanum hexandrum</i> (f) <i>S. lycocarpum</i> (fr) <i>S. palinacanthum</i> (fr) <i>S. piluliferum</i> (fr) <i>S. schlechtendalianum</i>
<i>Mechanitis polymnia casabranca</i> Haensch <i>Solanum hexandrum</i> (f) <i>S. lycocarpum</i> (f) <i>S. palinacanthum</i> (fr)
<i>Oleria aquata</i> (Weymer) <i>Solanum cernuum</i> (fr) ³ <i>S. swartzianum</i> (r) ⁴
<i>Pteronymia carlia</i> (Schaus) <i>Solanum mauritianum</i> (r)

¹ Records obtained in Juiz de Fora (MG), except for *S. schlechtendalianum* Walp. (a non-prickly species; see Silva, 1996) that was obtained in Brasília (DF).

² See appendices for author's names. Between parentheses: first record of ithomiine larvae on this species (f); larvae were reared on this species (r); use presumed by larval feeding marks (p).

³ From Costa (1991).

⁴ From Costa (1991); this interaction was noted by Brown (1992) in São Paulo State.

for example, presents a plate with *Solanum palinacanthum* (p. 370, Fig. 6D), although the legend (p. 368) calls it *Solanum aculeatissimum*.

(2) Some species of Solanaceae, such as *Solanum americanum* Mill., seem to be immune to feeding by ithomiine larvae (see Brown, 1987). So not all species of *Solanum* that grow in a given habitat represent potential hostplants for these larvae.

Of the 42 species of *Solanum* mentioned for Brazil by DB, at least 19 can be found in SE Minas Gerais (Appendix 1); and of the 50 species that occur in SE Minas Gerais, 31 were not reported by DB (Appendix 2). I suspect that most of the latter can be used by ithomiine larvae; nine of these 31 species are reported for the first time here as larval hostplant for ithomiine butterflies (Table 1).

Many widespread ithomiine species utilize several larval hostplants over their broad ranges

(Drummond, 1986; Brown, 1987; Costa, personal observation). Hence, the larval hostplant list for a given species should increase if records are added from different places.

The number of species of *Solanum* reported by DB for the Neotropics in general (72) and Brazil in particular (42) is only 8%-12% of the species of *Solanum* expected to occur in these regions.

Moreover, half of the 179 records on *Solanum* species reported by DB came from only two places: Costa Rica (55 records on 25 species) and East-Central São Paulo State, SE Brazil (Sumaré and Campinas: 34 records on 17 species). DB's data-base appears, therefore, a small and biased sample and many more records need to be accumulated before the hostplant relationships of these Neotropical butterflies can be properly evaluated.

APPENDIX 1

19 species of *Solanum* found in SE Minas Gerais, mentioned in Drummond & Brown (1987).¹

Subgenus <i>Leptostemonum</i> (prickly solanums) <ol style="list-style-type: none"> 1. <i>Solanum capsicoides</i> All. 2. <i>S. insidiosum</i> Mart. 3. <i>S. paniculatum</i> L. 4. <i>S. robustum</i> H. Wendl. 5. <i>S. scuticum</i> M. Nee [unpublished] (= <i>S. aspero-lanatum</i> auctorum, non Ruiz et Pav.) 6. <i>S. sisymbriifolium</i> Lam. 7. <i>S. vaillantii</i> Dunal (= <i>S. acerosum</i> Sendtn.)² 8. <i>S. variabile</i> Mart. 9. <i>S. viarum</i> Dunal
"Subgenus" <i>Solanum</i> (non-prickly solanums) <ol style="list-style-type: none"> 10. <i>Solanum adenotrichum</i> Dunal (= <i>S. concinnum</i> Schott ex Sendtn.)³ 11. <i>S. argenteum</i> Dunal ex Poir. 12. <i>S. caeruleum</i> Vell. (= <i>S. laxiflorum</i> Sendtn.)⁴ 13. <i>S. didymum</i> Dunal (= <i>S. gemellum</i> Mart. ex Sendtn.)³ 14. <i>S. flaccidum</i> Vell. 15. <i>S. granuloso-leprosum</i> Dunal 16. <i>S. mauritanum</i> Scop. 17. <i>S. megalochiton</i> Mart. 18. <i>S. pseudoquina</i> St.-Hil. (= <i>S. inaequale</i> Vell.)⁴ 19. <i>S. swartzianum</i> Roem. et Schult.

¹ Between parentheses: names used by Drummond & Brown (1987) and/or Brown (1992).

² See Nee (1991).

³ See Almeida-Lafetá (1998).

⁴ See Knapp (1986).

APPENDIX 2

31 species of *Solanum* found in SE Minas Gerais, not mentioned in Drummond & Brown (1987).

Subgenus <i>Leptostemonum</i> (prickly solanums) 1. <i>Solanum alternato-pinnatum</i> Steud. 2. <i>S. angustiflorum</i> Sendtn. 3. <i>S. asterophorum</i> Mart. 4. <i>S. decorum</i> Sendtn. 5. <i>S. hexandrum</i> Vell. 6. <i>S. cf. ligulatum</i> M. Nee ¹ 7. <i>S. lycocarpum</i> St.-Hil. 8. <i>S. palinacanthum</i> Dunal 9. <i>S. pelliceum</i> Sendtn. 10. <i>S. piluliferum</i> Dunal 11. <i>S. schizandrum</i> Sendtn. 12. <i>S. subumbellatum</i> Vell. 13. <i>S. velleum</i> Sw. ex Roem. et Schult.
"Subgenus" <i>Solanum</i> (non-prickly solanums) 14. <i>Solanum bullatum</i> Vell. 15. <i>S. caldense</i> Carvalho 16. <i>S. calvescens</i> Bitt. 17. <i>S. castaneum</i> Carvalho 18. <i>S. cernuum</i> Vell. 19. <i>S. cinnamomeum</i> Sendtn. 20. <i>S. cladotrichum</i> Vand. 21. <i>S. gnaphalocarpum</i> Vell. 22. <i>S. inodorum</i> Vell. 23. <i>S. jasminifolium</i> Sendtn. 24. <i>S. leucodendron</i> Sendtn. 25. <i>S. martii</i> Sendtn. 26. <i>S. pachinatum</i> Dunal 27. <i>S. refractifolium</i> Sendtn. 28. <i>S. rufescens</i> Sendtn. 29. <i>S. selloianum</i> Sendtn. 30. <i>S. vellozianum</i> Dunal 31. <i>S. warmingii</i> Hiern

¹ See Nee (1991).

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REFERENCES

- ALMEIDA-LAFETÁ, R. C., 1998, *Espécies lenhosas de Solanum (Solanaceae) da Reserva Biológica Santa Cândida, Juiz de Fora, Minas Gerais*. MSc thesis. Rio de Janeiro, Universidade Federal do Rio de Janeiro.
- BROWN, K. S., Jr., 1987, Chemistry at the Solanaceae/Ithomiinae interface. *Ann. Miss. Bot. Garden*, 74: 359-397.
- BROWN, K. S., Jr., 1992, Borboletas da Serra do Japi: diversidade, hábitos, recursos alimentares e variação temporal. In: L. P. C. Morellato (ed.), *História Natural da Serra do Japi: Ecologia e Preservação de uma Área Florestal no Sudeste do Brasil*, pp. 142-186. Campinas, Universidade Estadual de Campinas.
- BROWN, K. S., Jr. & FREITAS, A. V. L., 1994, Juvenile stages of Ithomiinae: overview and systematics (Lepidoptera: Nymphalidae). *Trop. Lepid.*, 5: 9-20.
- CARVALHO, L. d'A. F., 1996, Espécies de *Solanum* L. das seções *Cernuum* Carv. & Shep. e *Lepidotum* (Dun.) Seithe v. Hoff. (Solanaceae). *Pesquisas (Série Botânica)* 46: 5-83.
- COSTA, F. A. P. L., 1991, *Sobre a utilização de Solanum cernuum Vell. (Solanaceae) como planta hospedeira por Hypothyris ninonia daeta (Bdv., 1836) (Lepidoptera: Nymphalidae: Ithomiinae)*. MSc thesis. Campinas, Universidade Estadual de Campinas.
- DeVRIES, P. J., 1987, *The Butterflies of Costa Rica and their Natural History: Papilionidae, Pieridae, Nymphalidae*. Princeton, Princeton UP.
- DRUMMOND, B. A., III, 1986, Coevolution of ithomiine butterflies and solanaceous plants. In: W. G. D'Arcy (ed.), *Solanaceae: Biology and Systematics*, pp. 307-327. New York, Columbia UP.

- DRUMMOND, B. A., III, & BROWN, K. S., Jr., 1987, Ithomiinae (Lepid.: Nymphalidae): summary of known larval foodplants. *Ann. Miss. Bot. Garden*, 74: 341-358.
- EITERER, M., ALMEIDA-LAFETÁ, R. C. & COSTA, F. A. P. L., 1996, O gênero *Solanum* L. (Solanaceae) no município de Juiz de Fora. In: *SBB, Resumos do XLVII Congresso Nacional de Botânica*, p.142. Nova Friburgo, Sociedade Botânica do Brasil.
- HUNZIKER, A. T., 1979, South American Solanaceae: A synoptic survey. In: J. G. Hawkes, R. N. Lester & A. D. Shelton (eds.), *The Biology and Taxonomy of Solanaceae*, pp. 49-85. London, Academic.
- KNAPP, S. D., 1986, *A revision of Solanum section Geminata (G. Don) Walpers*. PhD thesis. Ithaca, Cornell University.
- MIELKE, O. H. H. & BROWN, K. S., Jr., 1979, *Suplemento ao Catálogo dos Ithomiidae Americanos de R. Ferreira d'Almeida (Lepidoptera) (Nymphalidae: Ithomiinae)*. Curitiba, Universidade Federal do Paraná.
- NEE, M., 1991, Synopsis of *Solanum* section *Acanthopora*: A group of interest for glycoalkaloids. In: J. G. Hawkes, R. N. Lester, M. Nee & N. Estrada (eds.), *Solanaceae III: Taxonomy, Chemistry, Evolution*, pp. 257-266. London, Academic.
- SILVA, S. R., 1996, *O gênero Solanum L. (Solanaceae) no Distrito Federal*. MSc thesis. Brasília, Universidade de Brasília.
- WHALEN, M. D., 1984, Conspectus of species group in *Solanum* subgenus *Leptostemonum*. *Gentes Herb.*, 12: 179-282.