

***Mechanitis polymnia casabranca* AND *Ithomia lichyi lichyi* (LEPIDOPTERA: NYMPHALIDAE) DAMAGING TREE OF *Solanum granuloso-leprosum* (SOLANACEAE)**

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ABSTRACT: The Zona da Mata region is located in southeastern Minas Gerais State, Brazil with fauna and flora diversified, including herbivorous insects and Solanaceae plants. Ithomiinae caterpillars were observed damaging tree of *Solanum granuloso-leprosum* Dunal (Solanaceae), used for different purposes and abundant in secondary forest. The objective of this study was to identify defoliating caterpillars of *S. granuloso-leprosum* at the campus of Universidade Federal de Viçosa (UFV) in Viçosa, Minas Gerais State, Brazil and review host plants of *Mechanitis polymnia* L., 1758 (Lepidoptera: Nymphalidae). Thirteen caterpillars found damaging a tree of *S. granuloso-leprosum* at the campus of UFV were collected and maintained in the Laboratório de Controle Biológico de Insetos (LCBI) from UFV until adult emergence. These caterpillars were of two species, being ten of the first and three of the second species. Adult specimens of the latter species were identified as *Ithomia lichyi lichyi* D'Almeida, 1939 (Lepidoptera: Nymphalidae) in the Departamento de Zoologia of Universidade Federal do Paraná (UFPR) in Curitiba, Paraná State, Brazil and of the group of ten caterpillars as *Mechanitis polymnia casabranca* Haensch, 1905 (Lepidoptera: Nymphalidae) in the Museu de Zoologia of Universidade de São Paulo (USP) in São Paulo State, Brazil. This is the first report of *M. polymnia casabranca* and *I. lichyi lichyi* together damaging plant of *S. granuloso-leprosum* in the Zona da Mata region of Minas Gerais State, Brazil and 57 plants are recorded as host of *M. polymnia*.

Key words: Damage, Ithomiinae, Papilionoidea, Solanales, Zona da Mata.

***Mechanitis polymnia casabranca* E *Ithomia lichyi lichyi* (LEPIDOPTERA: NYMPHALIDAE) DANIFICANDO ÁRVORE DE *Solanum granuloso-leprosum* (SOLANACEAE)**

RESUMO: A região da Zona da Mata está localizada no sudeste do estado de Minas Gerais, Brasil com fauna e flora diversificadas, incluindo insetos herbívoros e plantas Solanaceae. Lagartas Ithomiinae foram observadas danificando árvore de *Solanum granuloso-leprosum* Dunal (Solanaceae), usada para diversos fins e abundante em floresta secundária. Objetivou-se, com este estudo, identificar lagartas desfolhadoras de *S. granuloso-leprosum* no campus da Universidade Federal de Viçosa (UFV) em Viçosa, Minas Gerais, Brasil e revisar plantas hospedeiras de *Mechanitis polymnia* (L., 1758) (Lepidoptera: Nymphalidae). Treze lagartas encontradas danificando uma árvore de *S. granuloso-leprosum* no campus da UFV foram coletadas e mantidas no Laboratório de Controle Biológico de Insetos (LCBI) da UFV até a emergência de adultos. Essas lagartas foram de duas espécies, sendo dez da primeira e três da segunda espécie. Espécimes adultos da última espécie foram identificados como *Ithomia lichyi lichyi* D'Almeida, 1939 (Lepidoptera: Nymphalidae) no Departamento de Zoologia da Universidade Federal do Paraná (UFPR) em Curitiba, Paraná, Brasil e do grupo de dez lagartas como *Mechanitis polymnia casabranca* Haensch, 1905 (Lepidoptera: Nymphalidae) no Museu de Zoologia da Universidade de São Paulo (USP) em São Paulo, Brasil. Esse é o primeiro relato de *M. polymnia casabranca* e *I. lichyi lichyi* juntos, danificando planta de *S. granuloso-leprosum*, na região da Zona da Mata, de Minas Gerais, Brasil e 57 plantas estão registradas como hospedeiras de *M. polymnia*.

Palavras-chave: Danos, Ithomiinae, Papilionoidea, Solanales, Zona da Mata

1 INTRODUCTION

The Zona da Mata region, located in the southeastern Minas Gerais State, Brazil, with 36.058 km², representing 6.2% of the area of Mata Atlântica biome in this state (RESENDE et al., 2009). Its native vegetation was formed by Floresta Tropical, with dense tree cover and as an expansion of the Mata Atlântica (PORTUGAL et

al., 2010). These forests were reduced to small patches and bushes on steep slopes and replaced, largely, by agricultural crops, pasture and reforestation (SOUZA et al., 2009). The precipitation of the Zona da Mata varies from 1,200 to 1,400 mm (REIS et al., 2007). The tropical climate has hot summers, temperatures reaching 25 °C and low temperatures at altitudes of 1,000 m above sea level (SANTANA et al., 2010). The terrain is rugged, with

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predominance of hills and narrow valleys and mountains formed by ancient crystalline rocks. The altitude varies between 100 m in the Rio Pomba and Paraíba do Sul valleys and 1.889 m in the Pico do Brigadeiro (NUNES et al., 2009).

Solanum granuloso-leprosum Dunal (Solanaceae) is small tree and, in naturally occurring, reaches 12 m height and diameter at breast height of 30 cm (SOUZA; VALIO, 2001). This species occurs in secondary forests colonizing devastated areas, in northeastern Argentina, Uruguay, Paraguay and south-central Brazil (POUYU-ROJAS et al., 2006). Its wood is suitable for pulp and energy, its fruits enjoyed by wildlife and its leaves used as vermifuge for horses (FLORES-AYLAS et al., 2003; JACOMASSA; PIZO, 2010). The main interest in *S. granuloso-leprosum* is related to plantations for recovery of degraded ecosystems (FERREIRA et al., 2007).

The Ithomiinae (Lepidoptera: Nymphalidae) subfamily has, approximately, 370 species of butterflies (GIRALDO; URIBIE, 2010) and some feed on leaves of *S. granuloso-leprosum*, which may reduce the rate of photosynthesis and the development of this plant. These insects can be found in the Neotropical region from northern Argentina to Mexico (WILLMOTT; FREITAS, 2006) and abundant in tropical forests, including small fragments and urban and suburban systems (BROWN JUNIOR; FREITAS, 2003). *Mechanitis* species adapt to a wide variety of agricultural habitats and secondary forests where its caterpillars feed on host plants (YOUNG; MOFFETT, 1979). *Ithomia* species are abundant and with variable patterns of coloration of the wings, including transparent. These insects can mimic other genera of Lepidoptera, as *Hypothyris*, *Napeogenes*, *Oleria* and *Scada* (MALLARINO et al., 2004).

Caterpillars *Mechanitis* and *Ithomia* were reported in several countries on *Solanum* (Solanaceae) plants, with 24 host plants for *Mechanitis polymnia casabranca* Haensch, 1905 (Lepidoptera: Nymphalidae) (WILLMOTT; MALLET, 2004). Caterpillars of this species and of *Mechanitis lysimnia lysimnia* (F., 1793) (Lepidoptera: Nymphalidae) were found together in Itueta, Vale do Rio Doce region of Minas Gerais State, Brazil (VASCONCELLOS-NETO; BROWN JUNIOR, 1982) and the first in plants of *S. granuloso-leprosum* in São Paulo State, Brazil (DRUMMOND; BROWN JUNIOR, 1987). The occurrence of caterpillars of *M. lysimnia lysimnia* and *Ithomia lichyi lichyi* D'Almeida, 1939 (Lepidoptera: Nymphalidae) in plants of this Solanaceae was unknown

in the Zona da Mata of Minas Gerais State. The objective of this work was to record the occurrence of *M. polymnia casabranca* and *I. lichyi lichyi* together damaging plant of *S. granuloso-leprosum* in the Zona da Mata region of Minas Gerais State, Brazil and review host plants of *Mechanitis polymnia* (L., 1758) (Lepidoptera: Nymphalidae).

2 MATERIAL AND METHODS

Thirteen caterpillars were found on April 22, 2011 damaging a plant with 4 m height of *S. granuloso-leprosum* at the garden of the Pavilhão de Aulas (PVA I) from Universidade Federal de Viçosa (UFV) in Viçosa, Minas Gerais State, Brazil. This plant was identified after comparison with material deposited in the Laboratório de Dendrologia from UFV. These caterpillars were brought to the Laboratório de Controle Biológico de Insetos (LCBI) from UFV and placed in cage (12.5 cm height × 12.5 cm width × 30.5 cm length) with branches of this plant changed, daily, until the pupation. The stems of these branches were placed in glass tubes with water to reduce their leaves wilt. Adults from these caterpillars were fed with nutrient solution (10.5 g of honey, 1.05 l of distilled water, 350 ml of beer, 60.0 g of sucrose, 1.05 g of ascorbic acid and 1.05 g of Nipagin®) moistened in cotton swab second proposed methodology for *Anticarsia gemmatalis* Hübner, 1818 (Lepidoptera: Noctuidae) (FERREIRA et al., 2008). Adult specimens were photographed and deposited in the LCBI from UFV. Photos of adults of the group of ten caterpillars were sent to the Museu de Zoologia of Universidade de São Paulo (USP) in São Paulo State, Brazil and the group of three, sending a female specimen to the Departamento de Zoologia of Universidade Federal do Paraná (UFPR) in Curitiba, Paraná State, Brazil, for identifies these insects. Host plants of *M. polymnia* were reviewed.

3 RESULTS AND DISCUSSION

Ten (Figure 1A – adult) and three (Figure 1B – adult) caterpillars, respectively, belonged to two species. Individuals of the group of ten caterpillars become pupae after the fifth day of collection. Five normal adults and five deformed emerged from these pupae after the 12th day of pupation and the normal survived for 10 days. Adults of this group were identified as *M. polymnia casabranca* in the Museu de Zoologia of USP in São Paulo State, Brazil. Those of the group of three caterpillars become pupae after

the fifth day of collection. Two normal adults emerged from these pupae after the 12th day of pupation and survived by 10 days. These adults were identified as *I. lichyi lichyi* in the Departamento de Zoologia of UFPR in Curitiba, Paraná State, Brazil.



Figura 1 – Adultos de *Mechanitis polymnia casabranca* (A) e *Ithomia lichyi lichyi* (B) (Lepidoptera: Nymphalidae), respectivamente, repousando sobre uma folha artificial, coletados em Viçosa, Minas Gerais, Brasil após suas lagartas danificarem planta de *Solanum granuloso-leprosum* (Solanaceae).

Figure 1 – Adults of *Mechanitis polymnia casabranca* (A) and *Ithomia lichyi lichyi* (B) (Lepidoptera: Nymphalidae), respectively, resting on an artificial leaf, collected in Viçosa, Minas Gerais State, Brazil after their caterpillars damaged plant of *Solanum granuloso-leprosum* (Solanaceae).

This is the first report of *M. polymnia casabranca* and *I. lichyi lichyi* damaging plant of *S. granuloso-leprosum* in the Zona da Mata region of Minas Gerais State, Brazil. Ithomiinae common in southeastern Brazil (VASCONCELOS-NETO; BROWN JUNIOR, 1982) were, also, found in central Brazil after 24 years of the first assessment (EMERY et al., 2006), suggesting adaptation of these insects in different habitats. Insects of this group were not observed in 2004 and in some previous years, suggesting that the population dynamics of Ithomiinae may vary in different climatic years. For example, *Hypothyris ninonia daeta* Boisduval, 1836 (Lepidoptera: Nymphalidae) was the most abundant butterfly in 2003, while *M. polymnia* was absent in that year, although the most abundant in 2004 (VASCONCELOS-NETO; BROWN JUNIOR, 1982).

The fact of two species of Ithomiinae were found in a same plant of *S. granuloso-leprosum* agrees with the observed for *M. polymnia* and *Mechanitis lysimnia* (F., 1793) (Lepidoptera: Nymphalidae) from central Mexico to southeastern Brazil on plants of *Solanum* spp. (VASCONCELOS-NETO; BROWN JUNIOR, 1982).

However, *M. lysimnia* was more tolerant to climate years with lower temperature and, therefore, its population spread to central Argentina, although it was absent in Bacia Amazônia Central (BROWN JUNIOR, 1977). However, these species lay eggs on host plants in Sumaré, São Paulo State, Brazil, and showed peaks of reproduction during the year, above of their caterpillars and adults have variations in the color of the body (VASCONCELOS-NETO; BROWN JUNIOR, 1982). Ithomiinae can coexist on the same host, because the extreme scarcity of a host plant in a spatial or temporal limit leads to acceptance of that most abundant (BROWN JUNIOR, 1977; VASCONCELOS-NETO; BROWN JUNIOR, 1982). In addition, Ithomiinae species with mimetic features similar can mate and reproduce after stimulation by pheromone (SCOTT, 1973).

A total of 57 host plant species was recorded for *M. polymnia* (Table 1). Economically important plants, cultivated by man, as *Lycopersicon esculentum* Mill (Solanaceae) are hosts of *M. polymnia*, suggesting that the devastation of the Mata Atlântica biome may make this species a potential pest in crops of plants of this family (DRUMMOND; BROWN JUNIOR, 1987; FREITAS, 1996; SILVA et al., 1968). The polyphagia of *M. polymnia* makes this species most adaptable to coexistence with other Ithomiinae in a same plant and the use of host species of Solanaceae plants, abundant in the Zona da Mata region of Minas Gerais State, Brazil, could increase their survival (FERREIRA et al., 2007).

The behavior of caterpillars of *M. polymnia casabranca* and *I. lichyi lichyi* was gregarious on plant of *S. granuloso-leprosum*. Five caterpillars of the first species and three of the second were together on the adaxial side on a same leaf of *S. granuloso-leprosum*. Five caterpillars of *M. polymnia casabranca* were in another leaf of plant of this Solanaceae. The gregariousness in Ithomiinae is an adaptation to adverse conditions of the dry season, as high temperatures and low relative humidity of air (PINHEIRO et al., 2008). The caterpillars were fed on leaves of *S. granuloso-leprosum*, with preference for those younger, but leaving the veins intact. Natural enemies of these caterpillars were not observed. Generalist predator ant *Camponotus crassus* Mayr, 1862 (Hymenoptera: Formicidae) prey Ithomiinae, but individuals of this family can produce chemical defenses, for example, toxic or non-palatable substances, to avoid predation by natural enemies (PORTUGAL; TRIGO, 2005).

Tabela 1 – Plantas hospedeiras de lagartas de *Mechanitis polymnia* (Lepidoptera: Nymphalidae) e referências.**Table 1** – Host plants of caterpillars of *Mechanitis polymnia* (Lepidoptera: Nymphalidae) and references.

Host plants	References
Solanaceae	
<i>Brugmansia candida</i>	Brazil: (SILVA et al., 1968)
<i>Bruijfelsia grandiflora</i>	Brazil: (SILVA et al., 1968)
<i>Cyphomandra</i> spp.	Neotropical: (LAMAS, 1985)
<i>Cyphomandra betaceae</i>	Brazil: (BIZARRO et al., 2003; SILVA et al., 1968)
<i>Cyphomandra corymbiflora</i>	Brazil: (BIZARRO et al., 2003)
<i>Cyphomandra diplocochos</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>)
<i>Cyphomandra fragrans</i>	Brazil: (PORTUGAL; TRIGO, 2005)
<i>Cyphomandra hartwegii</i>	Ecuador: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>dorissides</i>)
<i>Cyphomandra sciadostylis</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>); (BIZARRO et al., 2003)
<i>Cyphomandra velutina</i>	Brazil: (SILVA et al., 1968) (spp. <i>casabranca</i>); (DRUMMOND; BROWN JUNIOR, 1987)
<i>Datura stramonium</i>	Venezuela: (GUAGLIUMI, 1971) (spp. <i>veritabilis</i>)
<i>Jaltomata procumbens</i>	Costa Rica: (HABER, 1978) (spp. <i>isthmia</i>)
<i>Lycopersicon</i> sp.	Brazil: (FREITAS, 1996) (spp. <i>casabranca</i>)
<i>Lycopersicon esculentum</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987; SILVA et al., 1968) (spp. <i>casabranca</i>); Ecuador: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>dorissides</i>)
<i>Nicotiana tabacum</i>	Venezuela: (GUAGLIUMI, 1971) (spp. <i>veritabilis</i>)
<i>Solanum</i> sp.	Brazil: (BIZARRO et al., 2003; FREITAS, 1996); Colombia: (OROZCO et al., 2009)
<i>Solanum</i> sp. (section <i>Brevantherum</i>)	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>polymnia</i>); Peru: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>eurydice</i>)
<i>Solanum</i> sp. (section <i>Solanum</i>)	Ecuador: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>dorissides</i>)
<i>Solanum</i> sp. (subgenus <i>Leptostemonum</i>)	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>polymnia</i>) (spp. <i>casabranca</i>); Trinidad: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>kayei</i>)
<i>Solanum</i> spp.	Brazil: (BROWN JUNIOR, 1992) (spp. <i>casabranca</i>); (PINHEIRO et al., 2008) (spp. <i>casabranca</i>); Costa Rica: (YOUNG, 1984) (spp. <i>isthmia</i>); Neotropical: (LAMAS, 1985); Trinidad: (BARCANT, 1970) (spp. <i>kayei</i>); n.i.: (NISHIDA, 2002)
<i>Solanum aculeatissimum</i>	Brazil: (SILVA et al., 1968); Suriname: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>polymnia</i>)
<i>Solanum adenotrichum</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>)
<i>Solanum adhaerens</i>	Costa Rica: (GENTRY; DYER, 2002) (spp. <i>isthmia</i>)
<i>Solanum asperum</i>	Costa Rica: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>isthmia</i>)
<i>Solanum aturense</i>	Costa Rica: (HABER, 1978) (spp. <i>isthmia</i>); (GENTRY; DYER, 2002) (spp. <i>isthmia</i>)
<i>Solanum crinitum</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>polymnia</i>)
<i>Solanum goodpeedii</i>	Bolivia: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>angustifascia</i>)
<i>Solanum granuloso-leprosum</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>)
<i>Solanum hayesii</i>	Costa Rica: (JANZEN; HALLWACHS, 2012) (spp. <i>isthmia</i>)
<i>Solanum hazenii</i>	Costa Rica: (JANZEN; HALLWACHS, 2012) (spp. <i>isthmia</i>)
<i>Solanum hexandrum</i>	Brazil: (COSTA, 1999) (spp. <i>casabranca</i>)
<i>Solanum hirtum</i>	Venezuela: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>veritabilis</i>)
<i>Solanum hispidum</i>	Costa Rica: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>isthmia</i>)
<i>Solanum incarceratum</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987; SILVA et al., 1968) (spp. <i>casabranca</i>)
<i>Solanum jamaicense</i>	Colombia: (GIRALDO; URIBIE, 2010); Costa Rica: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>isthmia</i>)
<i>Solanum lycocarpum</i>	Brazil: (COSTA, 1999) (spp. <i>casabranca</i>)
<i>Solanum mammosum</i>	Venezuela: (GUAGLIUMI, 1971) (spp. <i>veritabilis</i>)
<i>Solanum mauritanium</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987; SILVA et al., 1968) (spp. <i>casabranca</i>); (WILL-MOTT; MALLETT, 2004)
<i>Solanum megalochiton</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>)
<i>Solanum melongena</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>)
	n.i.: (BUKENYA; HALL, 1987)
	Venezuela: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>veritabilis</i>)
<i>Solanum palinacanthum</i>	Brazil: (COSTA, 1999) (spp. <i>casabranca</i>)
<i>Solanum paniculatum</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987; SILVA et al., 1968) (spp. <i>casabranca</i>)
<i>Solanum quitoense</i>	Colombia: (GALLEGO, 1950) (spp. <i>caucaensis</i>); Ecuador: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>dorissides</i>)
<i>Solanum robustum</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>)
<i>Solanum rupanum</i>	n.i.: (CHAPMAN; HALL, 1993); Costa Rica: (HABER, 1978) (spp. <i>isthmia</i>); (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>isthmia</i>); (GENTRY; DYER, 2002) (spp. <i>isthmia</i>)
<i>Solanum rugosum</i>	Costa Rica: (HABER, 1978) (spp. <i>isthmia</i>); Ecuador: (BECCALONI, 1997) (spp. <i>dorissides</i>)
<i>Solanum schlechtendalianum</i>	Costa Rica: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>isthmia</i>); (JANZEN; HALLWACHS, 2012) (spp. <i>isthmia</i>)
<i>Solanum scuticum</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>)
<i>Solanum sessiliflorum</i>	Brazil: (SILVA et al., 1968) (spp. <i>dorissides</i>); (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>); Ecuador: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>dorissides</i>); Peru: (LAMAS, 1976) (spp. <i>dorissides</i>); Venezuela: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>veritabilis</i>)
<i>Solanum sissiliflorum</i>	Brazil: (SILVA et al., 1968) (spp. <i>dorissides</i>); (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>); Ecuador: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>dorissides</i>); Peru (LAMAS, 1973) (spp. <i>dorissides</i>); Venezuela: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>veritabilis</i>)
<i>Solanum sisymbriifolium</i>	Brazil: (SILVA et al., 1968; DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>polymnia</i>)
<i>Solanum spinosissimum</i>	Brazil: (SILVA et al., 1968)
<i>Solanum stramonifolium</i>	Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>angustifascia</i>)
<i>Solanum tabacifolium</i>	Brazil: (BRÜCKMANN et al., 2000) (spp. <i>casabranca</i>); (PORTUGAL; TRIGO, 2005) (spp. <i>casabranca</i>)
<i>Solanum torvum</i>	Belize: (MEERMAN, 2003) (spp. <i>lycidice</i>); Brazil: (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>); Colombia: (CONSTANTINO, 1998) (spp. <i>caucaensis</i>); Costa Rica: (DEVRIES, 1987) (spp. <i>isthmia</i>); Venezuela: (GUAGLIUMI, 1971) (spp. <i>veritabilis</i>)
<i>Solanum tuberosum andigena</i>	Venezuela: (GUAGLIUMI, 1971) (spp. <i>veritabilis</i>)
<i>Solanum veritabile</i>	Brazil: (SILVA et al., 1968) (spp. <i>casabranca</i>); (DRUMMOND; BROWN JUNIOR, 1987) (spp. <i>casabranca</i>); (FREITAS, 1996) (spp. <i>casabranca</i>)

n.i. = unidentified.

4 CONCLUSIONS

Mechanitis polymnia casabranca and *I. lichyi lichyi* have potential of defoliation and complete the life cycle on plants of *S. granuloso-leprosum* in the field and laboratory. Despite of the large number of hosts of *M. polymnia*, further studies should be conducted to evaluate the mechanisms of coexistence between these two species.

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6 REFERENCES

- BARCANT, M. **Butterflies of Trinidad and Tobago**. London: Collins, 1970.
- BECCALONI, G. W. Vertical stratification of ithomiine butterfly (Nymphalidae: Ithomiinae) mimicry complexes: the relationship between adult flight height and larval host plant height. **Biological Journal of the Linnean Society**, Southampton, v. 62, n. 3, p. 313-341, Nov. 1997.
- BIZARRO, J. M. F.; CASAGRANDE, M. M.; MIELKE, O. H. H. External morphology of *Thyridia psidii cetoides* (Rosenberg & Talbot): III., abdomen and appendages (Lepidoptera, Nymphalidae, Ithomiinae). **Revista Brasileira de Zoologia**, Curitiba, v. 20, n. 4, p. 681-684, Dec. 2003.
- BROWN JUNIOR, K. S. Borboletas da Serra do Japi: diversidade, habitats, recursos alimentares e variação temporal. In: MORELLATO, L. P. C. (Ed.). **História natural da serra do Japi: ecologia e preservação de uma área florestal no sudeste do Brasil**. Campinas: UNICAMP, 1992. p. 142-187.
- BROWN JUNIOR, K. S. Geographical patterns of evolution in Neotropical Lepidoptera: differentiation of the species of *Melinaea* and *Mechanitis* (Nymphalidae, Ithomiinae). **Systematic Entomology**, Canberra, v. 2, n. 3, p. 161-197, July 1977.
- BROWN JUNIOR, K. S.; FREITAS, A. V. L. Butterfly communities of urban forest fragments in Campinas, São Paulo, Brazil: structure, instability, environmental correlates, and conservation. **Journal of Insect Conservation**, Headington, v. 6, n. 4, p. 217-231, Dec. 2003.
- BRÜCKMANN, M.; TRIGO, J. R.; FOGLIO, M. A.; HARTMANN, T. Storage and metabolism of radioactively labeled pyrrolizidine alkaloids by butterflies and larvae of *Mechanitis polymnia* (Lepidoptera: Nymphalidae, Ithomiinae). **Chemoecology**, Brussels, v. 10, n. 1, p. 25-32, Mar. 2000.
- BUZENYA, Z. R.; HALL, J. B. Six cultivars of *Solanum macrocarpon* (Solanaceae) in Ghana. **Bothalia**, Pretoria, v. 17, n. 1, p. 91-95, July 1987.
- CHAPMAN, E.; HALL, W. **Caterpillars: ecological and evolutionary constraints on foraging**. New York: Wiley, 1993. 587 p.
- CONSTANTINO, L. M. Butterfly life history studies, diversity, ranching and conservation in the Chocó rain forests of Western Colombia (Insecta: Lepidoptera). **SHILAP Revista de Lepidopterologia**, Madrid, v. 26, n. 101, p. 19-39, Jan. 1998.
- COSTA, F. A. P. L. New records of larval hostplants for Ithomiinae butterflies (Nymphalidae). **Revista Brasileira de Biologia**, São Carlos, v. 59, n. 3, p. 455-459, Aug. 1999.
- DEVRIES, P. J. **The butterflies of Costa Rica and their natural history: Papilionidae, Pieridae, Nymphalidae**. Princeton: Princeton University, 1987. 456 p.
- DRUMMOND, B. A.; BROWN JUNIOR, K. S. Ithomiinae (Lepidoptera: Nymphalidae): summary of know larval food plants. **Annals of the Missouri Botanical Garden**, Missouri, v. 74, n. 2, p. 341-358, Jan. 1987.
- EMERY, E. O.; BROWN JUNIOR, K. S.; PINHEIRO, C. E. G. As borboletas (Lepidoptera, Papilionoidea) do Distrito Federal, Brasil. **Revista Brasileira de**

- Entomologia**, Curitiba, v. 50, n. 1, p. 85-92, jan./mar. 2006.
- FERREIRA, J. A. M.; ZANUNCIO, J. C.; TORRES, J. B.; MOLINA-RUGAMA, A. J. Predatory behaviour of *Podisus nigrispinus* (Heteroptera: Pentatomidae) on different densities of *Anticarsia gemmatalis* (Lepidoptera: Noctuidae) larvae. **Biocontrol Science and Technology**, Lethbridge, v. 18, n. 7, p. 711-719, July 2008.
- FERREIRA, R. A.; DAVIDE, A. C.; BEARZOTI, E.; MOTTA, M. S. Tree species direct sowing for forest restoration. **Cerne**, Lavras, v. 13, n. 3, p. 271-279, jul./set. 2007.
- FLORES-AYLAS, W. W.; SAGGIN, O. J.; SIQUEIRA, J. O.; DAVIDE, A. C. Effects of *Glomus etunicatum* and phosphorus on initial growth of woody species at direct seeding. **Pesquisa Agropecuária Brasileira**, Brasília, v. 38, n. 2, p. 257-266, fev. 2003.
- FREITAS, A. V. L. Population biology of *Heterossais edessa* (Nymphalidae) and its associated Atlantic Forest Ithomiinae community. **The Journal of the Lepidopterists' Society**, Eureka, v. 50, n. 1, p. 273-289, Dec. 1996.
- GALLEGO, F. L. Estudios entomológicos. **Revista Facultad Nacional de Agronomía**, Medellín, v. 11, n. 37, p. 57-71, ene. 1950.
- GENTRY, G. L.; DYER, L. A. On the conditional nature of Neotropical caterpillar defenses against their natural enemies. **Ecology**, Davis, v. 83, n. 11, p. 3108-3119, Nov. 2002.
- GIRALDO, C. E.; URIBIE, S. I. Record of *Mechanitis polymnia* (Lepidoptera: Ithomiinae) on *Solanum jamaicense* and life cycle in the laboratory. **Revista Colombiana de Entomología**, Bogotá, v. 36, n. 1, p. 165-168, jun. 2010.
- GUAGLIUMI, P. Entomofauna della canna da zucchero nel Nord-Est del Brasile. **Rivista di Agricoltura Subtropicale e Tropicale**, Firenze, v. 65, n. 4, p. 49-66, 1971.
- HABER, W. A. **Evolutionary ecology of tropical mimetic butterflies (Lepidoptera: Ithomiinae)**. 1978. 454 f. Thesis (Ph.D. in Entomology) - University of Minnesota, Minneapolis, 1978.
- JACOMASSA, F. A. F.; PIZO, M. A. Birds and bats diverge in the qualitative and quantitative components of seed dispersal of a pioneer tree. **Acta Oecologica**, Paris, v. 36, n. 5, p. 493-496, Sept./Oct. 2010.
- JANZEN, D. H.; HALLWACHS, W. **Philosophy, navigation and use of a dynamic database (ACG Caterpillars SRNP) for an inventory of the macrocaterpillar fauna, and its food plants and parasitoids, of the Area de Conservacion Guanacaste (ACG), northwestern Costa Rica**. Disponível em: <<http://janzen.sas.upenn.edu>>. Acesso em: 10 fev. 2012.
- LAMAS, G. Los Papilionoidea (Lepidoptera) de la zona reservada de Tambopata, Madre de Dios, Perú: I., Papilionidae, Pieridae y Nymphalidae. **Revista Peruana de Entomología**, Lima, v. 27, n. 1, p. 59-73, ene. 1985.
- LAMAS, G. **Taxonomia e evolução dos gêneros *Ituna* Doubleday (Danainae) e *Patitia* gen. n., *Thyridia* Hübner e *Methona* Doubleday (Ithomiinae) (Lepidoptera, Nymphalidae)**. 1973. 255 f. Tese (Doutorado em Zoologia) - Universidade de São Paulo, São Paulo, 1973.
- MALLARINO, R.; BERMINGHAM, E.; WILLMOTT, K. R.; WHINNETT, A.; JIGGINS, C. D. Molecular systematics of the butterfly genus *Ithomia* (Lepidoptera: Ithomiinae): a composite phylogenetic hypothesis based on seven genes. **Molecular Phylogenetics and Evolution**, Detroit, v. 34, n. 3, p. 625-644, Mar. 2004.
- MEERMAN, J. C. **REA: mayflower bocawina national park: appendices**. Dangriga: PACT, 2003. v. 2, 44 p.
- NISHIDA, R. Sequestration of defensive substances from plants by Lepidoptera. **Annual Review of Entomology**, Palo Alto, v. 47, n. 1, p. 47-57, Jan. 2002.
- NUNES, L. A. P. L.; DIAS, L. E.; JUCKSCH, I.; BARROS, N. F.; KASUYA, M. C. M.; CORREIA, M. E. F. Impact of monocultivation coffee on biological indicators of quality soil in the Zona da Mata (MG), Brazil. **Ciência Rural**, Santa Maria, v. 39, n. 9, p. 2467-2474, out. 2009.
- OROZCO, S.; MURIEL, S. B.; PALACIO, J. Diversity of diurnal Lepidoptera in an area of tropical dry forest from west of Antioquia. **Actualidades Biológicas**, Medellín, v. 31, n. 90, p. 31-41, jun. 2009.
- PINHEIRO, C. E. G.; MEDRI, Í. M.; SALCEDO, A. K. M. Why do the ithomiines (Lepidoptera, Nymphalidae)

aggregate?: notes on a butterfly pocket in central Brazil. **Revista Brasileira de Entomologia**, Curitiba, v. 52, n. 4, p. 610-614, jan. 2008.

PORTUGAL, A. F.; COSTA, O. D. V.; COSTA, L. M. Physical and chemical properties of a soil under different production systems and forest in the Zona da Mata region of Minas Gerais State, Brazil. **Revista Brasileira de Ciência do Solo**, Viçosa, v. 34, n. 2, p. 575-585, mar./abr. 2010.

PORTUGAL, A. H. A.; TRIGO, J. R. Similarity of cuticular lipids between a caterpillar and its host plant: a way to make prey undetectable for predatory ants? **Journal of Chemical Ecology**, Tampa, v. 31, n. 11, p. 2551-2561, Nov. 2005.

POUYU-ROJAS, E.; SIQUEIRA, J. O.; SANTOS, J. G. D. Symbiotic compatibility of arbuscular mycorrhizal fungi with tropical tree species. **Revista Brasileira de Ciência do Solo**, Viçosa, v. 30, n. 3, p. 413-424, maio/jun. 2006.

REIS, H.; SCOLFORO, J. R. S.; OLIVEIRA, A. D.; OLIVEIRA, A. T.; MELLO, J. M. Floristic composition analysis, diversity and similarity of Atlantic Forest fragments in Minas Gerais State, Brazil. **Cerne**, Lavras, v. 13, n. 3, p. 280-290, set. 2007.

RESENDE, J. L. P.; PADUA, C. T. J.; OLIVEIRA, A. D.; SCOLFORO, J. R. S.; COELHO, L. M. Characterization of a forest incentive program in Minas Gerais State. **Cerne**, Lavras, v. 15, n. 3, p. 295-302, jul./set. 2009.

SANTANA, S. W. J.; BARROS, R.; TORRES, J. B.; GONDIM, M. G. C. Thermal requirements of the coconut pest *Atheloca subrufella* (Hulst) (Lepidoptera: Phycitidae). **Neotropical Entomology**, Londrina, v. 39, n. 2, p. 181-186, Mar./Apr. 2010.

SCOTT, J. A. Mating of butterflies. **The Journal of Research on the Lepidoptera**, Columbia, v. 11, n. 1, p. 99-127, Jan. 1973.

SILVA, A. G. D. A. E.; GONÇALVES, C. R.; GALVÃO, D. M.; GONÇALVES, A. J. L.; GOMES, J.; SILVA, M. N.; SIMONI, L. **Quarto catálogo dos insetos que vivem nas plantas do Brasil: seus parasitos e predadores**. Rio de Janeiro: Ministério da Agricultura, 1968. 622 p.

SOUZA, R. P.; VALIO, I. F. M. Seed size, seed germination, and seedling survival of Brazilian tropical

tree species differing in successional status. **Biotropica**, Zurich, v. 33, n. 3, p. 447-457, Mar. 2001.

SOUZA, R. M.; ANJOS, N.; SORGATO, J. C. Occurrence of *Naupactus cervinus* (Boheman) in coffee plantation in the region of Zona da Mata mineira. **Ciência e Agrotecnologia**, Lavras, v. 33, n. 1, p. 1967-1971, jan./fev. 2009.

VASCONCELLOS-NETO, J.; BROWN JUNIOR, K. S. Interspecific hybridization in *Mechanitis* butterflies (Ithomiinae): a novel pathway for the breakdown of isolating mechanisms. **Biotropica**, Zurich, v. 14, n. 4, p. 288-294, Dec. 1982.

WILLMOTT, K. R.; FREITAS, A. V. Higher-level phylogeny of the Ithomiinae (Lepidoptera: Nymphalidae): classification, patterns of larval host plant colonization and diversification. **Cladistics**, New York, v. 22, n. 4, p. 297-368, Aug. 2006.

WILLMOTT, K. R.; MALLET, J. Correlations between adult mimicry and larval host plants in Ithomiine butterflies. **Proceedings of the Royal Society B-Biological Sciences**, London, v. 271, n. 1, p. 266-269, Aug. 2004.

YOUNG, A. M. Ithomiine butterflies associated with non-antbird droppings in Costa Rican tropical rain forest. **The Journal of the Lepidopterists' Society**, Eureka, v. 38, n. 1, p. 61-63, Dec. 1984.

YOUNG, A. M.; MOFFETT, M. Studies on the population biology of the tropical butterfly *Mechanitis isthmia* in Costa Rica. **The American Midland Naturalist**, Notre Dame, v. 101, n. 2, p. 309-319, Apr. 1979.

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