

New Record of the Endangered Brazilian Swallowtail *Heraclides himeros baia* (Rothschild & Jordan, 1906)

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NEW RECORD OF THE ENDANGERED BRAZILIAN SWALLOWTAIL *HERACLIDES HIMEROS BAIÁ*
(ROTHSCHILD & JORDAN, 1906)

Additional key words: conservation, dry forest, endangered species, Paraíba

In the current list of threatened species in Brazil, 57 species of Lepidoptera are listed, nine of which are in the family Papilionidae (Machado et al. 2008). One of these species is *Heraclides himeros* (Hopffer, 1865), a butterfly known from few extant populations, which is poorly studied in comparison with other Papilionidae (Tyler et al. 1994). The two described subspecies are considered threatened: the endangered *Heraclides himeros himeros* (Hopffer, 1865), from coastal Rio de Janeiro and Espírito Santo, and the critically endangered *Heraclides himeros baía* (Rothschild & Jordan, 1906), known from few specimens from the Brazilian states of Bahia, and Tocantins (Collins & Morris 1985, Tyler et al. 1994, Brown & Freitas 2008a,b, Freitas & Marini-Filho 2011). Although the nominal subspecies, *H. himeros himeros* has been extensively studied in most aspects (immature stages, population ecology and natural history, see Tyler et al. 1994, Brown et al. 1995), there is a lack of basic information about the biology of *H. himeros baía*. In addition, except for a recently collected male from Caetité, Bahia (collected in January, 2000), this subspecies has not been recorded for over 70 years (last collecting date was 1939, from an individual of unknown locality in Bahia, in the BMNH, London), and the available data shows that this butterfly is unknown from conservation areas.

Recently, a population of *H. himeros baía* was found in the “Parque Estadual Pico do Jabre” (PEPJ) (7°15'06"S e 37°22'56"W), located at Serra de Teixeira, in the west of Plateau of Borborema, between the municipalities of Maturéia and Mãe D'água, Paraíba State, NE Brazil. The PEPJ consists of 851 ha with altitudes varying from 780 to 1,000 m (maximum altitude of 1,197 m). The vegetation is montane semideciduous forest, surrounded by semi-arid vegetation (i.e., caatinga), with great physiognomic heterogeneity and a dry season that lasts at least eight months per year (Tabarelli & Silva 2003, Agra et al. 2004, Prado 2009, Rodal et al. 2008). The area is part of the altitude wetlands of the states of Pernambuco and Paraíba, known locally as “brejos de altitude” (Braga et al. 2002, Cabral et al. 2004, Tabarelli & Santos 2004).

Butterfly surveys were recorded monthly from April 2011–April 2012, as part of a broader project studying butterfly diversity in the PEPJ (Kerpel et al. in prep.).

Visual surveys were carried out from 0800 h to 1600 h in six transects: three at low altitudes (780 to 900 m) and three near the top of Pico do Jabre (1,065 to 1,197 m). Each transect was surveyed for 80 minutes, and times of surveys by transect were randomized; the total sampling effort was 96 h.

Adults of *H. himeros baía* were observed from 1045 h to 1330 h within the forest in two transects, both above 1,000 m of altitude. These two transects correspond to the best-preserved sectors in the study area, and also where the potential host plant, *Pilocarpus spicatus* Saint Hill. (Rutaceae) occurs, which according to Agra et al. (2004) occurs only above 900 m of altitude in the study site. A total of 28 *H. himeros baía* were captured and released, with the majority recorded during the wet season (Fig. 2). The number of individuals observed per day varied from one to six, which is slightly lower than those obtained for *H. himeros himeros*, where almost 20 individuals are observed per day in a given site (using the same method of transect counts, see Tyler et al. 1994 and Brown et al. 1995).

In a conservation perspective, the present results are important for at least four reasons: 1) this is the only known population of *H. himeros baía* in recent times; 2) this record, the first in the state of Paraíba, is the northernmost point of occurrence of the subspecies, expanding in about 1000 km its known extent of



FIG. 1. Male *Heraclides himeros baía* collected on June 06, 2011, on Parque Estadual Pico do Jabre, Maturéia, Paraíba State; dorsal (left) and ventral view (right).



FIG. 2. Monthly numbers of *H. himeros baia* recorded in Parque Estadual Pico do Jabre, Maturéia, Paraíba State, between April, 2011 and April, 2012.

occurrence (sensu IUCN 2013); 3) this is the first record for the biome caatinga (previous records were for the Cerrado savanna and Atlantic Forest); and 4) this is the only population of *H. himeros baia* inside a conservation unity. In view of the present results, and considering its sparse and low-density populations, and fast flight, which makes it difficult to distinguish from the widespread *Heracles astyalus* Godart 1819, it is possible that other populations of *H. himeros baia* persist within its geographical range, thus potentially changing its conservation status.

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LITERATURE CITED

- ACRA, M. F., M. R. V. BARBOSA & W. D. STEVENS. 2004. Levantamento florístico preliminar do Pico do Jabre, Paraíba, Brasil, pp. 123-137. In Porto, K. C., J. J. P. Cabral & M. Tabarelli (eds.), Brejos de Altitude em Pernambuco e Paraíba, História Natural, Ecologia e Conservação. Ministério do Meio Ambiente, Brasília, (série Biodiversidade, n. 9).
- BRAGA, R. A. P., J. J. S. P. CABRAL, S. M. G. L. MONTENEGRO & G. S. PÉRIER JR. 2002. Conservação dos recursos hídricos em brejos de altitude - O caso de Brejo dos Cavalos, Caruaru, PE. Rev. Bras. Eng. Agríc. Ambient. 6: 539-546.
- BROWN JR., K. S. & A. V. L. FREITAS 2008a. *Heracles himeros baia* (Rothschild & Jordan, 1906), pp. 430. In Machado, A. B. M., G.

M. M. Drummond & A. P. Paglia (eds.), Livro vermelho da fauna brasileira ameaçada de extinção. MMA, Brasília, DF, Fundação Biodiversitas, Belo Horizonte, MG.

- _____. 2008b. *Heracles himeros himeros* (Hopffer, 1865). I pp. 431. In Machado, A. B. M., G. M. M. Drummond & A. P. Paglia (eds.), Livro vermelho da fauna brasileira ameaçada de extinção. MMA, Brasília, DF, Fundação Biodiversitas, Belo Horizonte, MG.
- BROWN, K. S. JR., C. F. KLITZKE, C. BERLINGERI, AND P. E. R. DOS SANTOS. 1995. Neotropical swallowtails: chemistry of food plant relationships, population ecology, and biosystematics, pp. 405-445, 9 figs., 4 tabs. In Scriber, J. M., Y. Tsubaki & R. C. Lederhouse (eds.), Swallowtail butterflies: their ecology and evolutionary biology. Gainesville, Scientific Publishers, FL.
- CABRAL, J. J. P., R. BRAGA, S. MONTENEGRO, S. CAMPELLO, A. CIRILLO, G. S. PÉRIER JR. & S. LOPES-FILHO. 2004. Recursos hídricos e os brejos de altitude, pp. 31-48. In Porto, K. C., J. J. P. Cabral & M. Tabarelli (eds.), Brejos de Altitude em Pernambuco e Paraíba, História Natural, Ecologia e Conservação. Ministério do Meio Ambiente, Brasília, (série Biodiversidade, n. 9).
- COLLINS, N. M. & M. G. MORRIS. 1985. Threatened swallowtail butterflies of the world: The IUCN Red Data Book. IUCN, Gland and Cambridge. vii + 401 pp. + 8 pls.
- FREITAS, A. V. L. & O. J. MARINI-FILHO. 2011. Plano de Ação Nacional para Conservação dos Lepidópteros Ameaçados de Extinção. ICMBio, Brasília, 124pp.
- IUCN 2013. IUCN Red List of Threatened Species. Version 10. <www.iucnredlist.org>. Downloaded on 04 November 2013.
- MACHADO A. B. M., G. M. DRUMMOND & A. P. PAGLIA. 2008 Livro vermelho da fauna brasileira ameaçada de extinção. MMA, Brasília, Brasil. 1420 pp.
- PRADO, D. E. 2009. As caatingas da América do Sul, pp. 3-73. In Leal, I. R., M. Tabarelli & J. M. C. Silva (eds.), Ecologia e conservação da Caatinga. Editora Universitária da UFPE, Recife, Brasil.
- RODAL, M. J. N., M. R. V. BARBOSA & W. W. C. THOMAS. 2008. Do the seasonal forests in northeastern Brazil represent a single floristic unit? Braz. J. Biol. 68: 467-475.
- TABARELLI, M. & J. M. C. SILVA. 2003. Áreas e ações prioritárias para a conservação da biodiversidade da Caatinga, pp. 777-796. In Leal, I. R., M. Tabarelli & J. M. C. Silva (eds.), Ecologia e conservação da Caatinga. Editora Universitária da UFPE, Recife, Brasil.
- _____. & A. M. SANTOS. 2004. Uma breve descrição sobre a história natural dos brejos Nordestinos, pp. 17-24. In Porto, K. C., J. J. P. Cabral & M. Tabarelli (eds.), Brejos de Altitude em Pernambuco e Paraíba. História Natural, Ecologia e Conservação. Brasília: Ministério do Meio Ambiente, p. 17-24.
- TYLER, H., K. S. BROWN, JR. & K. WILSON. 1994. Swallowtail Butterflies of the Americas: A study in biological dynamics, ecological diversity, biosystematics, and conservation. Gainesville, FL. Scientific Publishers, Inc., Gainesville, FL. 377 pp.

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