



Parides burchellanus (Westwood, 1872) (Lepidoptera, Papilionidae): new distribution records from southwestern Minas Gerais state, Brazil

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Abstract: We herein report new records of *Parides burchellanus* (Westwood, 1872) in southwestern Minas Gerais state, Brazil, in areas of the upper São Francisco and Araguari river systems, including the buffer zone of the Parque Nacional da Serra da Canastra. Until recently, the only known colonies of *P. burchellanus* were located in the municipalities of Brumadinho, in Minas Gerais state, and Planaltina, in the Distrito Federal, some 640 km apart from each other. The implications of these new records to the conservation status of this species are discussed.

Key words: *Parides burchellanus*, Papilionidae, new records, Cerrado, Minas Gerais.

The butterfly *Parides burchellanus* (Westwood, 1872) is a black winged Troidini, with occurrence reported in Minas Gerais state, northern São Paulo state, Goiás state and the Distrito Federal (Tyler et al. 1994; Mielke et al. 2004; Silva-Brandão et al. 2008). Some populations of *P. burchellanus* have been referred to as of *P. panthonus jaguarae* (Foetterle, 1902) in the literature (Tyler et al. 1994; Mielke et al. 2004), but these taxa have been recently synonymized based on morphological (Mielke et al. 2004) and molecular (Silva-Brandão et al. 2008) evidence.

Parides burchellanus is endemic to the Cerrado (Brazilian savanna) domain in central Brazil, where it occurs in riparian forests along shaded stretches of streams and rivers (Mielke et al. 2004; Beirão et al. 2012). In the field, its only known host plant is the vine

Aristolochia chamissonis Duchartre (Aristolochiaceae) (Mielke et al. 2004), which occurs in association with shaded patches of undisturbed stream and riverbank soil. From a population study carried out in the municipality of Brumadinho, central Minas Gerais state, Beirão et al. (2012) observed that *P. burchellanus* showed strong association to riparian forests, along which adult individuals performed linear movements, being however absent from several other seemingly suitable sites, as well as its host plant. Habitat and host plant specificity are considered the main determinants of the rarity and patchy occurrence of *P. burchellanus* in nature (Tyler et al. 1994; Mielke et al. 2004; Beirão et al. 2012).

Parides burchellanus is ranked as Lower Risk / Near Threatened in the IUCN's Red List of Threatened Species (Gimenez Dixon 1996). In 2003, it was considered Vulnerable in Brazil (MMA 2003; Machado et al. 2008), but a recent reassessment taking into account data on the small size of its populations, up-listed *P. burchellanus* to Critically Endangered (ICMBio 2014) based on IUCN's criterion C2a(i), in which all known populations are smaller than 50 mature individuals and are continuously declining (IUCN 2011).

Literature records indicate a low resilience of colonies of the species and extinction of local populations in face of alterations in its habitat, as seems to have been the case in sites of historical records (e.g., Westwood 1872; Foetterle 1902) affected by deforestation and flooding. These include the intensively searched region of Fazenda Jaguará, in Matozinhos, Minas Gerais (Tyler et al. 1994; Mielke et al. 2004); several localities in Batatais, São

Paulo (Tyler et al. 1994; Beirão et al. 2012); the region of Uberaba, Minas Gerais, where extensive deforestation took place (Brown and Mielke 1998; Casagrande 1998); and in one colony at the Maranhão River, in Planaltina, Goiás, which apparently went extinct due to a heavy flooding episode (Tyler et al. 1994).

Until recently, the only extant colonies of *P. burchellanus* were those located along tributaries of the Maranhão River, in the municipality of Planaltina, Distrito Federal (16 km southwest of the former locality reported by Brown and Mielke [1967]) (F.C. Campos-Neto and O.J. Marini-Filho, unpublished data) and in the municipality of Brumadinho, Minas Gerais (Mielke et al. 2004; Beirão et al. 2012). These two colonies are 640 km apart in a straight line. A record of the species in the municipality of Carmo do Rio Claro, Minas Gerais, mentioned in Beirão et al. (2012), was actually mistaken and herein excluded after careful reexamination of the species records' database by the researchers who led the field assessments at that time (F.C. Campos-Neto and M.V. Beirão).

Over the last five years, however, additional records of *P. burchellanus* resulted from extensive searches conducted throughout the species range (Figure 1). In October 2011 it was detected by F.O. Resende some 60 km northwest of the Planaltina population, and in March 2012, it was detected by F.C. Campos-Neto at

the headwaters of the Bambuí River, a tributary of the upper São Francisco river basin, in the municipality of Campos Altos, Minas Gerais, some 220 km northwest of the Brumadinho population. Soon after, in August 2012, the species was detected 70 km south of this last location and some 240 km west of the Brumadinho population, in the municipality of São Roque de Minas, Minas Gerais, from a photo record by Ricardo A. G. da Costa (Figure 2). This site lays at the border of the Parque Nacional da Serra da Canastra, near the headwaters of the São Francisco River.

The new findings around the Serra da Canastra region prompted further searches for *P. burchellanus* and its host plant *A. chamissonis* (Figure 3) along the upper stretches of the São Francisco River and its tributaries, as well as along nearby drainages pertaining to the upper Araguari River basin, with additional assessment efforts carried out throughout the region in 2013. *Parides burchellanus* was found in both river systems on several occasions in 2013, within the range of the municipalities of Perdizes, Araxá, Ibiá, Campos Altos, Tapiraí, Medeiros, São Roque de Minas, Vargem Bonita and Tapira, all in Minas Gerais state (Figure 1). Between May and October 2013, *P. burchellanus* was spotted 29 times along 83.7 km of transects covering seven distinct drainages of the upper Araguari River basin, and at 13 locations along 22 km of the main channel of the upper São Francisco River

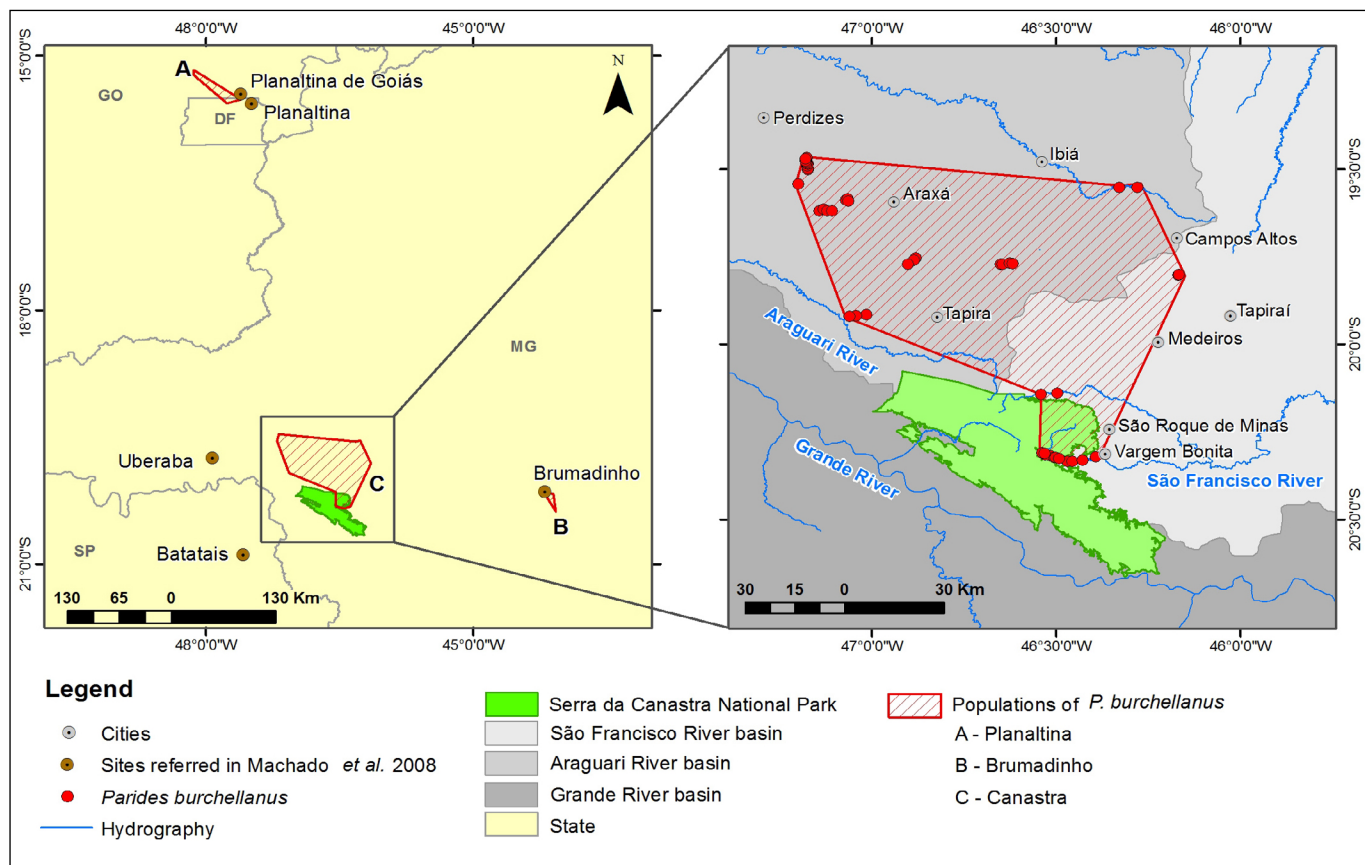


Figure 1. Distribution range of *Parides burchellanus* in the states of Minas Gerais (MG), São Paulo (SP) and Distrito Federal (DF), with hatched polygons covering recent distribution records compiled for the extant populations of (A) Planaltina, (B) Brumadinho and (C) Canastra region.



Figure 2. *Parides burchellanus* pictured at the margins of the São Francisco River, downstream of the Serra da Canastra National Park. Photo by Ricardo A.G. da Costa.

(downstream from the Parque Nacional da Serra da Canastra) and some of its tributaries.

Throughout the region, *P. burchellanus* occurred on shaded gallery forest habitat along drainages varying from 3 m to 25 m wide, at elevations between 770 m and 1010 m above sea level (a.s.l.), always in low densities (1 to 4 individuals per sighting). Its host plant occurs sparsely throughout drainages of the whole region, mostly as young individuals or clusters. Although *P. burchellanus* has been spotted along drainages surrounding the Canastra mesa, at the fringes of the Parque Nacional da Serra da Canastra, it was not seen at the upper plateau (1,200–1,400 m a.s.l.), where a study of fruit-feeding butterflies took place along two and a half years, on similar habitats (Marini-Filho and Martins 2010).

These new records show that the hilly cerrado landscape of the southwestern Minas Gerais state still hosts colonies of *P. burchellanus*, possibly constituting the largest known population of the species.

Additional assessment efforts should be carried out in order to determine whether the remaining populations of this species are connected across the landscape, as other populations may exist between those currently known.

The National Action Plan for the Conservation of Lepidoptera Threatened with Extinction (Freitas and Marini-Filho 2011) mentions habitat loss as the most significant threat to *P. burchellanus*, also stressing pollution of watercourses and isolation of populations as noteworthy. Given the magnitude and the increasingly fast pace of conversion of Cerrado landscapes to agriculture in Brazil over the last few decades, one can assume these as widespread and intensifying threats throughout the species' range. These threats may



Figure 3. *Aristolochia chamissonis*, host plant to *Parides burchellanus* larvae, at the margins of a tributary of the upper São Francisco River, near the Serra da Canastra. Photo by Fernando C. Campos Neto.

possibly be less prevalent over the hilly landscapes of the surrounding mountainous areas, such as in the surroundings of the Parque Nacional da Serra da Canastra and nearby mountain chains, which are less apt to large scale, mechanized agricultural production.

New population data for the Canastra region may eventually affect the recently assigned Critically Endangered conservation status of *P. burchellanus* (MMA 2014). From the preliminary data presented here, it seems possible that the number of mature individuals may be larger than 50, notwithstanding the fact that we lack data to ascertain whether this population is in decline and does not suffer from extreme fluctuations that could lead to local extinction. Population assessments should then be conducted in the Serra da Canastra region, as to aid in a more precise assessment of the conservation status of the species. Also to that aim, the monitoring of each of the extant populations is recommended.

The findings described herein are of importance regarding the management of the buffer zone of the Parque Nacional da Serra da Canastra, as this area concentrates numerous drainages that flow off the Park's elevated grounds, with suitable gallery forest habitat for *P. burchellanus*. A strengthened governance of this buffer zone regarding the implementation of Brazil's new forest code (Law # 12.651/2012), particularly through facilitation of environmental compliance in rural properties (e.g., rural environmental cadaster, gallery forest protection, and restoration) is of utmost relevance. Finally, several drainages at the Park's buffer zone harbor important tourism attractions, such as the Casca D'anta waterfall and rafting sites along the upper course of the São Francisco River where *P. burchellanus* occurs, making them natural targets to educational and environmental awareness campaigns aimed at the protection of freshwater habitats and associated biodiversity.

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