

Distribution of *Eupetomena macroura* in Paraguay, new records for Misiones Province, Argentina, and comments on its geographic expansion

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Introduction

A number of bird species recently recorded for southeastern Brazil, eastern Paraguay, and Misiones, Argentina, represent recent/new geographic range expansions. Examples are provided by species such as *Phimosus infuscatus* (Lichtenstein, 1823), *Todirostrum cinereum* (Linnaeus, 1766), *Fluvicola nengeta* (Linnaeus, 1766), *Xolmis velatus* (Lichtenstein, 1823), *Campylorhynchus turdinus* (Wied, 1831), *Schistochlamys ruficapillus* (Vieillot, 1817), *Nemosia pileata* (Boddaert, 1783), *Thlypopsis sordida* (d'Orbigny & Lafresnaye, 1837) and *Sporophila lineola* (Linnaeus, 1758) among others (Alvarenga 1990, Bosso 2001, Krauczuk *et al.* 2003, Klavins & Bodrati 2007, Straube *et al.* 2006, Straube *et al.* 2007, Areta & Almirón 2009, Castillo *et al.* 2009, Piacentini *et al.* 2009, Militello *et al.* 2010, Bencke *et al.* 2010, Narosky & Izurieta 2010, A. Garello pers. com.). Expansion is a natural tendency in bird population dynamics (Straube *et al.* 2006), but modification of habitats can also produce colonization, as occurs when opportunistic species ride on the back of an agricultural frontier to expand their range or areas of occupation (Straube *et al.* 2006, Piacentini *et al.* 2009).

Here we summarize recent records of *Eupetomena macroura* in Paraguay and Argentina, report new records for Argentina, and comment on the temporal and geographical sequence of records that describe range expansion in this species.

Eupetomena macroura (Gmelin, 1788) is a hummingbird species of wide distribution in South America, known from the Guyanas, Peru, Brazil (to Capão da Canoa, 200 m off the beach, northern coasts of Rio Grande do Sul), Bolivia and Paraguay (Short 1975, Sick 1985, Hayes 1995, Saibene *et al.* 1996, Chébez 1996, Del Hoyo *et al.* 1999, Straube *et al.* 2006, Petersen & Petry 2009) and has recently been recorded for Argentina (Castillo *et al.* 2009, Narosky & Izurieta 2010).

E. macroura is known from Paraguay since 1930 (Hayes 1995), when collections were made in the Concepción Department. It was considered “rare” and was known only from the east of this Department, specifically in vegetation called “campos cerrados”. The range limit was indicated as “Estancia Centurión”, around 30-40 km east of the Paraguay River (Hayes 1995, Straube *et al.* 2006).

The species is now known to be a permanent resident at various sites of the Chaco-Pantanal in the Alto Paraguay Department (Guyra Paraguay 2005). Its density in Paraguay is now considered to be scarce in the Chaco-Pantanal Mato Grosso ecoregion, rare in Campos Cerrados and in the Alto Paraná Atlantic Forest ecoregions (Guyra Paraguay 2004) although status in



Figure 1. New localities with records of *Eupetomena macroura* in Argentina and Paraguay. 1- La Eugenia Country Club, Garupá; 2- Terrazas District, Itaembé Mini, Posadas; 3- Puerto Rico; 4- Piñalito Norte, San Antonio Municipalidad; 5- Garden of Hummingbirds, Puerto Iguazú; 6- Reserva Biológica Carapá; 7- Yby Ja'u, Concepción Department; 8- Pedro Juan Caballero, Amambay Department; 9- Bella Vista Norte, Amambay Department; 10- Paso Bravo National Park, Concepción Department; 11- San Luis de la Sierra Ranch, La Paz Stream, Concepción Department; 12- Bella Vista Norte; 13- Puerto Guarani, Paraguay River; 14- Los Tres Gigantes, 15- Estancia Fortín Patria, Negro River; 16- Madrejón, Defensores del Chaco National Park, Dry Chaco biome, Paraguay.

Campos Cerrados is now considered scarce (instead of rare) in Guyra Paraguay's biodiversity database. For the following site records, refer to Figure 1 and Table 2 for a map and summary, respectively.

In effect, since 2001, the presence of this species has been almost constant in the Chaco-Pantanal Mato Grosso ecoregion, centered on the city of Bahía Negra close to the Paraguay-Brazil-Bolivia tri-frontier. The first indications of its presence were photographed by Kevin Cassels, administrator of estancia Fortín Patria (19°55'S, 58°35'W) in the main garden of the estancia, and represent the first records for the Paraguayan Chaco. Permanent presence was confirmed by Alberto Esquivel and Juan Klavins, with observations during March, April and May 2002 in the same locality, and by Hugo del Castillo (HDC) between 13-19 March 2006, also in Fortín



Figure 2. *Eupetomena macroura* at Los Tres Gigantes Biological Station, of Asociación Guyra Paraguay Private Reserve in the Pantanal biome, a 15,000 hectare reserve in the Pantanal, Mato Grosso ornithogeographic region (Hayes, 1995), Negro River, on the Bolivian border. July 2007 (Photo: © Emily Y. Horton, Guyra Paraguay).

Patria, in addition to a record further south on the Paraguay River in Puerto Guarani (21°17'S, 57°56'W) during the same field season (Figure 1, Table 2).

Since 13 June 2006 HDC and others have recorded the species at Guyra Paraguay's Paraguayan Pantanal Reserve on the Negro River (named Otuquis River in Bolivia), on the Bolivian border, downstream of Fortín Patria. At the reserve's biological station Los Tres Gigantes (20°05'S, 58°08'W; Figure 2), permanent presence of the species was established from the following records: HDC, Arne Lesterhuis and others (14 July 2007), HDC, Nelson Pérez y Andrés Colman (15 July 2008), HDC and others (16 July 2009), Silvia Centrón and Hugo Cabral between 8-12 September 2009 (Figure 2), Cristina Morales, Claudio Prieto and Alfredo Stroessner between 20-22 August 2010; HDC, Silvia Centrón and Andrea Ferreira on 13 April 2011 (Figure 1, Table 2).

The habitat occupied by the species in the Chaco-Pantanal region is gallery forest along the banks of the Negro River on the Bolivian border. This gallery forest is present as a narrow strip along the higher banks of the watercourse which give way to extensive palm savanna and flooded grasslands away from the river.

Modern records of the species from the Los Campos Cerrados region are: Estancia San Luis de la Sierra (22°24'S, 57°28'W), Arroyo La Paz, Concepción Department, from 19-27 October 1999 by HDC, Rob Clay and others; Parque Nacional Paso Bravo (22°25'S, 57°10'W), Concepción, on the list of species for Alter Vida, Jorge Escobar Argaña and others in 2008; Bella Vista Norte (22°07'S, 56°31'W), Amambay Department, 25 March 2005, by HDC and Mónica Montiel; Yby Ja'u (22°58'S, 56°32'W), Concepción, Nelson Pérez and others, October 1999; Pedro Juan Caballero (22°33'S, 55°44'W), Amambay, Nelson Pérez in 2005; and the first record for the Alto Paraná region: Jorge Escobar Argaña at Reserva Biológica Carapá (24°16'S, 54°22'W); Itaipú Binacional, on the Paraná River, Canindeyú



Figure 3. *Eupetomena macroura*. This individual stayed about two months, feeding from artificial feeders disappearing during the cold season. La Eugenia Country Club, Garupá City, Campos District (Photo: Silvia Kruchowski).

Department in 2005. Data from the unpublished Guyra Paraguay biodiversity database are available online at *BirdLife International: Worldbirds* (www.worldbirds.org).

Records from Concepción are from the Campos Cerrados ecoregion along watercourses in dry forests called "cerradones"; from Bella Vista Norte, on the banks of the Apa River on the Brazilian border; and from the Yby ja'u and Pedro Juan Caballero localities, from the transitional Cerrado-Atlantic Forest. The Carapá locality is a typical Interior Atlantic Forest, and at this last locality the species visited an exotic *Grevilea*, both Pedro Juan Caballero and Carapá are on the frontier with Brazil. The last register was photographed by John Jessop in Madrejón (Paul Smith and HDC, pers. com.), station of the Defensores del Chaco National Park (20°37'S, 59°52'W), Dry Chaco biome (Figure 1, Table 2)

In Argentina the first record was an individual at the Timbó Section in Iguazú National Park (Misiones Province) by H. Povedano on 22 July 1993 (Chebez 1996, Saibene *et al.* 1996), which was rejected by Mazar Barnett & Pearman (2001) for lack of evidence. Ernesto Krauczuk found *E. macroura* at Piñalito Norte, San Antonio municipality, in the Interior Atlantic Forest; an individual was seen visiting Ceibo de Monte (*Erythrina falcata*) flowers, on 18 July 2005 (Straube *et al.* 2006). The species was also encountered recently in La Eugenia Country Club, Garupá City, Ruta Provincial 105 KM 5,5 (SK, Figure 3, 27°29'S, 55°52'W; Figure 1, Table 2). The site is located within the Campos District Biogeographic Unit, an ecotonal area between the Atlantic Forest and the Humid Chaco ecoregions, characterized by rush communities and savannas that alternate with woodlands and forest patches over a soft hilly area (Giraud *et al.* 2003).

It has been seen daily since 10 April 2011 at a feeder in the patio of the main house where it is typically present all day, drinking from the feeder 3-8 times per hour from 8:00 AM to dusk. An individual was seen feeding from Samohú (*Ceiba*

speciosa) flowers and ‘China Pink’ (*Hibiscus rosa-sinensis* L.), a variety with white flowers, in the urban area of Puerto Rico (26°49’S, 55°01’W, 2012-04-23, 14:20 h, 30 min. obs.); observations were made by Rodrigo Martínez Gamba (pers. com.). Two individuals were recorded visiting artificial feeders in the Terrazas District, Itaembé Mini, Posadas (27°24’S, 55°57’W; Figure 4), between 5-8 June 2012. In Puerto Iguazú, on the other hand, the species was present at various times of year (Table 1). Highest occurrence was during January, but it was present in all months of the year. The present population is probably made up of only a few individuals (Castillo *et al.* 2009).

As mentioned, the first Argentine record occurred in Iguazú National Park; it was first seen in the Rosewood and Assai Palm Forest, then in Montane Araucaria Forest, the Campos District, and most recently in the Laurel and Guatambu Forest. In Paraguay, Short (1975) mentions the species occurring to the northern edge of the Paraguay Chaco biome; Hayes (1995) mentions four records from the Campos Cerrados biome and there are six new records for the same biome; one from the Interior Atlantic Forest biome; three from the Pantanal Mato Grosso biome; and one in the Dry Chaco biome.

Upon examining the temporal and geographical sequence of recent records for this species, we can conclude that in Paraguay, *E. macroura* is at the edge of its distribution, as along the whole border zone with Bolivia and Paraguay there are few records from the interior, and it shows a preference for larger watercourses along which it is expanding its range (Figure 1).

The southward expansion in Paraguay occurs in the Interior Atlantic Forest biome and Mato Grosso Pantanal biome, which is confirmed by the mention of the species by Short (1975) in the north of the country in the Dry Chaco biome, and the data show a predominance of records in the Campos Cerrados biome.

The expansion in Misiones is occurring in three different biomes, two for the Interior Atlantic Forest biome and one for the Campos District, although predominantly in urban and suburban sites, the possible causes of the expansion, such as increasing prevalence of artificial feeders, habitat changes caused by humans. This view is consistent with available records from Argentina where, as in Puerto Iguazú, further to the centre in Puerto Rico and south in Garupá and Posadas (250 km), this and other species seem to be expanding their geographic ranges southward, and it is now an all year resident in Misiones.

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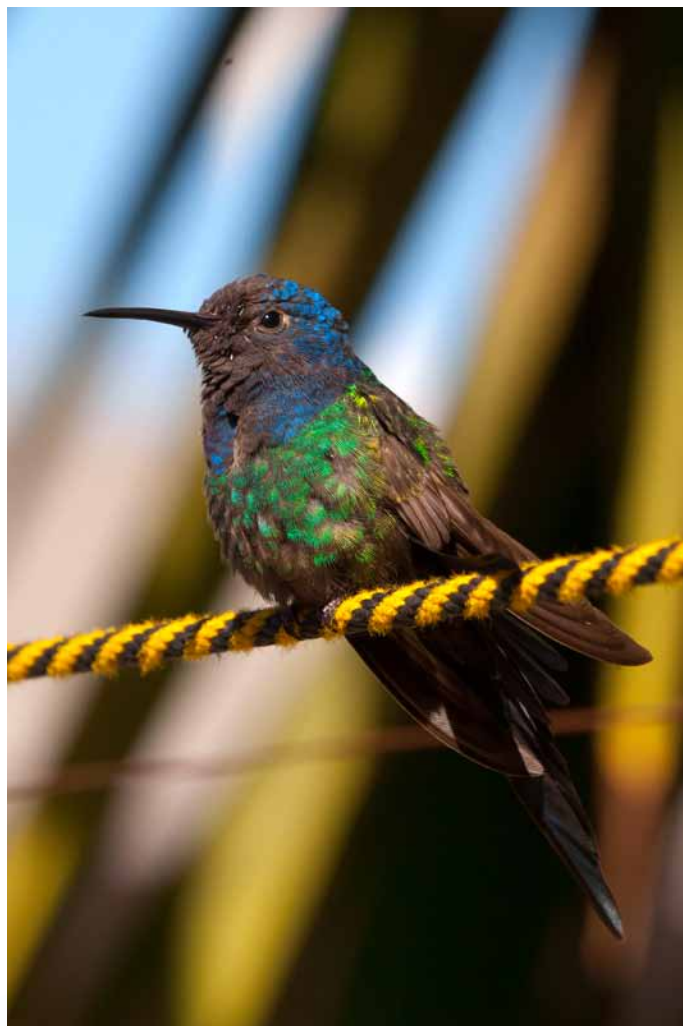


Figure 4. *Eupetomena macroura*. Two individuals were registered feed from artificial feeders during all daylight hours every 10 minutes. *Eupetomena macroura* and *Florisuga fusca* (Vieillot, 1817) are the only species that do not displace *Hylocharis chrysura* (Shaw, 1812). Garden in Terrazas District, Itaembé Mini, Posadas City (Photo: © Marcelo Allende, www.avesdelinea.blogspot.com, June 2012).

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Table 1. Phenology of *Eupetomena macroura* at Jardín de los Picaflores, Puerto Iguazú, Misiones. January 2005 is the first record of the species. The colored boxes indicate the months in which the species was recorded and show that the species has been stable from 2009 to May 2012.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2005	X	X	X	X	X	X	X					
2006	X	X	X	X	X				X	X		
2007	X											
2008								X	X	X	X	X
2009	X							X	X	X	X	X
2010	X	X	X	X	X	X	X	X	X	X	X	X
2011	X	X	X	X	X	X	X	X	X	X	X	X
2012	X	X	X	X	X							

Table 2. Locality, Habitat, and Biogeographic Unit records for *E. macroura* in Paraguay and Argentina (Giraud *et al* 2003, Guyra Paraguay 2004).

Locality	Habitat	Biogeographic Unit
1- La Eugenia Country Club, Garupá	Suburban, Garden	Campos District
2- Terrazas District, Itaembé Miní, Posadas	Urban, Garden	Campos District
3- Puerto Rico	Urban, Garden	Laurel and Guatambu Forest
4- Piñalito Norte, San Antonio Municipality	Forest	Montane Araucaria Forest
5- Garden of Hummingbirds, Puerto Iguazú	Urbano, Garden	Rosewood and Assai Palm Forest
6- Reserva Biológica Carapá	Forest	Atlantic Forest
7- Yby Ja'u, Concepción Department	Cerrado	Campos Cerrados
8- Pedro Juan Caballero, Amambay Department	Cerrado	Campos Cerrados
9- Bella Vista Norte, Amambay Department	Cerrado	Campos Cerrados
10- Paso Bravo National Park, Concepción Department	Cerrado	Campos Cerrados
11- San Luis de la Sierra Ranch, La Paz Stream, Concepción Department	Cerrado	Campos Cerrados
12- Bella Vista Norte	Cerrado	Campos Cerrados
13- Puerto Guaraní, Paraguay River	Gallery Forest	Mato Grosso Pantanal
14- Los Tres Gigantes	Gallery Forest	Mato Grosso Pantanal
15- Estancia Fortín Patria, Negro River	Gallery Forest	Mato Grosso Pantanal
16- Madrejon, Defensores del Chaco National Park	Xerofitic Forest	Dry Chaco Biome