

# New records and distribution extension of *Acanthochelys macrocephala* (Rhodin, Mittermeier & McMorris 1984) in midwestern Brazil

Tainá Figueras Dorado-Rodrigues<sup>1</sup>, Elizângela Silva Brito<sup>1</sup>, Karoline Rodrigues Silva<sup>1</sup>, Rafael Martins Valadão<sup>2</sup>, Fábio Andrew Gomes Cunha<sup>3</sup>, Christine Strüssmann<sup>1,4</sup>

<sup>1</sup> Universidade Federal de Mato Grosso, Instituto de Biociências, Centro de Biodiversidade, Laboratório de Herpetologia, Avenida Fernando Corrêa da Costa, 2367, CEP 78060-900, Cuiabá, MT, Brasil .

<sup>2</sup> Instituto Chico Mendes de Conservação da Biodiversidade, Centro Nacional de Pesquisa e Conservação de Répteis e Anfíbios, CEP 74605-090, Goiânia, GO, Brasil.

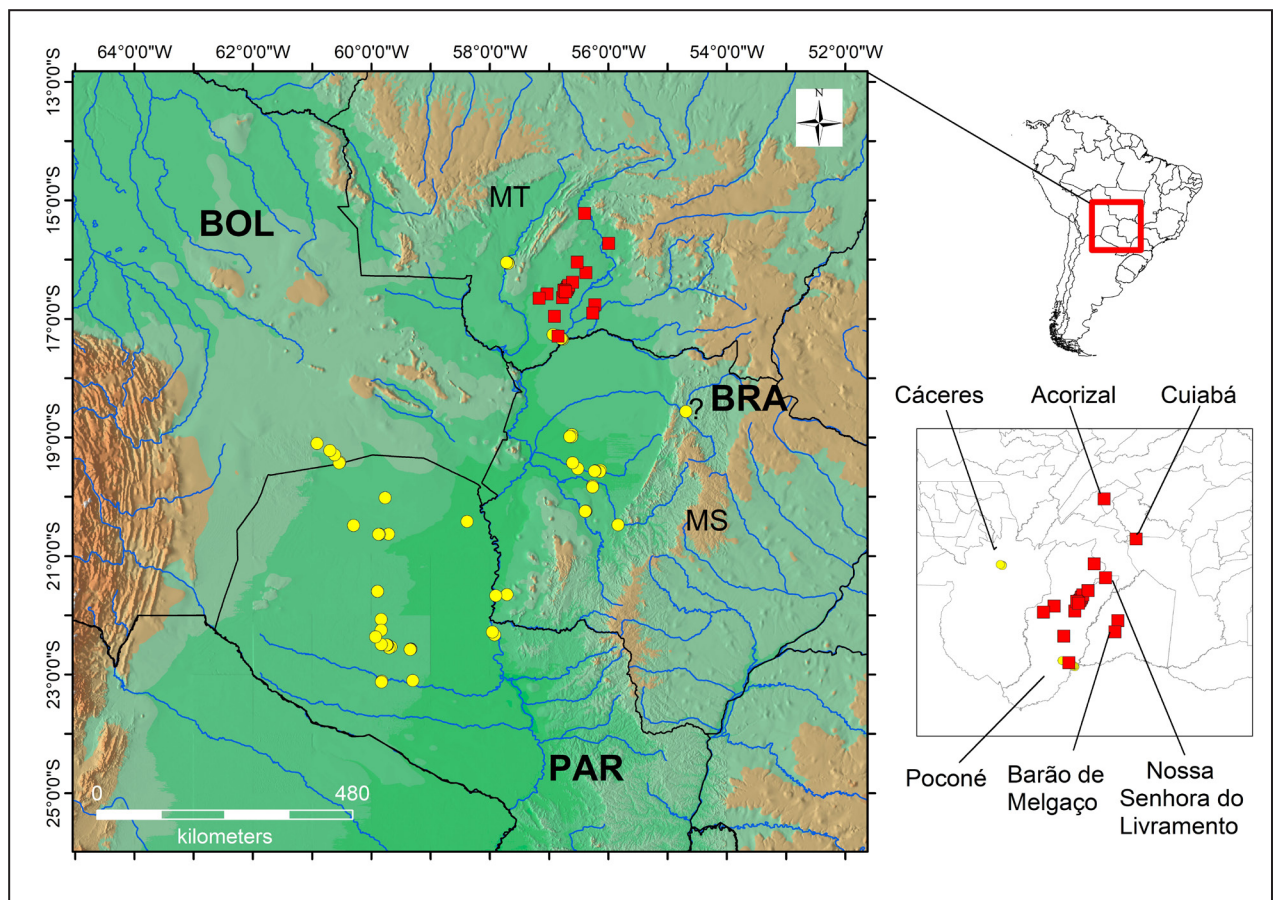
<sup>3</sup> Universidade Federal do Pará, Campus Universitário do Guamá, Núcleo de Ecologia Aquática e Pesca da Amazônia, Programa de Pós-Graduação em Ecologia Aquática e Pesca, CEP 66075-110, Belém, PA, Brasil.

<sup>4</sup> Universidade Federal de Mato Grosso, Faculdade de Medicina Veterinária, Avenida Fernando Corrêa da Costa, 2367, CEP 78060-900, Cuiabá, MT, Brasil.

*Localities.*— We recorded specimens of *A. macrocephala* in five municipalities of Mato Grosso state (Brazil: Fig. 1)

(1) Poconé Municipality, Pantanal ecoregion: I) Mal-

hada Farm (Lat. 16°34'42”S, Long. 57°02'05”W), January 2011, observed by TFD-R. A hatchling (Fig. 2A) was captured in a pitfall trap installed in a seasonally flooded grassland (completely dry),



**Figure 1.** Distribution of *Acanthochelys macrocephala* in South America. BRA = Brazil (MT: Mato Grosso State; MS: Mato Grosso do Sul State). BOL = Bolívia. PAR = Paraguay. Red square = new records reported in this study; yellow dots = previously known records; ? = unconfirmed record in the municipality of Coxim (see Ávila *et al.*, 2006).



50 m away from the nearest permanently wet area; II) Santa Inês Farm (Lat. 16°39'14"S, Long. 57°10'12"W), May 1991, observed by CS. An unsexed adult was found submerged in shallow water in a seasonally flooded grassland; III) Piuval Farm (Lat. 16°22'58"S, Long. 56°36'08"W), May 2012, observed by MRFC (see Acknowledgements). An

unsexed adult was recorded in the edge of a circular forest patch of paleo-fluvial origin distributed along the seasonally flooded grassland matrix of the Pantanal, locally known as *capão*; IV) Pouso Alegre Farm (Lat. 16°31'04"S, Long. 56°44'58"W), January 2011, January and March 2012, observed by ESB and LVSCF. Three individuals were recorded



**Figure 2.** Individuals of *Acanthochelys macrocephala* recorded in Poconé (a - d), Cuiabá (e), and Acorizal (f), Mato Grosso State, Brazil.



near a *capão* edge and two additional individuals (one female, one unsexed adult) were captured in traps installed in open termite savannas, locally known as *campo de murundu*: the female (Fig. 2B) captured with a funnel trap baited with fresh beef and installed in the center of a small pond, and the unsexed adult captured with a pitfall trap installed in the edge of another small pond ; V) Transpantaneira Park Road (or MT-060), 146 km long, which crosses the Pantanal between the localities of Poconé and Porto Jofre, a small port settlement in the right margin of the Cuiabá River. December 2002 and July 2008, two specimens road-killed collected by CS and deposited in the Herpetological Collection of Universidade Federal de Mato Grosso (UFMT-R 341, UFMT-R 6910); March, April, and July 2011, April 2022, and January 2023, observed by FRT, ESB, CS, MRFC, and RCP. Eight individuals were found alive while crossing the road (Fig. 2C, D);

(2) Barão de Melgaço Municipality, Pantanal: I) São Francisco do Perigara Farm (Lat. 16°54'06"S, Long. 56°15'47"W), April 1989, observed by CS. One unsexed adult was recorded submerged in shallow water; II) RPPN Sesc Pantanal (Lat. 16°45'43"S, Long. 56°13'35"W), January 2021, observed by GS. One unsexed adult was recorded crossing an unpaved road;

(3) Nossa Senhora do Livramento Municipality, Pantanal: Pirizal district (Lat. 16°13'10"S, Long. 56°22'48"W), March 2012, collected by AP and deposited in the Herpetological Collection of Universidade Federal de Mato Grosso (UFMT-R 9893). The individual was captured while crossing a road;

(4) Cuiabá Municipality, Cerrado ecoregion: Peri-urban area (Lat. 15°43'41"S, Long. 55°59'45"W), November 2021, observed by KRS. One unsexed adult (Fig. 2E) was recorded moving towards an artificial pond;

(5) Acorizal Municipality, Cerrado-Pantanal transition zone: MT-10 paved state highway, 70 km long (Lat. 15°13'12"S, Long. 56°24'00"W), February 2010, observed by RMV. One adult (Fig. 2F) was recorded during a wildlife roadkill survey. The monitored stretch of the MT-010 is surrounded by seasonally flooded open environments created by the overflow of the Cuiabá river during the rainy season.

*Comments.*— The big-headed Pantanal swamp turtle *Acanthochelys macrocephala* (Rhodin, Mittermeier & McMorris, 1984) is a rare and poorly studied medium-sized freshwater turtle (Rhodin *et al.*, 2021), whose individuals can explore a wide variety

of habitat types. Although they typically inhabit wetlands and marshes, the species is also occasionally found in slow moving streams, shallow bays, brackish or salty lagoons, natural and or artificial shallow lakes, many of which dry up seasonally (e.g., Mauro *et al.*, 2004; Rhodin *et al.*, 2018). *Acanthochelys macrocephala* has a geographical distribution restricted to central South America, with an estimated extent of occurrence (EOO) of 283,284 km<sup>2</sup> (encompassing localities situated in southern Bolivia, northeastern Paraguay, and midwestern Brazil (Rhodin *et al.*, 2018; 2021, and references therein). In Bolivia and Paraguay, published records correspond to areas of Chaco. In Brazil, records are restricted to the Upper Paraguay river basin, throughout the Pantanal wetlands or nearby Chaco areas. These records were limited until now to four municipalities of Mato Grosso do Sul and two municipalities of Mato Grosso (Rhodin *et al.*, 1984; Cintra and Yamashita, 1989; Kinas *et al.*, 2005; Ávila *et al.*, 2006; Garbin *et al.*, 2016; Métrailler, 2006; Ferronato and Molina, 2009; Rhodin *et al.*, 2009; Souza *et al.*, 2010; Garbin *et al.*, 2016; Brito *et al.*, 2018; Brito *et al.*, 2020). Some of the records we provided here constitute the first occurrence of the species for the municipalities of Barão de Melgaço, Nossa Senhora do Livramento, Cuiabá, and Acorizal, and increase from two to six the number of municipalities where the species is currently known in Mato Grosso (previously known for Poconé and Cáceres - the latter being the species type locality). Our record from Acorizal extends the geographic distribution of the species approximately 170 km northeast from the previous northernmost known record, in the municipality of Cáceres (Rhodin *et al.*, 2021). Moreover, the records from Cuiabá and Acorizal confirm the presence of *A. macrocephala* in habitats situated outside the lowland Pantanal (Ferronato and Molina, 2009; Rhodin *et al.*, 2009; Rhodin *et al.*, 2021), in areas belonging to the plateau of the "Paraná-Guimarães" Cerrado ecoregion (see Sano *et al.*, 2019). The only previous record in a typical Cerrado habitat (in the municipality of Coxim, Mato Grosso do Sul) was based on a turtle skeleton, tentatively identified as *A. macrocephala* by Ávila *et al.* (2006). Overall, we increased the EOO of the species by 10%, expanding it to 314,324 km<sup>2</sup>.

Of the total number of records detailed above (n=23), 82.6% took place during the local rainy season, between November and April. However, 48% of the records were concentrated in the Pantanal water

drawdown period, between March and May, reinforcing previous observations by Brito *et al.* (2020). During this period, the water level in the flooded grasslands decreases and the remaining ponds are disconnected. In 70% of the records made during the drawdown period, turtles were encountered while moving through dry habitats (crossing a road or on the edge of forested patches). Individuals probably move more during the water drawdown period, in the search of mates, permanent ponds, and/or suitable reproductive habitats (Brito *et al.*, 2020), thus enhancing the detection of the species.

### Acknowledgements

We thank Fernando Rodrigo Tortato, Luiz Vicente da Silva Campos Filho, Marcos Roberto Ferramosca Cardoso, André Pansonato, Gabriela Schuck, and Richard de Campos Pacheco for original field records; Felipe Franco Curcio for allowing access to material under his care in the Herpetological Collection of the Federal University of Mato Grosso; FAGC thanks Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES); CS thanks Conselho Nacional de Desenvolvimento Científico e Tecnológico for a research fellowship (CNPq #3123038/2018-1). Permits were provided by the Brazilian System of Biodiversity Information and Authorization (licence # SISBIO 13429 to CS and SISBIO 25492-1 to ESB).

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Recibida: 12 Junio 2023  
Revisada: 26 Junio 2023  
Aceptada: 04 Julio 2023  
Editor Asociado: L. Alcalde

doi: 10.31017/CdH.2023.(2023-019)

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