Check List the journal of biodiversity data

NOTES ON GEOGRAPHIC DISTRIBUTION

Check List 11(3): 1631, April 2015 doi: http://dx.doi.org/10.15560/11.3.1631
ISSN 1809-127X

Kinosternon scorpioides scorpioides Linnaeus, 1766: range extension and first records in the upper Paraguay River basin and Mato Grosso do Sul, Brazil

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Abstract: The Scorpion mud turtle (*Kinosternon scorpioides*) is the chelonian species with the largest distribution range in the Neotropics. The species is reportedly distributed as two disjunct populations in South America: the Amazonian and the Chacoan populations. We present new records of *K. s. scorpioides* which represent an expansion of the species distribution, with the first records for the Upper Paraguay River basin, the first records for the Mato Grosso do Sul state, Brazil, as well as an evidence that the two previously documented populations area not disjunct.

Key words: distribution, first records, *Kinosternon scorpioides*, Pantanal, Paraguay River basin

The Scorpion mud turtle (*Kinosternon scorpioides*) is the most widely distributed chelonian species in the Neotropics (Ernst and Barbour 1989; Cabrera and Colantonio 1997; Berry and Iverson 2001; Turtle Taxonomy Working Group 2009; Berry Iverson, and 2011). The species is known to occur from Panamá and El Salvador, along the Caribbean coastal range to the northeastern Atlantic coast in Brazil, covering the whole Amazon rainforest, the eastern ranges of Colombia, Ecuador and Peru, and reaching its southernmost occurrence in central and southern Bolivia, northern Paraguay and northern Argentina in the Chaco range (Berry and Iverson 2001). Until recently, the species from Argentina, Bolivia and Paraguay was considered disjunct from its conspecific correlate from the Amazon basin, and was separated as the subspecies *K. scorpioides serei* by Berry (1978) from *K. s. scorpioides*. However, Cabrera and Colantonio (1997) argued that there is no morphological basis for splitting these subspecies, as well as other possible ones such as *K. s. carajasensis*, from the *K. s. scorpioides*, leading them to argue that *K. scorpioides* should be considered a monotypic species from southern Mexico to the whole of its distribution South American.

Distribution maps and range descriptions have extended the species in a relatively narrow band from the Amazon basin towards northern Argentina and northern Paraguayan Chaco region, crossing central Bolivia in the foothills of the Andes (Freiberg 1967; Iverson 1992; Norman 1994; Berry and Iverson 2011; Acosta et al. 2013). None of these maps present records or projections indicating that *K. scorpioides* occurs in the Upper Paraguay River basin, located in eastern Bolivia (eastern Chiquitana region) and in western Brazil (Pantanal wetland region) (see Iverson 1992; Berry and Iverson 2011). Recently, an extension was documented in the northern Mato Grosso state, Brazil (Costa et al. 2010), again without records reaching the Upper Paraguay River basin. Herpetological surveys in the southernmost region of the Pantanal, in the border with Paraguay, have not included *K. scorpioides* in the findings (Souza et al. 2010), despite the species have been documented in the Northern areas of the Paraguay (Métrailler 2003) at less than 200 km to the west of the Souza et al. (2010) study area.

We present new records of *K. s. scorpioides* outside of the Amazon basin, which represent both an extension of the species range to eastern Bolivia and the first documented records in the Upper Paraguay River basin, as well as the first record of the species for the Mato Grosso do Sul state, Brazil. We found two individuals in January 2008, one hatchling and one adult male, in a temporary stream at the Santa Teresa mountain range (18°16′49″ S, 057°31′05″ W), in the western border of the Pantanal wetland. The specimens were documented via photograph and released in the same location in which

Figure 1. *Kinosternon s. scorpioides* from the Santa Teresa mountain range. HCPAPI 489 (top and left bottom) and HCPAPI 490 juvenile from the same location (right, bottom), Mato Grosso do Sul, Brazil, January 2008.

they were observed (Figure 1). The pictures are cataloged in the database of the Embrapa Pantanal Vertebrate Collection (HCPAPI 489 and HCPAPI 490). Additionally, we received one adult individual found the downtown Corumbá, Mato Grosso do Sul, Brazil, (19°00′27″ S, 057°39′05″ W) in June 2009 which is preserved as a complete voucher in the Embrapa Pantanal Vertebrate Collection (HCPAP 491). The exact origin of this specimen is unknown, but local informants are aware of the occurrence of this turtle in small, permanent or seasonal streams running from the Urucum mountain range, located 15 km from Corumbá. Finally, in March 2014 we found another adult male at Santa Teresa Ranch, in the same location as the above-mentioned released individuals. Although this specimen bore evidence of carnivore mammal attack, it was complete and preserved as a voucher at the Embrapa Pantanal Vertebrate Collection (HCPAP 500). Our findings represent a range expansion of more than 300 km from the nearest known locations from the south (see Berry and Iverson 2011), and more than 800 km from the nearest records in the north (see Costa et al. 2010) (Figure 2).

The habitat in which the HCPAP 500 specimen was recorded at Santa Teresa mountains is characterized by a seasonal forest stream which retains some water pools during the dry season. Local residents report that the turtles are easily seen in artificial ponds constructed to retain water from the existing streams to provide water for the cattle in the dry season. *K. scorpioides* is locally known as "galápago", representing a clear influence of the Spanish spoken in Bolivia, whose border is located a few kilometers from the Santa Teresa Ranch, as well as from Corumbá and the Urucum Mountains.

The flexibility of *K. scorpioides* in using seasonal aquatic habitat is well known (Pereira et al. 2007; Vogt et al. 2009; Berry and Iverson 2011), including wetlands from the semi-arid Chaco region of Paraguay, Argentina and Bolivia. Despite records obtained in the western fringe of the 140.000 km² Pantanal wetland, no records exist from within the floodplains. However, the Pantanal is largely seasonal, and the occurrence of the species there would not be a surprise. Given the lack of consistent inventories in a vast region in central South America, it seems not realist to defend a discontinuous southern

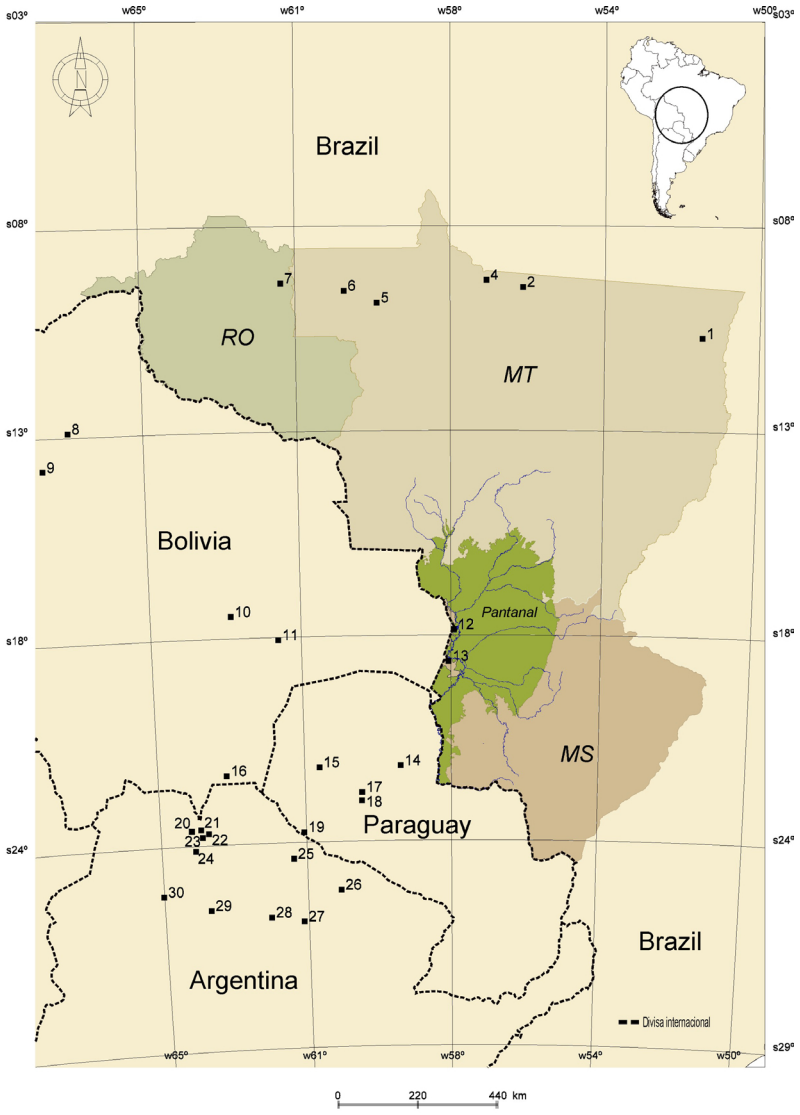

Figure 2. Distribution of known localities for *Kinosternon s. scorpioides* south of the Amazon rainforest in Brazil, Bolivia, Paraguay, and Argentina. The drainage shown in the figure represent the main rivers of the Upper Paraguay River basin, which form the Pantanal wetland (in the center of the map). MT: Mato Grosso state, Brazil. MS: Mato Grosso do Sul state, Brazil. RO: Rondônia state, Brazil.

population of *K. s. scorpioides* in the Chaco based solely on the lack of occurrence data. Rather, we propose that this subspecies might have a continuous distribution across South America from the Amazon basin to northern Chaco region, and thus questioning the hypothesis from Pritchard and Trebbau (1984) and Pritchard (1989) who suggested that the disjunct distribution of the Amazon basin and the Chaco region is a result of forest expansion after the Pleistocene.

ACKNOWLEDGEMENTS

We thank to the owners of Santa Teresa ranch for permission to use the property and for their logistic support, Embrapa Pantanal for the financial support of this fieldwork and logistics, and Science Without Borders program for financing RMC's PhD (CNPq/Capes, process 237737/2012-4).

LITERATURE CITED

Acosta, J.L., C. Calamante and S. Palomas. 2013. *Kinosternon scorpioides scorpioides* (Linnaeus, 1766). Primer registro para la provincia del Chaco (República Argentina). Cuadernos de Herpetología 27(2): 169. http://www.scielo.org.ar/scielo.php?pid=S1852-57682013000200008&script=sci_arttext

Andreone, F., E. Gavetti and S. Bouero. 2007. Revised catalogue of the herpetological collection in Turin University. II. Chelonia and Crocodylia. Bulletin do Museo Regionale de Scientia Naturais de Torino 24(2): 301–347.

Berry, J.F. and J.B. Iverson. 2011. *Kinosternon scorpioides* (Linnaeus, 1766)—Scorpion Mud Turtle. Chelonian Research Monographs 5: 63.1–63.15.

Berry, J.F. and J.B. Iverson. 2001. *Kinosternon scorpioides*. *Catalogue of American Amphibians and Reptiles* 725: 1–11.

Cabrera, M.R. and S.E. Colantonio. 1997. Taxonomic revision of the South American subspecies of the turtle *Kinosternon scorpioides*. *Journal of Herpetology* 31: 507–513. doi: 10.2307/1565602

Cei, J. M. 1993. Reptiles for noroeste, nordeste e este de la Argentina: Herpetofauna de las selvas subtropicales, Puna y Pampas. Museo

Table 1. Records of *Kinosternon s. scorpioides* south of the Amazon rainforest through the Chaco region, their localities, countries and source of information (voucher numbers and publications). See the distribution of records in the Figure 2.

Record	Locality	Country	Voucher number/publication
01	Tapirapé river, Mato Grosso	Brazil	MZUSP 2185
02	Cristalino river, Mato Grosso	Brazil	Costa et al. 2010
03, 04	Paranaíta, Mato Grosso	Brazil	ZUEC-REP 3567 and UFMT-R 8122, 6772, 6773
05	Aripuanã, Mato Grosso	Brazil	MZUFV 0043, *Costa* et al. 2010
06	Aripuanã, Mato Grosso	Brazil	UFMT-R 7411, 7412
07	Cachoeira do Nazaré, Machado river, Rondônia	Brazil	MZUSP 2184, Cabrera and Colantonio 1997
08	Unespecified	Bolivia	Cabrera and Colantonio 1997
09	Tumapasa, La Paz	Bolivia	USNM AMPHIBIEN & REPTILES 65103.6040798
10	Santa Cruz	Bolivia	MZUTR 3864: Andreoni et al. 2007
11	Cuoesí, Bañados de Izozog	Bolivia	Gonzáles 1998
12	Santa Teresa ranch, Corumbá, Mato Grosso do Sul	Brazil	HCPAP 500, this note
13	Corumbá, Mato Grosso do Sul	Brazil	HCPAP 491, this note
14	Chaco	Paraguay	Métrailler 2003
15	Villa Hayes, Teniente Ochoa	Paraguay	USNM 341888.6209941
16	Caiza	Bolivia	MZUTR 3864
17	Boquerón	Paraguay	CM HERPS 94243
18	Presidente Hayes	Paraguay	CM HERPS 142545
19	Buena Vista, Santa Cruz	Paraguay	MACN 11968, Cabrera and Colantonio 1997
20	Tabacal, Orán	Argentina	MACN 7058
21	Salta	Argentina	FML 00026
22	Embarcación, Salta	Argentina	KU KUH 161258
23	Tabacal	Argentina	MACN 1247
24	Yuto, Jujuy	Argentina	MCZ HERP R 66978
25	Ingeniero Suárez, Matacos	Argentina	MACN 13885
26	Las Lomitas, Patiño	Argentina	FML 00029
27	Unespecified	Argentina	UNNEC 10976
28	Unespecified	Argentina	Lavilla et al. 1995
29	Joaquin V. Gonzáles, Salta	Argentina	FML 00043
30	Los Blancos, Salta	Argentina	FML 00007

Collections: MZUSP – Museu de Zoologia da Universidade de São Paulo (Brazil); ZUEC –REP – Coleção de Zoologia da Universidade Estadual de Campinas, Répteis (Brazil); UFMT-R – Coleção Zoológica da Universidade Federal de Mato Grosso, Répteis (Brazil); MZUFV – Muzeu de Zoologia da Universidade Federal de Viçosa (Brazil); USNM - National Museum of Natural History (United States); MZUTR – Herpetological Collection from Turin University (Italy); HCPAP – Coleção de Herpetologia da Embrapa Pantanal (Brazil); HCPAPI – Coleção de Herpetologia da Embrapa Pantanal - Images (Brazil); CM-HERPS - Carnegie Museum of Natural History (United States); MACN – Museo Argentino de Ciências Naturales (Argentina); MCZ HERP - Museum of Comparative Zoology, Harvard University (United States); FML - Fundación Miguel Lillo (Argentina); KU KUH – Biodiversity Institute, University of Kansas (United states); UNNEC Colección de Herpetología de la Universidad Nacional del Nordeste (Argentina).

Regionale di Scienze Naturali (Torino) Monografía 14: 1– 952.

Costa, H. C., F. B. Molina, V. A. São-Pedro and R. N. Feio. 2010. Reptilia, Testudines, Kinosternidae, *Kinosternon scorpioides scorpioides* (Linnaeus, 1766): Distribution extension. Check List 6(2): 314–315 http://www.checklist.org.br/getpdf?NGD040-09

Ernst, C.H. and R.W. Barbour. 1989. Turtles of the World. Washington, DC: Smithsonian Institution Press. 313 pp.

Freiberg, M. 1967. Tortugas de la Argentina. Ciência y Investigación 23: 351–363.

Iverson, J. B. 1992. A revised checklist with distribution maps of the turtles of the world. Richmond: privately printed. 374 pp.

Gonzáles, A. L. 1998. La herpetofauna del Izozog. Ecología en Bolivia 31: 45–52.

Lavilla, E.O., F.B. Cruz and G.J. Scrocchi. 1995. Amphibiens et reptiliens de la Station Biologique Los Colorados dans Province de Salta, Argentina (2º partie). Revue Française d'Aquariologie et Herpétologie 22: 117–128.

Métrailler, S. 2003. Note sur l'écologc d'*Acanthochelys macrocephala* (Rhodin, Mittermeier e McMorris, 1985) au Paraguay (Reptilia, Chelidae). Revue Suisse de Zoologia 110(3): 483–490.

Norman, D.R. 1994. Amphibians and reptiles from the Paraguayan Chaco. I. Privately printed, San José, Costa Rica.

Pereira, L.A., A.L. De Souza, M.V.J. Cutrin and E.G. Moreira. 2007. Características ecológicas do habitat de *Kinosternon scorpioides* Linnaeus, 1766 (Reptilia, Chelonia, Kinosternidae) no município de São Bento–Baixada Maranhaense (maranhão, Brasil). Boletin do Laboratório de Hidrobiologia 20: 9–14.

Pritchard, P. C. H. and P. Trebbau. 1984. The turtles of Venezuela. SSAR Contributions to Herpetology 2: 1–403.

Pritchard, P. C. H. 1989. Geographic distribution: *Kinosternon s. scorpioides*. Herpetological Review 40: 14.

Turtle Taxonomy Working Group (A.G.H. Rhodin, J.F. Parham, P.P. van Dijk and J.B. Iverson). 2009. Turtles of the World: annotated checklist of taxonomy and synonymy, 2009 update, with conservation status summary. Chelonian Research Monographs 5: 39–84.

Vogt, R.C., C.R. Ferrara, L. Schneider and L.B. Santos Junior. 2009. Brazilian Amazon turtles: habitat. Herpetological Review 40 (2): 213.

Authors' contribution statement: WMT determined the species of each specimen released in the field and those kept as vouchers in the Embrapa Pantanal Vertebrate Collection. RMC, ARC and GOF contributed with the search of the species in the field and with the elaboration of this note.

Received: July 2014
Accepted: February 2015
Editorial responsibility: Diego José Santana