The Identity of a Controversial Neotropical Turtle Hatchling (Reptilia: Testudines: Chelidae)

Article *in* Herpetological Review · December 2015

1 author:

Stephan Böhm

10 PUBLICATIONS **9** CITATIONS

SEE PROFILE

Herpetological Review, 2015, 46(4), 510–512.

The Identity of a Controversial Neotropical Turtle Hatchling (Reptilia: Testudines: Chelidae)

Due to lack of data and available specimens with confirmed genealogy, the identification of hatchling South American chelid turtles has been difficult and controversial through time. Neonates of few species are unmistakable, either by body profile (*Chelus fimbriata*, *Platemys platycephala*, *Hydromedusa* spp.) or by persistence through life of the ground color or pattern that adults exhibit (e.g., *Phrynops hilarii*). In many other species, however, the hatchlings show coloration and/or patterns that shift across ontogeny, e.g., *Mesoclemmys dahli* (Rueda-Almonacid et al. 2007), *M. gibba* (Métrailler 2001; Rueda-Almonacid et al. 2007; Vogt 2008), *M. tuberculata* (Santana et al. 2015), *M. zuliae* (Pritchard and Trebbau 1984; Rueda-Almonacid et al. 2007), *Phrynops geoffroanus* (Pritchard 1979; Pritchard and Trebbau 1984), and *Phrynops tuberosus* (Böhm 2008; Coelho et al. 2014). Identifying empty shells of juvenile turtles is even harder, due to the occurrence of a yellowish plastron with central expanded black area in several species, e.g., *Mesoclemmys gibba* (Métrailler 2001), *M. heliostemma* (Rueda-Almonacid et al. 2007), *M. nasuta* (Métrailler and Le Gratiet 1996), *M. raniceps* (Böhm 2009), *M. tuberculata* (Reis et al. 2014), and *M. vanderhaegei* (Marques et al. 2014).

The purpose of this paper is to set the identity of a hatchling chelid turtle, purportedly the southernmost record of *Mesoclemmys vanderhaegei* (Bour) (Iverson 1986, 1992), whose identification has been doubted repeatedly (Waller and Chebez 1987; Cabrera 1998; Vinke et al. 2013). This specimen is housed at the Zoologisches Museum Hamburg as ZMH R 1025 (Fig. 1A). Associated data to it are: "*Phrynops nasutus* aus Puerto Malabrigo, Paraná, Provinz Santa Fé, östlicher Rand des südlichen Chaco, Argentinien, von Dr. Med. Schreiber, 5.4.1930."

Puerto Malabrigo is a domestic harbor (not to be confused with the city of Malabrigo, located about 38 km to northwest of it) on the western bank of the Paraná River, at 29°2957S, 59°3701W. The locality is situated about 520 km from the nearest record of *Mesoclemmys vanderhaegei* (Arroyo Zaimán at Misiones Province; Cabrera 1998), assuming dispersal via the Paraná River, or about 380 km from the nearest northern record, if dispersal was via the Paraguay River (Laishí, Formosa Province; Cabrera 1998).

Upon close inspection of ZMH R 1025, we determine that the specimen is a hatchling of the Chaco Side-necked Turtle *Acanthochelys pallidipectoris* (Freiberg). This species has been cited from Santa Fe province (Fernández 1987; Buskirk 1988; Cabrera 1998; Piña and Larriera 2001; Vinke et al. 2011) but it is rarely encountered and vulnerable for being endemic to the Chaco ecoregion. Our determination of the true identity of this hatchling is supported by the following evidence.

MARIO R. CABRERA*
Museo de Zoología and Instituto de Diversidad y Ecología Animal (IDEA), CONICET/Universidad Nacional de Córdoba – Av. Vélez Sarsfield 299, (5000) Córdoba, Argentina
STEPHAN BÖHM
Johannagasse 18/16, 1050 Wien, Austria
**Corresponding author; e-mail: mcabrera@efn.uncor.edu*

Morphology.— (a) Although considerably smaller than in adults, ZMH R 1025 (Fig. 1A) bears the femoral spurs that only *A. pallidipectoris* exhibits. (b) The noticeable narrowing at the sides of the carapace is due to the freshly-hatched condition of this individual.

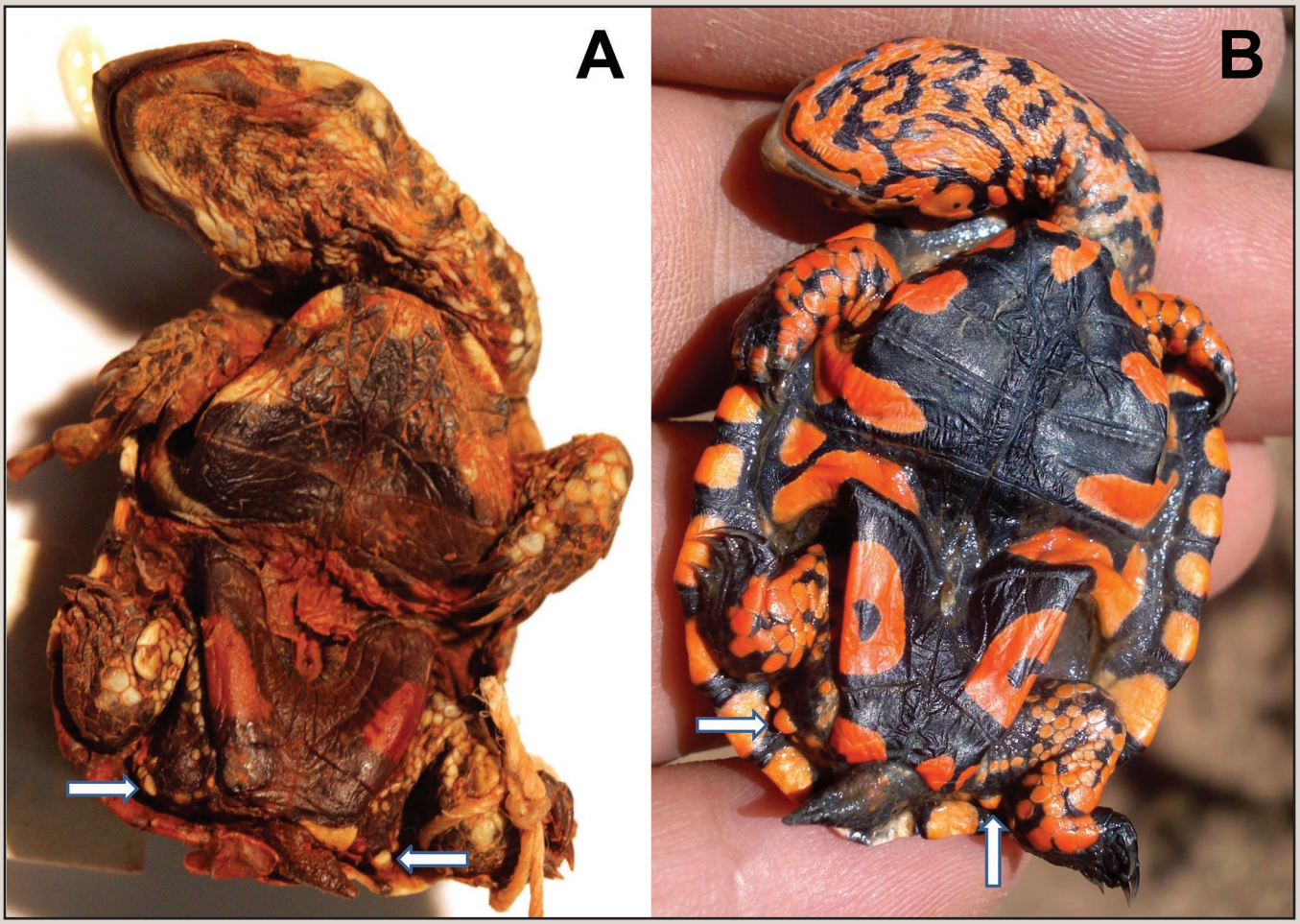
Size.—This specimen's straight-line carapace length (SCL) = 28.4 mm; in three specimens of *A. pallidipectoris* bred in captivity the shell of hatchlings had an average length of 31 mm (Vinke et al. 2011). On the contrary, *Mesoclemmys* hatchlings are at least 35 mm SCL when they hatch, according to our observations on captive-born *M. gibba* and *M. raniceps* (Böhm 2009, and unpublished data). Santana et al. (2015) reported a carapace length of 47.1 mm for *M. tuberculata* , and Souza et al. (2000), in the only published reference to hatchling size of *Mesoclemmys vanderhaegei*, reported SCLs of 39.2 mm and 41.9 mm for two wild-hatched neonates.

Pattern and color.—There is full concordance of the ZMH R 1025 hatchling with living *A. pallidipectoris* juveniles (Fig. 1B). For comparison with *M. vanderhaegei*, see figure 5 in Marques et al. (2014) that shows the largely black plastron and soft body parts of a live *M. vanderhaegei* hatchling.

From an ecological perspective, passive transport of a tiny *M. vanderhaegei* (or any other chelid hatchling) by drifting in a large river through hundreds of kilometers seems unlikely due to hazardous presence of abundant predatory fishes such as *Hoplias malabaricus*, *Salminus brasiliensis,* and others, as well as crocodilians (*Caiman latirostris*, *C. yacare*), in both the Paraná and Paraguay rivers (Vinke et al. 2013). All the species of the genus *Acanthochelys* (*A. macrocephala*, *A. pallidipectoris*, *A. radiolata*, and *A. spixii*) have small hatchlings with vivid red, orange, or yellow colors present on the marginal scutes, the plastron, and soft body parts (Cabrera 1998; Artner 2007; Mocelin et al. 2008; Vinke et al. 2011). Upon growing, these colors fade or disappear altogether, being replaced by brown or black. These bright colors might act as aposematic signals to discourage potential predators of these vulnerable animals in the early stages of their lives. For example, experiments by Britson (1998) and Britson and Gutzke (1993) showed that Largemouth Bass might associate the bright plastral colors and patterns of Red-eared Sliders (*Trachemys scripta*) with the defensive behavior of the turtle. However, in sediment-rich rivers with turbid water such as the Paraná, protection by color cannot act.

The clarification of the true identity of the ZMH R 1025 specimen allows better definition of the actual range of *M. vanderhaegei*, a species assessed as IUCN Data Deficient or Near Threatened (Marques et al. 2014). Except for reference to this hatchling, *Mesoclemmys vanderhaegei* never has been found farther south than 28ºS latitude. This chelid turtle is therefore limited to Brazil, Paraguay, and small portions of southeastern Bolivia and northeastern Argentina.

Acknowledgments.—We thank Jakob Hallermann (Zoologisches Museum Hamburg, Germany) and Georg Gassner (Naturhistorisches Museum Vienna, Switzerland) for logistical assistance. Soledad Palomas authorized us to use her live hatchling photograph. Associate



PHOTOS BY STEPHAN BÖHM (LEFT) AND SOLEDAD PALOMAS (RIGHT)

FIG. 1. *Acanthochelys pallidipectoris*. (A) The hatchling ZMH R 1025 from Puerto Malabrigo, Santa Fe province, Argentina; (B) A live juvenile (SCL = 43 mm) from Chaco province, Argentina. Note the incipient femoral spurs typical of this species (arrows).

Editor Peter Lindeman and two anonymous reviewers made valuable comments that improved the manuscript. MRC is a researcher of Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), and is supported by the Secretaría de Ciencia y Tecnología (SECYT), Universidad Nacional de Córdoba, Argentina.

LITERATURE CITED

ARTNER, H. 2007. Observations in the natural habitat in Paraguay and their implications for the first successful breeding of the Pantanal swamp turtle *Acanthochelys macrocephala* (Rhodin, Mittermeier & McMorris, 1984). Emys 14:4–25.

BÖHM, S. 2008. Considerations regarding a near-natural husbandry of the tuberose side-necked turtle, *Phrynops tuberosus* (Peters, 1870). Radiata 17:45–54.

———. 2009. *Batrachemys raniceps* (Gray 1855): Die Amazonas-Krötenkopfschildkröte. Sacalia 6:9–29.

BRITSON, C. A. 1998. Predatory responses of largemouth bass (*Micropterus salmoides*) to conspicuous and cryptic hatchling turtles: a comparative experiment. Copeia 1998:383–390.

———, AND W. H. N. GUTZKE. 1993. Antipredator mechanisms of hatchling freshwater turtles. Copeia 1993:435–440.

BUSKIRK, J. R. 1988. New locality records in Argentina and Paraguay for chelid turtles, *Platemys pallidipectoris* (Freiberg) and *Platemys macrocephala* (Rhodin et al.). Herpetol. Rev. 19:74–75.

CABRERA, M. R. 1998. Las Tortugas Continentales de Sudamérica Austral. Priv. printed, Córdoba, Argentina. 120 pp.

COELHO, R. D. F., K. DE SOUZA, E. K. M. R. SANTOS, I. A. NOVELLI, AND L. B. RIBEIRO. 2014. *Phrynops tuberosus* (Peters' side-necked turtle). Hatchling size. Herpetol. Rev. 45:485–486.

FERNANDEZ, M. S. 1987. Ampliación de la distribución geográfica de *Platemys pallidipectoris* Freiberg, 1945 (Chelonii, Chelidae). Bol. Asoc. Herpetol. Arg. 3:9.

IVERSON, J. B. 1986. A Checklist with Distribution Maps of the Turtles of the World. Priv. printed, Richmond, Indiana. 283 pp.

———. 1992. A Revised Checklist with Distribution Maps of the Turtles of the World. Priv. printed, Richmond, Indiana. 363 pp.

MARQUES, T. S., S. BÖHM, E. S. BRITO, M. R. CABRERA, AND L. M. VERDADE. 2014. *Mesoclemmys vanderhaegei* (Bour, 1973)—Vanderhaege's toad-headed turtle, karumbé-hy. *In* A. G. J. Rhodin, P. C. H. Pritchard, P. P. van Dijk, R. A. Saumure, K. A. Buhlmann, J. B. Iverson, and R. A. Mittermeier (eds.), Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group., Chelon. Res. Monogr. 5:083.1–083.8.

MÉTRAILLER, S. 2001. Elevage et reproduction en captivité de *Phrynops gibbus* (Schweigger, 1812). Manouria 4:21–26.

———, AND G. LE GRATIET. 1996. Tortues Continentales de Guyane Française. Priv. printed, Bramois, Switzerland. 128 pp.

MOCELIN, M. A., R. FERNANDES, M. PORTO, AND D. S. FERNANDES. 2008. Reproductive biology and notes on natural history of the side-necked turtle *Acanthochelys radiolata* (Mikan, 1820) in captivity (Testudines: Chelidae). S. Amer. J. Herpetol. 3:223–228.

PIÑA, C. I., AND A. LARRIERA. 2001. Geographic distribution: *Acanthochelys pallidipectoris*. Herpetol. Rev. 32:116.

Pritchard, P. C. H. 1979. Encyclopedia of Turtles. T.F.H. Publ., Neptune, New Jersey. 895 pp.

———, and P. Trebbau. 1984. The Turtles of Venezuela. SSAR Contrib. Herpetol. 2. Ithaca, New York. 466 pp.

Reis, P. M. A. G., R. D. F. Coelho, F. M. Walker, and L. B. Ribeiro. 2014. *Mesoclemmys tuberculata* (tuberculate toad-headed turtle). Hatchlings. Herpetol. Rev. 45:691.

Rueda-Almonacid, J. V., J. L. Carr, R. A. Mittermeier, J. V. Rodriguez-M., R. B. Mast, R. C. Vogt, A. Rhodin, J. Ossa-V., J. N. Rueda, and C. Goettsch. 2007. Las Tortugas y los Cocodrilianos de los Países Andinos del Trópico. Conservación Internacional/Edit. Panamericana, Bogotá, Colombia. 538 pp.

Santana, D. O., T. S. Marques, G. H. C. Vieira, R. G. Faria, and D. O. Mesquita. 2015. Hatchling morphology of the tuberculate toadhead turtle (*Mesoclemmys tuberculata* [Lüederwaldt, 1926]) from northeastern Brazil (Testudines: Chelidae). Herpetol. Notes 8:407–410.

Souza, F. L., M. Martins, and R. J. Sawaya. 2000. A new record and observations of Vanderhaege´s toad-headed turtle, *Phrynops vanderhaegei* (Testudines, Chelidae) in SE Brazil. Bol. Asoc. Herpetol. Esp. 11:85–88.

Vinke, T., S. Vinke, and G. Köhler. 2013. What is known about *Mesoclemmys vanderhaegei* (Bour, 1973): a systematic review of the available literature. Paraquaria Nat. 1:21–31.

———, ———, E. Richard, M. R. Cabrera, L. Paszko, P. Marano, and S. Métrailler. 2011. *Acanthochelys pallidipectoris* (Freiberg 1945)—Chaco side-necked turtle. *In* A. G. J. Rhodin, P. C. H. Pritchard, P. P. van Dijk, R. A. Saumure, K. A. Buhlmann, J. B. Iverson, and R. A. Mittermeier (eds.), Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group, Chel. Res. Monogr. 5:065.1–065.7.

Vogt, R. C. 2008. Tortugas Amazónicas. Gráfica Biblos, Lima. 104 pp.

Waller, T., and J. C. Chebez. 1987. Notas sobre las tortugas de la provincia de Misiones, Argentina e inclusión de *Phrynops williamsi* Rhodin y Mittermeier, 1983 (Testudines: Chelidae) en la herpetofauna Argentina. Hist. Nat. 7:53–59.