

Hatchling morphology of the Amazonian toad-headed turtle (*Mesoclemmys raniceps* [Gray 1855]) from Peruvian Tropical Andes (Testudines: Chelidae)

Bruno Ferronato^{1,4*}, Flavio Molina^{2,3}, Freddy Molina⁴, Renato Espinosa⁴ and Victor Morales⁴

Abstract. We report the morphology of two *Mesoclemmys raniceps* hatchlings captured during an investigation on the ecology of Amazon freshwater turtles in Asháninkas indigenous communities in Departamento de Pasco, Peru. This study represents the first description of wild hatchling *M. raniceps* in Peru and a new record for minimum carapace length of wild *M. raniceps*.

Keywords. Pichis River Valley, Chelonian, Peru, Amazon Basin

Introduction

Mesoclemmys raniceps is a side-necked turtle distributed on the Amazon basin, and Orinoco basin (McCord, Joseph-Ouni and Lamar, 2001; Bour and Zaher, 2005; Rueda-Almonacid et al., 2007; Vogt, 2008). Little information is available for *M. raniceps* life history traits (Souza, 2004; Souza, Giraldelelli and Martins, 2006). There are evidences that the females can lay eggs several times in the year, with a median clutch of 4-8 spherical eggs (Medem, 1960; Pritchard and Trebbau, 1984; Rueda-Almonacid et al., 2007) but few descriptions are available for hatchlings (McCord, Joseph-Ouni and Lamar, 2001; Gaibazzi, 2005; Schilde 2008; Böhm 2009). Here we report the morphology of two wild hatchlings of *M. raniceps* from Tropical Andes Region, in Central Peru.

Material and methods

During the “Amazon Turtles Ecology Project” in Asháninkas Indigenous Communities in Central Peru, on 11 February 2009, we hand-captured one hatchling in Santa Rosa de Chivis community (SRCC) on a road (10°20'06.5”S, 74°59'15.5”W, 220 m elev.) close to a clean-water shallow lagoon. On 22 July 2009 another hatchling was hand-captured in San José de Azupizu community (SJAC) in a stream (Figure 1) (10°23'16”S, 74°54'38.2”W, 240 m elev.). We used a vernier caliper (to the nearest 0,01 mm) for the turtle’s measurements, evaluating the carapace length, carapace width, plastron length, plastron width, carapace high, bridge length and head width (between tympanums), all of them referring to straight measurements. In order to determine the plastral formulae, we measured the intergular, humeral, pectoral,



Figure 1. A stream inhabited by a *Mesoclemmys raniceps* hatchling in San José de Azupizu community, Departamento de Pasco, Peru. Photograph: Bruno de Oliveira Ferronato.

1 Cámara Nacional de la Producción y el Emprendimiento, CANPRODEM. Jr. Zorritos 940, Lima 1, Lima, Peru; email: brunoferronato@hotmail.com

2 Museu de Zoologia da Universidade de São Paulo, Av. Nazaré, 481, Ipiranga, CEP 04263-000 São Paulo, São Paulo, Brazil.

3 Universidade de Santo Amaro, Rua Prof. Enéas de Siqueira Neto, 340, Jardim das Imbuías, CEP 04829-300, São Paulo, São Paulo, Brazil.

4 Universidade Ricardo Palma, Facultad de Ciencias Biológicas. Ap. Postal 18-01, Av. Benavides 5440, Las Gardenias, Surco, Lima, Peru.

* corresponding author



Figure 2. *Mesoclemmys raniceps* hatchlings from Departamento de Pasco, Peru. A, B and C from Santa Rosa de Chivis community. D from San José de Azupizu community. Photographs: Bruno de Oliveira Ferronato

abdominal, femoral and anal ventral scutes. We used a vernier caliper measuring the distance of the suture of these ventral scutes, except for the intergular that we measured the mid-line, all of them referring to straight measurements. Turtle weight was measured using a 100g Pesola spring scale. For more details on turtle measurements and shell morphology see McCord, Joseph-Ouni and Lamar (2001). Hatchlings were measured, photographed and released. Both indigenous communities are located in the Pichis River Valley, Oxapampa Province, in Departamento de Pasco, Peru. Those communities are in the buffer zone of the Bosque de Protección San Matías-San Carlos, in the Peruvian Tropical Andes region.

Results and Discussion

The hatchlings measurements from SRCC and SJAC are listed in Table 1. The egg caruncle and umbilical scar were absent. The hatchlings characteristics indicated they probably had a few months of age. Both turtles had a large head; head width for SRCC and SJAC hatchlings measured 15.0 and 15.3 mm (Table 1), respectively, and represented 27.9% and 24.1% of carapace length.

Hatchlings' morphology and color pattern were very similar and differences will be pointed whenever necessary. Intergular scute was triangular and longer

than broad. The plastral formulae to SRCC hatchling was intergular > femoral > abdominal > pectoral > humeral = anal, and to SJAC hatchling was intergular > anal > abdominal > femoral > pectoral > humeral (Table 1). The anal notch was angular. Carapace was oval with maximum width at the level of the 8th marginal scute. There was a central keel, evident on the second, third and fourth vertebral scutes. Head dorsal surface was covered by large shields of irregular shapes and different sizes (Figure 2). Ventral surface of the head and neck was covered by small rounded shields. Two medium barbels were attached to the chin. Forelimbs had five claws, hind limbs had four claws.

Plastron was mostly black combined with a yellowish coloration. There was a slightly difference in the larger hatchling (SJAC) where humeral and anal ventral scutes had a larger area covered with black (Figure 2). In the smaller hatchling (SRCC), the black color was less evident on these same scutes, although it had several black spots, mainly in the anal region. Yellowish coloration was predominant on plastron bridges and ventral surfaces of marginal scutes. Carapace was blackish. Dorsal surface of head was pale gray mottled

Table 1. *Mesoclemmys raniceps* hatchlings measurements (in mm and weight in g) from Departamento de Pasco, Peru. CL=Carapace length; CW=Carapace width; PL=Plastron length; PW=Plastron width; CH=Carapace high; BL=Bridge length; HW=Head width; W=Weight; IN= Intergular ventral scute; HU= Humeral ventral scute; PE= Pectoral ventral scute; AB= Abdominal ventral scute; FE= Femoral ventral scute; AN= Anal ventral scute

Measure*	CL	CW	PL	PW	CH	BL	HW	W
SRCC/SJAC**	53.8/63.4	41.0/52.3	43.0/51.8	33.9/41.6	16.6/19.2	10.0/14.6	15.0/15.3	20/30
Measure***	IN	HU	PE	AB	FE	AN		
SRCC/SJAC	9.4/12.3	6.0 / 6.0	6.1 / 7.0	8.0 / 8.2	8.4 / 7.9	6.0/10.5		

* All the measurements (mm) listed in the table refer to straight measures

** SRCC= Santa Rosa de Chivis Community; SJAC= San José de Azupizu Community

*** Sutures distances, except for intergular scute

with black spots and black vermiculated marks. A lateral black stripe was evident on each side of the head, extending from the tympanum through the eye and to the nostril. Ramphoteca was pale gray mottled with black. Dorsal surface of neck was black with light gray small markings, and neck ventral surface with small yellow spots. Tympanum was blackish mottled with pale gray and the iris was blackish. The limbs were black with some yellowish spots.

Pritchard and Trebbau (1984) reported a *M. raniceps* [= *Phrynops nasutus*] hatchling from Colombia that measured 58.0 mm of straight carapace length. According to them, hatchlings had a head width that is about 30% of the carapace length. McCord, Joseph-Ouni and Lamar (2001) reported some biometric data of juveniles *M. raniceps* based on one museum specimen (carapace length: 57.0 mm; carapace width: 46.6 mm; carapace high: 17.3; bridge length: 12.3 mm; all of them refer to straight measurements) and two captive living specimens (the smallest measuring - carapace length: 105.1 mm; carapace width: 83.0 mm; carapace high: 36.4; bridge length: 22.5 mm; all of them refer to straight measurements). General descriptions of morphology and coloration were presented by Pritchard and Trebbau (1984) and by Bour and Pauler (1987), with almost no information about hatchlings. A description of captive management of *M. raniceps* is available in Gaibazzi (2005), Schilde (2008) and Böhm (2009), and captive hatchlings measured 40.0 mm of straight carapace length when they hatched (Gaibazzi, 2005). One of the hatchlings described here (SRCC) represents a new record for minimum carapace length of wild *M. raniceps* in the Amazon basin, and this is the first morphology description of wild hatchlings *M. raniceps* to Peru.

Acknowledgments. We thank the native people of Santa Rosa de Chivis and San José de Azupizu communities for allowing us working on their territory and special thanks to our indigenous assistants J. Compusuri and W. Mussolini, to the "Amazon Turtles Ecology Project" supported by Rufford Small Grant Foundation (ref.03.01.09), and Cleveland Metroparks Zoo and Cleveland Zoological Society Foundation grants, to the Peruvian NGO Canprodem, and to Natural History Museum of Ricardo Palma University for their logistic support, to R. Vogt who kindly helped in turtle species identification, and S. Métrailler and S. Vinke who helped with bibliography, to Ministerio de Agricultura by giving us the scientist collect permit (n° 0057-2009-AG-DGFFS-DGEFFS).

References

- Böhm, S. (2009): *Batrachemys raniceps* (Gray 1855) – die Amazonas Krötenkopfschildkröte. *Sacalia* **23**: 9- 29.
- Bour, R., Pauler, I. (1987): Identite de *Phrynops vanderhaegei* Bour, 1973, et des especes affines (Reptilia – Cheloniidae). *Mesogee* **47**: 3-23.
- Bour, R., Zaher, H. (2005): A new species of *Mesoclemmys*, from the open formations of Northeastern Brazil (Cheloniidae). *Pap. Avul. Zool.* **45**: 295-311.
- Gaibazzi, G. (2005): Elevege et reproduction de la Platémyde de l'Amazonie, *Batrachemys raniceps* (Gray, 1855). *Manouria* **8**: 27-32.
- McCord, W.P., Joseph-Ouni, M., Lamar, W.W. (2001): Taxonomic reevaluation of *Phrynops* (Testudines: Chelidae) with the description of two new genera and a new species of *Batrachemys*. *Rev. Biol. Trop.* **49**: 715-764.
- Medem, F. (1960): Informe sobre reptiles colombianos (IV). El primer hallazgo de la tortuga *Phrynops (Batrachemys) nasuta* (Schweigger) em Colômbia. *Noved. Colomb.* **1**: 284-290.
- Pritchard, P.C.H., Trebbau, P. (1984): The turtles of Venezuela. SSAR. New York. 403pp.
- Rueda-Almonacid, J.V., Carr, J.L., Mittermeier, R.A., Rodriguez-Mahecha, J.V., Mast, R.B., Vogt, R.C., Rhodin, A.G.J., de la Ossa-Velásquez, J., Rueda, J.N., Mittermeier, C.G. (2007): Las tortugas y los crocodilianos de los países andinos del trópico. Série de guías tropicales de campo N°6. *Conservación Internacional*. Editora Panamericana. Bogotá, Colombia. 538pp.

- Schilde, M. (2008): Husbandry and first-time breeding of *Batrachemys raniceps* (Gray 1856), the Amazon Toad-headed turtle. *Radiata* **17**: 55-62.
- Souza, F. L. (2004): Uma revisão sobre padrões de atividade, reprodução e alimentação de cágados brasileiros (Testudines, Chelidae). *Phyllomedusa* **3**: 15-27.
- Souza, F. L., Giraldelli, G.R., Martins, T.A. (2006): Reproductive aspects of Brazilian side-necked-turtles (Chelidae). *Rev. Esp. Herp.* **17**: 28-34.
- Vogt, R. (2008): *Tortugas Amazonicas*. Grafica Biblos. Lima, Peru. 104 pp.