HERPETOCULTURE NOTES

TESTUDINES — TURTLES

***DERMATEMYS MAWII* (Central American River Turtle). DESCRIPTION OF NEONATES.** *Dermatemys mawii* (known as "Hicatee" in Belize) is a large (carapace length [CL] to 600 mm) freshwater turtle restricted to the Atlantic coastal lowlands of southern Mexico, northern Guatemala, and Belize (Vogt et al. 2011. Chelon. Res. Monogr. 58:1–12). Populations throughout this geographic range have been decimated by over-harvesting and consequently, *D. mawii* is now considered among the most endangered turtles in the world (Stanford et al. 2018. Turtles in Trouble: The World's 25 Most Endangered Tortoises and Freshwater Turtles – 2018. Turtle Conservation Coalition, Ojai. 84 pp.). Much about the natural history of *D. mawii* remains poorly known (Vogt et al., *op. cit.*), and in particular there is a notable paucity of information on its early life stages. Vogt et al. (*op. cit.*) provide a brief description and morphometric data for a sample of 40 hatchlings from Veracruz, Mexico, and both Legler and Vogt (2013. The Turtles of Mexico. University of California Press, Berkeley. 402 pp.) and Barrett et al. (2016. Turtle Survival 2016:44–45) present single photographs of emerging neonates largely obscured by the eggshell. To our knowledge the latter are the only published photographs of neonate *D. mawii*.

From June 2015 through August 2018, we examined 258 neonate *D. mawii* at the Hicatee Conservation and Research Center (HCRC) in the Toledo District of southern Belize. Here we report morphometric measurements, describe coloration, and present representative photographs of these turtles. Such information is useful for species identification, calculating growth rates, and understanding the adaptive significance of coloration and morphology (Platt et al. 2016. Herpetol. Rev. 47:125–126). The neonates we examined were produced as part of a conservation-breeding program with the ultimate objective of restoring head-started *D. mawii* to depleted populations in rivers throughout Belize (Barrett et al., *op. cit.*). The captive-breeding population was established in 2014–2015 with 45 *D. mawii* (17 males and 28 females or subadults of undetermined sex); founders include wild-caught turtles (captured under permit) and others confiscated from poachers. Captive females began laying eggs in 2014 and hatchings have been successfully produced in each subsequent year (2015–2018).

We examined and measured each neonate on the day of hatching, except for those turtles that emerged on Saturday–Sunday, which were instead processed on Monday morning. Using a pair of digital calipers, we measured (to nearest 1.0 mm) straight-line CL (from notch in posterior marginals to anterior edge of nuchal scute), maximum carapace width (CW), mid-line plastron length (PL; from base of anal notch to posterior edge of gular scute), and shell depth (SD; vertical distance from plastron to highest point of carapace); body mass (BM) was determined to nearest 0.1 g with a digital balance (Table 1). The mean CL and BM of the neonates we measured are considerably less than reported for a sample of 40 hatchlings in Veracruz, Mexico (mean CL = 54.0 mm; mean BM = 31.4 g; Vogt et al., *op. cit.*). In contrast, the range of values we report for CL and BM are greater than the ranges for CL (range = 20.0–39.0 mm) and BM (range = 18.0–35.0 g) given by Vogt et al. (*op. cit.*). To our knowledge, measures of CW, PL, and SD for neonate *D. mawii* are unavailable in the literature.

TABLE 1. Morphometric measurements for 258 neonate Central American River Turtles (*Dermatemys mawii*) hatched at the Hicatee Conservation and Research Center in Toledo District, Belize (14 June 2015 to 23 July 2018).

Attribute	Mean ± 1 SD	Range
Carapace length (mm)	50.2 ± 2.9	28.8–56.4
Carapace width (mm)	39.3 ± 3.7	25.1–48.4
Plastron length (mm)	43.9 ± 2.4	31.7–49.6
Shell depth (mm)	27.2 ± 1.9	23.1–38.1
Body mass (g)	29.1 ± 4.4	20.0–39.0

PHOTOGRAPHED BY JACOB MARLIN AND PARR MCQUEEN, RESPECTIVELY.

FIG. 1. Neonate *Dermatemys mawii* photographed at the Hicatee Conservation and Research Center, Toledo District, Belize. Note dark camouflage-like flecking on carapace and overall dark body coloration (A), whitish plastron, post-orbital stripe, whitish gular region and mandible (B), and distinctive yellow-orange rostral patch, light fringe on webbing, and prominent caruncle (A-B).

In the neonates we examined (Fig. 1), the carapace has a base color of greenish-yellow to olive brown, is covered with dark flecks varying in number from a few to > 100, and exhibits a low median keel. At hatching, the bones of the carapace are unfused and each marginal scute displays a whitish edge. The plastron

and plastral-bridge are unmarked and whitish to cream. Eye color is dark olive-brown. Body coloration is for the most part gray to blackish, except for a prominent yellowish post-orbital stripe, and whitish gular region and mandible. A caruncle and distinctive yellow-orange patch on the rostrum (below the nares and above the caruncle) were present on every hatchling in our sample. The feet are relatively large, broad, and webbed, with long claws. The anterior webbing of both the rear and forefeet display a yellowish fringe. The rear and forefeet have four and five toes, respectively. The claws are typically dark gray, although frequently at least one is white. According to Legler and Vogt (*op. cit.*), hatchling coloration gradually fades, and markings are completely lost after three years.

The functional significance of the coloration we describe in neonate *D. mawii* remains speculative. Given the dark body and carapace, coupled with dark, camouflage-like flecking on the carapace, the coloration would seem to play a role in crypsis, enhancing concealment of neonates from potential predators. That said, the adaptive significance of the bright orange patch below the nares is less clear. This bright patch is exposed whenever the hatchling surfaces to breathe and would seemingly catch the attention of predators. Rather than crypsis, we instead suggest that this patch may play a role in intraspecific signaling between hatchlings and other conspecifics in the turbid waters that characterize *D. mawii* habitat.

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FIG. 1. *Trachemys venusta* observed at the Miguel Alvares del Toro Regional Zoo (ZOOMAT).

FIG. 2. Two eggs of *Kinosternon* sp. imbedded in organic matter.

***TRACHEMYS VENUSTA* (Eastern Meso-American Slider) and *KINOSTERNON* SP. (Mud Turtle). ARBOREAL ACTIVITY.** Legler and Vogt (2013. The Turtles of Mexico: Land and Freshwater Forms. University of California Press, Berkeley. 402 pp.) reported that many different species of turtles in Mexico bask on tree trunks emerging from the water and nest on the banks of bodies of water. More specifically, Alvarez del Toro (1973. Los Reptiles de Chiapas, Second Edition. Gobierno del Estado, Tuxtla Gutiérrez, Chiapas, México. 178 pp.) noted that *Trachemys venusta* commonly basks on branches ≥ 2 m above the water in Chiapas, Mexico.

On 15 April 2018, at the Miguel Alvarez del Toro Regional Zoo (ZOOMAT; 16.725071°N, 93.093939°W) in Tuxtla Gutierrez, Chiapas, Mexico, a captive female *T. venusta* (28.3 cm maximum carapace length, 19.9 cm carapace width, 3.1 kg mass) was seen perched on a tree (*Manilkara zapota*) at a height of 103 cm above the substrate in the sun (Fig. 1) at 0933 h. The event lasted ca. 18 minutes, with the turtle climbing ca. 25 cm higher after the first sighting. The activity ended with her abrupt fall to the ground and return to the water. In addition, on this same date and tree, I found three eggs of *Kinosternon* sp. at heights of 66.5 cm (egg size: 38.3 mm long × 20 mm wide, 7.04 g; 33.4 mm × 18.4 mm, 7.02 g; Fig. 2) and 29 cm (33.1 mm × 18.7 mm, 6.82 g; Fig. 3). The first two eggs were buried separately in more than 60%