Captive Breeding of *Pangshura smithii smithii*

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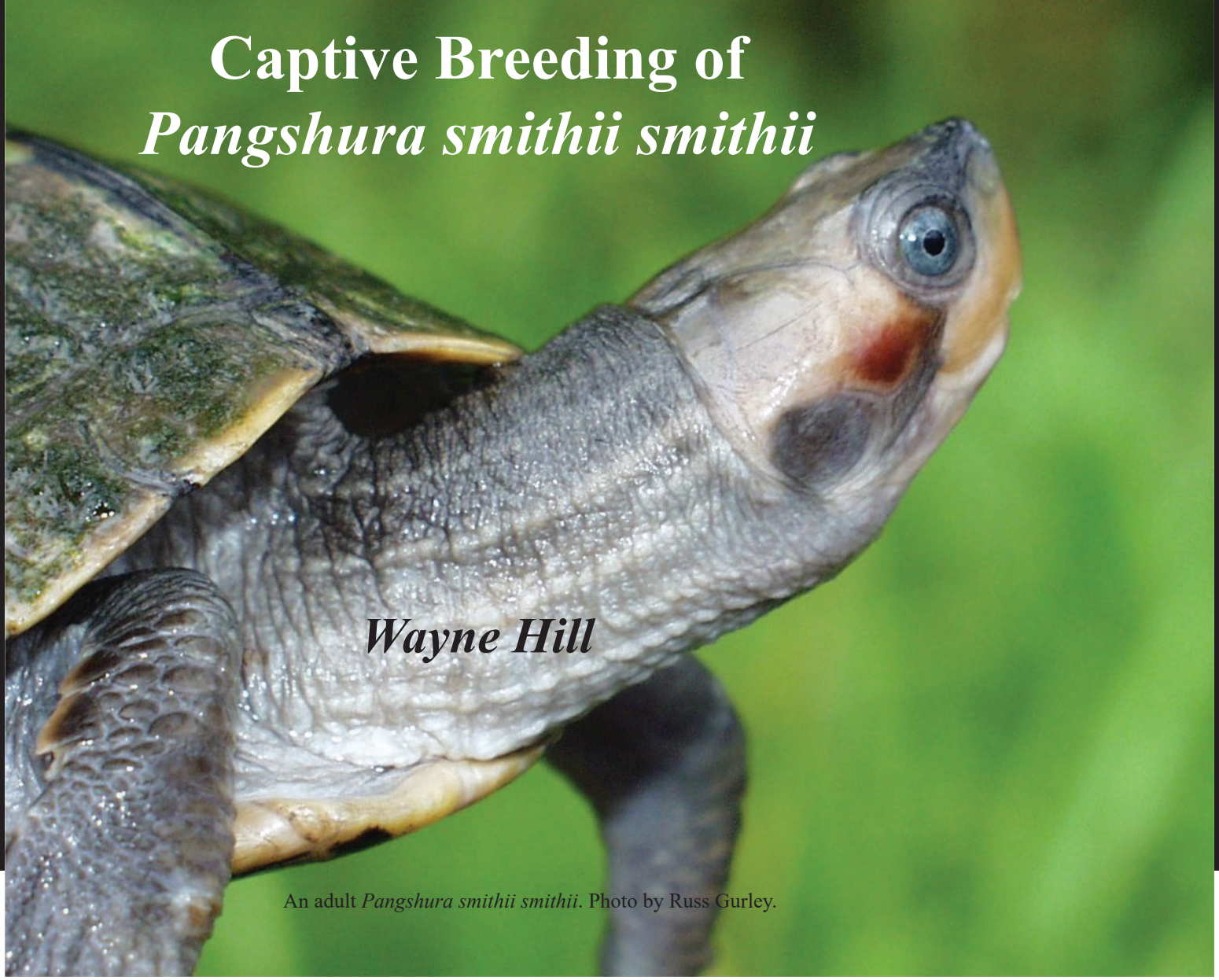

An adult *Pangshura smithii smithii*. Photo by Russ Gurley.

The Scottish zoologist, Andrew Smith, is known as the father of South Africa zoology. He has three reptiles named after him: a gecko, *Geckko smithii*, a lizard, *Lepidophyma smithii* and a freshwater turtle, *Pangshura smithii*. It is this last reptile that is of special interest to me.

Pangshura smithii, also known as the Brown Roofed Turtle, has two subspecies. One is *Pangshura smithii smithii* and the second is *Pangshura smithii pallidipes*. *Pangshura smithii pallidipes* (Moll, 1987), the Pale-footed Roofed Turtle, is found in the northern tributaries of the Ganges in India and Nepal. *Pangshura smithii smithii* (Gray, 1863), the Brown Roofed Turtle, is found in the Indus, Ganges, and Brahmaputra River drainages in Bangladesh, India, and Pakistan.

P. s. smithii is a small turtle, growing to 23 cm or less. Its flat carapace is olive to brown with a dark brown vertebral stripe. It lacks the raised third scute that is common with some other members of this genus. The plastron is almost the same length as the carapace. The carapace of the female measures 153-227 mm and that of the male is 101-108 mm in length. These measurements are recorded from wild-collected turtles. The plastron of both sexes is yellow with black blotches on each section. Occasionally, some of these turtles have plastrons that are almost completely black with small yellow borders. The male has a longer and thicker tail than the female. Their sexual dimorphism is obvious. Although both sexes have serrated upper and lower jaws, they are shy and easily handled. P. s. smithii is distinctive with its red blotch behind the eye. These turtles are omnivorous, feeding on plant matter and rotting flesh.

P. s. pallidipes (pale-footed) differs from *P. s. smithii* largely by the color. The plastron of *P. s.*

An adult pair of *Pangshura smithii*, male (left) and female (right).

pallidipes is yellow but without the blotches found on the *P. s. smithii*. The head, limbs, and penis on the *P. s. pallidipes* are much lighter, almost white, in contrast to the *P. s. smithii*. *P. s. smithii* and *P. s. pallidipes* have feet that are fully webbed which makes them fast swimmers.

In the wild, male *P. s. smithii* make up less than 10 percent of the total population. Nesting season is in the autumn of the year. Eggs are elongated and average around eight per clutch; double clutching is not unusual. Hatchlings measure 35-39 mm carapace length.

In 1978, I was in Lahore, Pakistan, on business when my host asked if she could take me to Shalimar Bagh (Shalimar Gardens). I accepted her offer and we toured this beautiful site which dated back to the 1600's. There were many reflecting pools and gardens but I saw no turtles. The host then recommended the Lahore Zoo. There we saw an African Spurred Tortoise, *Stigmochelys sulcata*, a soft-shell kept in a concrete pond, crocodilians, and lots of pythons and cobras but very few turtles. I asked my host if anyone could show me any turtles in the wild. She inquired among the locals and then the next day we visited a spot on the River Ravi where turtles basked. Before we could get close enough to identify them they were in the water and gone. Early the next morning I was able to get closer the turtles' basking spot and waited in a more hidden position. I used a pair of borrowed military binoculars to observe the site. After a couple of hours of waiting, I was rewarded with a group of turtles basking together, something I had not seen in that part of the world. I was looking for a brightly colored head and a raised scute in the back, but all I saw was a flat back and a reddish spot behind the eye. I had seen my first *Kachuga* (now *Pangshura*) *s. smithii*. I vowed that I would one day own some.

I have been successfully breeding *P. s.smithii* since 2010. It had been reported that *P. s. smithii* could not maintain their health in temperatures below 65° F. I set up my *P. s. smithii* indoors where I could control the temperature and keep them above 65° F. I produced two to three hatchlings a year for the first three years. During the last four years I moved my breeding stock outdoors, but kept the juveniles inside. Today I have an outdoor enclosure 16' x 20' with an egg-laying area that is 4' x 14'. I cover the enclosure with 6 mil plastic sheeting during the cold months. The plastic sheeting keeps the pond warm with a greenhouse effect during the day. In the evenings, I try to maintain the warmth with a small but steady stream of water from our deep well. The 72° F well water helps maintain the temperature until the sun come up. Our breeding stock has experienced temperatures lower then the 65° F without any ill effects.

Captive-hatched babies.

Side view of a young *Pangshura smithii*.

Carapace view of a young *Pangshura smithii*.

Our average female breeder is 216 mm and the average male breeder is 115 mm and they are all captive-born. The breeders are fed FRM fingerling catfish food and defrosted capelin (fish). Aquatic plants are also available in their ponds.

My production of hatchling *P. s. smithii* has increased dramatically the last four years. Although my *P. smithii* breeding population is predominately male, I get multiple clutches each year. A large clutch is 11 eggs and a small clutch is four eggs . The eggs are laid from October to January.

A rule at my breeding facility is to diapause turtle eggs of any species that are laid in the fall or winter. This simulates being in the ground over winter. The *P. s. smithii* eggs are diapaused for eight weeks at 68-72° F. Then the eggs are incubated eight weeks at 84° F. I generally have an 80 percent hatch.

The mission of the Turtle and Tortoise Preservation Group (TTPG) is to ensure survival of the world's turtles and tortoises through captive breeding. The TTPG supports the private ownership of chelonians and recognizes the substantial role that the private sector has played in the captive breeding and conservation of turtles and tortoises.

The hatchlings need UV to do well in their early years. The growth rate of the newly hatched *P. s. smithii* is unusual. They triple their size in just a few months. Unlike most of our juvenile turtles, *P. s. smithii* juveniles can be kept in groups without worrying about aggressive behavior toward each other.

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