

Pig-Nosed Turtle

(*Carettochelys insculpta*)

By Arthur Georges

Most members of the general populace regard reptiles with suspicion at best, fear and revulsion at worst. Turtles are the exception. Their unique shell makes retreat rather than attack the best option, affords a rounded body form and makes for ponderous movement on land — all of which engender positive responses from adults and children who see them for the first time. The turtle shell is one of the most enduring innovations in vertebrate history. It is the single unifying theme for the great diversity of turtle and tortoise species that have come to occupy our oceans, forests, swamps, lakes, rivers and deserts.

About 260 turtle species exist on the planet, from the tropics to just inside the Arctic Circle. Probably none are more unusual than — or as spectacular as — the enigmatic pig-nosed turtle (*Carettochelys insculpta*). This large freshwater turtle grows more than 18 inches long and weighs up to 75 pounds. It has flippers like those of sea turtles. Each bears only two claws, rather than the limbs and distinct feet of most other freshwater turtles. The

horny scutes overlaying the shells of most other freshwater turtles are absent. Instead, pig-nosed turtle shells are covered with skin — soft

and cream-colored on the undersurface; thin, taut and grayish-brown above.

The nostrils open at the end of a fleshy proboscis, resembling a pig's nose. Through this opening the turtle inhales not only air when it surfaces, but also water when submerged. When scientists first noticed this, they suggested that the papillae in the throat may be used to extract oxygen from the water, like gills. The pig-nosed turtle is certainly one of the most aquatic of freshwater turtles: elegant and at home in the water but clumsy and vulnerable on land.

An Ancient and Unique Animal

Walter Froggett and Jas Shaw first discovered the pig-nosed turtle. In the early 1880s, the two intrepid explorers traveled up the mighty Fly River of Papua New Guinea as part of an expedition with the Geographical Society of Australasia. Two turtles were caught while nesting on a sandbar. No doubt Froggett and Shaw were as taken by the unusual appearance of these turtles as we are today after first seeing one, but primal urges and an interest in survival prevailed, and they ate the turtles. Fortunately, the explorers had the presence of mind to send the remains of their meal to the Australian Museum in Sydney, where they were recognized as a new and spectacular find by the curator Dr. E.P. Ramsay. He described the species in 1886.

The discovery caused a buzz in scientific circles. One scientist then another argued their case for the relation-



ABOVE: This nesting beach bears the telltale tracks of nesting females.

Pig-nosed turtles (*Carettochelys insculpta*) breathe air and water through their snout, which resembles a pig's nose.



ship of this new turtle, which was quite an enigma. Some even proposed it as a link between sea turtles and freshwater river turtles, primarily because of its flippers. We now know that its flippers are built around the digits of the foot. This makes them more like the wings of a bat than the flippers of sea turtles, so the resemblance is only superficial. In fact, the pig-nosed turtle is so distinctive, and its relationship to other living turtles so distant, that it has been placed in its own family, the Carettochelyidae.

We know from the fossil record that millions of years ago, in the Tertiary, there were many species in this family from Asia, Europe and North America. The pig-nosed turtle now represents the family only in the major rivers of southern New Guinea and Australia's Northern Territory. The species is a relict of more prosperous times for this interesting group.

Biological Surprises

As a freshwater turtle of considerable antiquity, the pig-nosed turtle's biology holds many surprises and has generated great scientific interest internationally. Possibly most unusual is its nesting biology. In the dry season, as receding floodwaters of the tropics expose sandbars on the riverbanks, female turtles shell up their eggs and move up and down the river in search of a place to nest. They often move in groups, and after finding a nesting bank, they jostle nervously for position in the shallows. One or two bravely crawl out, then scamper back to the safety of water, leaving a distinctive arched track. Some may venture further and dig a test chamber, but they lay no eggs before beating a hasty retreat. Often other females or unwelcome spectators spook them.

One or two females ultimately nest, laying between 10 and 35 round, white, hard-shelled eggs in a shallow nest. The whole process only takes a few minutes. Although nesting occurs each year, a female only lays every second year, often with two or three successive clutches. The eggs develop rapidly to full term, and then something surprising happens — they enter torpor within the egg. So deep is their slumber that it is possible to remove all of the eggshell and maternal membranes without disturbing the youngster. Immersion in water stimulates the eggs to hatch, and the young turtles wait in their eggs for the torrential rains or floodwaters to inundate

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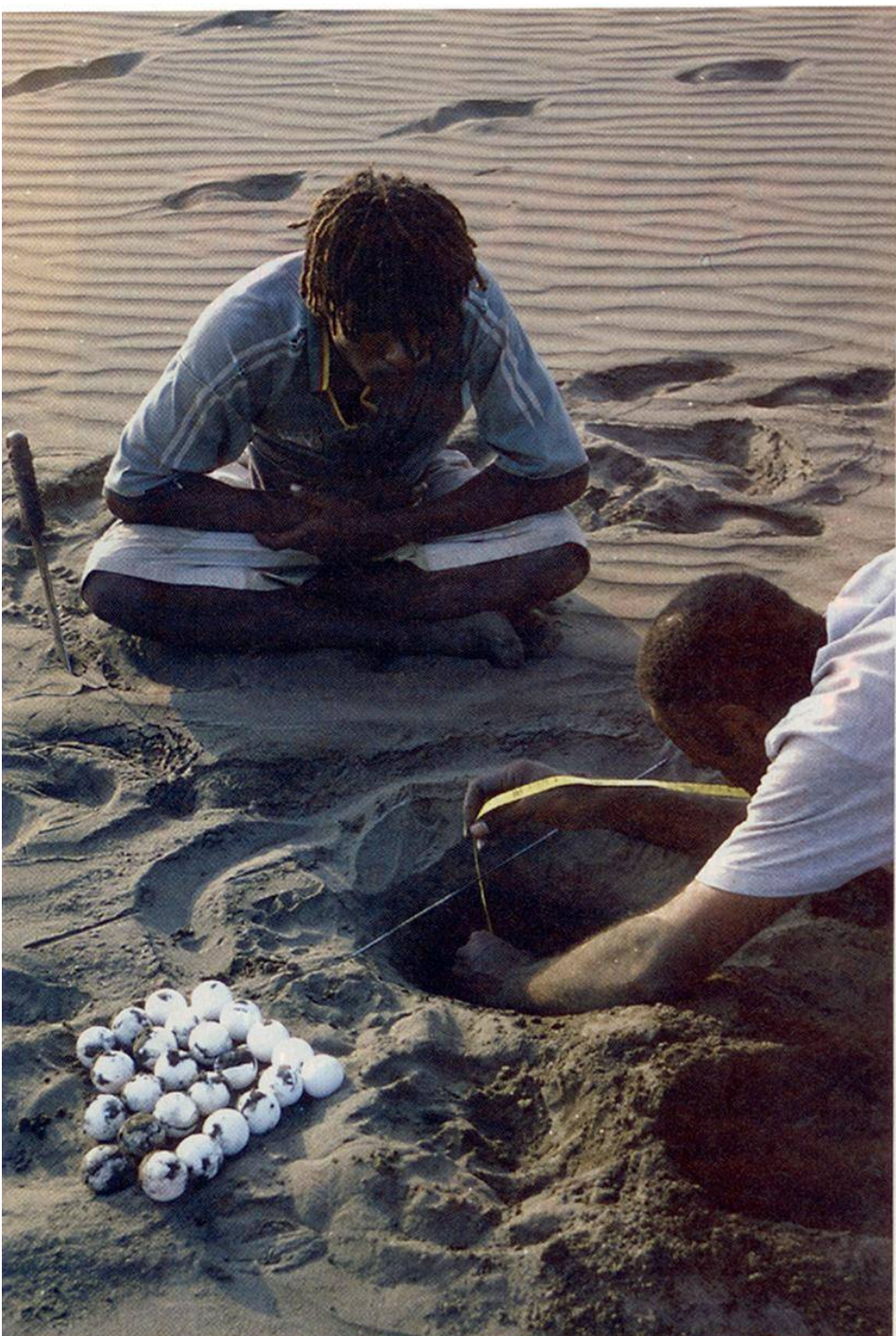
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their nest before emerging into the relative safety of the turbid waters.

The sex of the young turtles is determined by the temperatures at which they incubate. Indeed, all eggs incubated below 90 degrees Fahrenheit yield males, and all eggs incubated above this temperature produce females. A single degree can make all the difference. One would think that this trait would make the species appallingly vulnerable to global warming. They have persisted in the face of climate change in the past, which gives us hope, but how they have done it remains a mystery and presents science with a perplexing problem to solve.

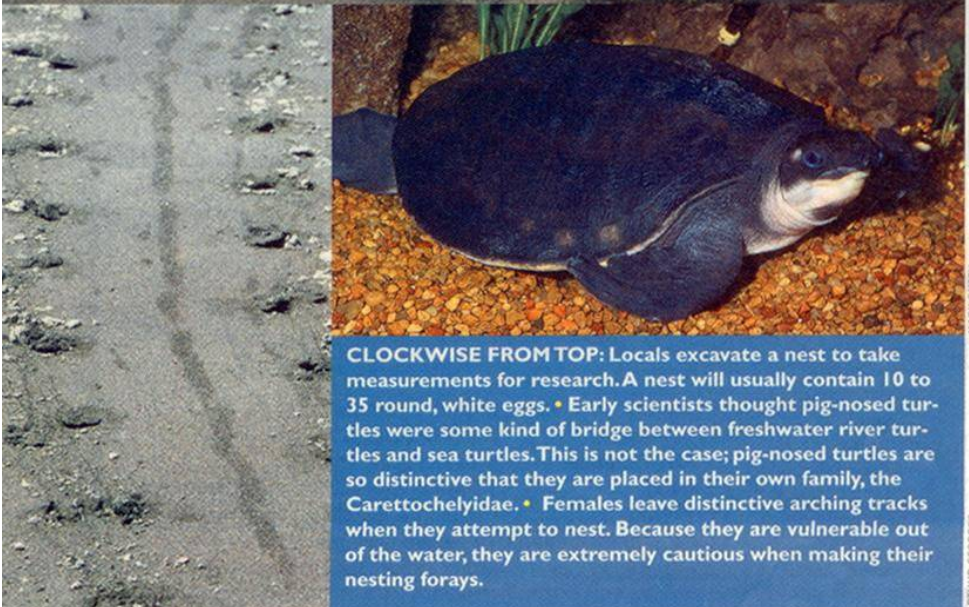
Survival Threats

Stereotyped nesting habits make pig-nosed turtles, like many turtle species, particularly vulnerable to overexploitation by indigenous peoples who rely on them as an important source of protein. In the Kikori region of Papua New Guinea, the annual harvest of eggs and adult turtles is very high, exacerbated by changes in the patterns of human habitation, increases in human population sizes and the introduction of modern technologies, particularly outboard motors. There are indications of dramatic declines in pig-nosed turtle populations in southern Papua New Guinea in past decades.

In Indonesian Papua, the pressures are different but no less intense. A burgeoning market in turtles and turtle products globally puts immense pressure on wild populations. This market is fed largely by the combination of traditional practices and newfound wealth in developing Asian countries, such as China, and by the pet trade in developed countries.

Local people — eager to secure cash where opportunities are few — have responded to this demand, and collection of pig-nosed turtle eggs has expanded along the Vriendschap River. Many are consumed locally, but large numbers also enter the illicit international pet trade with Taiwan, China, Singapore, Japan and the United States despite the fact that this species receives CITES protection. It is listed on Appendix II.

The challenge for conservation is to engage with these communities and their governments, and to convince them current practices are unlikely sustainable, especially where adult turtles are harvested. Dramatic declines in pig-nosed turtle populations are in no one's interest, whether this turtle is viewed as an iconic species in need of conservation or a resource important to the local economy as food or for trade. **P**



CLOCKWISE FROM TOP: Locals excavate a nest to take measurements for research. A nest will usually contain 10 to 35 round, white eggs. • Early scientists thought pig-nosed turtles were some kind of bridge between freshwater river turtles and sea turtles. This is not the case; pig-nosed turtles are so distinctive that they are placed in their own family, the *Carettochelyidae*. • Females leave distinctive arching tracks when they attempt to nest. Because they are vulnerable out of the water, they are extremely cautious when making their nesting forays.

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