

# The Pig-Nosed Turtle, *Carettochelys insculpta* Underwater Glider



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The first time I ever saw a pig-nosed turtle, *Carettochelys insculpta*, was at a travelling herp show in Milan, Italy, when I was only about 8 years old. I had already been particularly impressed by some large alligator snapping turtles, *Macrolemys temminckii*, that looked a lot like a monster I'd seen in a Godzilla film! It was in the next tank that I then beheld the "strange cross between a sea

turtle and an elephant," swimming peacefully through the water. This animal was so curiously sweet and funny looking at the same time that I asked my father to take a picture of it.

I still have that photograph, and looking at it now, I marvel at how my child's mind once explained this creature. But even adults often think it is a sea turtle. When friends of mine first saw my three young specimens, they asked me which ocean they were

from. The reason for this common misconception is that the pig-nosed turtle has long and elegant flipper-like front limbs, similar to those of sea turtles and unlike those of any other freshwater turtle.

Captives of this species are rather rare in both public and private aquariums, but anyone who is fortunate enough to see one will certainly be fascinated by its extraordinary grace. This turtle can be seen gliding underwater



with only the slightest movements of its front limbs to keep from sinking. Or, it can use all its limbs with concerted force to become a true sprinter. Indeed, its unique morphological features make *Carettochelys insculpta* the most adept swimmer of freshwater chelonians.

Another remarkable aspect of this species is its elongate, fleshy proboscis with prominent nostrils. Used like a snorkel, this snout structure allows the turtle to continue breathing while the rest of its body is submerged. It also contributes to the turtle's odd appearance, and is responsible for the common name "pig-nosed turtle."

### **Description and natural history**

Also commonly called the Fly River turtle or the New Guinea plateless turtle, *Carettochelys insculpta* occurs in southern Irian Jaya (Indonesia) and Papua New Guinea, and in northwestern Northern Territory (Australia). It inhabits rivers, lakes, swamps, and water holes, usually in areas where the water is 2–7 metres deep. It can also tolerate brackish waters, and is sometimes found in estuaries.

The name "Fly River turtle" comes from the Papuan river where the first specimens were officially discovered by science. In 1886, Geographical Society of Australasia explorers Walter Froggett and Jas H. Shaw collected two turtles and sent them to the Australian Museum in Sydney, where curator E. P. Ramsay recognized them as a new and interesting species.

The pig-nosed turtle is a large and heavy chelonian, reaching up to 60 centimetres in carapace length with a weight of nearly 22.5 kilograms. Morphologically it is a true swimming machine. In addition to its flipper-like front limbs, the hind limbs are heavily webbed and used for both paddling and steering. The greyish carapace is quite streamlined, and has a median keel, although this becomes less pronounced as the turtle grows. The carapace has no scutes, but instead is covered with a leathery skin similar to that of softshell turtles (family Trionychidae). The whitish plastron is reduced, and has cartilaginous connections between elements, giving it a certain degree of flexibility. In hatchlings and juveniles the plastron is somewhat translucent and appears pinkish in colour due to the underlying blood vessels.

The long proboscis allows *Carettochelys insculpta* to breathe while keeping its eyes submerged to continuously observe its underwater surroundings. When the turtle is entirely submerged, the snout has other functions. It is equipped with sensory receptors that help the turtle to locate prey in turbid water or sand, and it also acts as a channel to the throat, where special papillae extract oxygen directly from the water.

*Carettochelys insculpta* is an omnivorous species. Hatchlings and juveniles eat a higher proportion of animal material (about 70 percent); adults, eat a lower proportion of animal material (about 30 percent). The typical diet consists of leaves, flowers,

and fruits of riverbank vegetation (in particular *Ficus racemosa*, *Syzygium forte*, *Pandanus aquaticus*, *Nypa fructicosa*, *Sonneratia* spp., *Canarium indicum*, and *Xylocarpus* spp.), aquatic plants (such as *Vallisneria* spp. and *Najas tenuifolia*), and fishes, molluscs (such as *Batissa violacea*, *Nerita* sp., and *Centhidea* sp.), crustaceans, aquatic insect larvae, worms, and carrion.

Sexual dimorphism is not pronounced in this species. The sexes can be distinguished only in specimens of at least 10 years of age, when the carapace length has reached about 25 centimetres. Males are smaller than females of similar age (weighing about 25 percent less), but have proportionally longer and thicker tails.

Sexual maturity is reached even later, when the animals are 14–16 years old and the carapace length is about 30 centimetres. Because development is so slow, captive breeding is very rare, and restricted almost exclusively to public aquariums, where adult specimens are easier to keep successfully.

In the wild, egg deposition occurs during the dry season, about 2 months after mating. In the dark of night, the female uses her hind limbs to dig a circular nest chamber about 20 centimetres deep in the sandy banks, about half a metre from the water's edge. The white, spherical, hard-shelled eggs measure about 38 millimetres in diameter. After laying,

the female covers the eggs carefully, and then returns to the water, leaving the nest to its own fate. In Australia, average clutch size is 7–19 eggs; Papuan specimens lay a maximum of 39 eggs in one clutch. Females lay up to two clutches per year, but only every other year.

As in all turtles, incubation temperature affects the sex of offspring. A constant 32°C (90°F) produces both males and females. Cooler temperatures produce mostly males, and warmer temperatures produce mostly females.

*Carettochelys* is not protected by CITES yet, but is included as “vulnerable” in the IUCN Red List. Pig-nosed turtle nests are plundered by monitor lizards (*Varanus panoptes* and *Varanus mertensi*), and the young turtles are food for crocodiles (*Crocodylus novaeguineae* and *Crocodylus porosus*), but the level of this natural predation alone is not a danger to the species overall.

In Australia, the main threat to *Carettochelys* is feral water buffaloes, which have reproduced excessively since being introduced from southeastern Asia in the 19th century. When they go to the water to drink, these heavy animals crush hundreds of turtle eggs buried in the sandy shore. Also, although *Carettochelys* has been known to science for only a little more than a century, the Aborigines have known and hunted this turtle for many thousands of



years — relishing it as a gastronomic speciality, and contributing to its decrease in numbers. Australia prohibits commercial exportation of its native fauna, including *Carettochelys*, so the animal trade is not a significant factor in the decline of the species there. In Papua New Guinea and Irian Jaya, exportation of this turtle is now officially regulated, but an illegal market has been established in these two States, and hundreds of specimens are shipped to Europe and the United States every year. The market for this species is nonetheless relatively limited due to its high retail price.

### Captive care

*Carettochelys insculpta* is not for beginners. It needs plenty of space and special care. And considering the precarious situation of wild populations, it is especially important that keepers ensure captive turtles a worthy future.

This species is best kept in large aquariums — 150 litres is enough for two young specimens of less than 15 centimetres, but as they grow they will need three or four times that volume in order to swim freely and also have a place for refuge. Except when laying eggs, the pig-nosed turtle is fully aquatic. Thus, non-breeding turtles require no land area, but a sexually mature pair will need access to a sandy area out of the water so the female can nest.

Pig-nosed turtles are prone to fungal infections, so water quality and correct temperature are critical. Up to 90 percent of hatchlings sold in specialized shops already suffer from fungal infections due to unhygienic conditions during shipping or holding by wholesalers. Such infections, if extensive, can be difficult to treat, and can lead to the death of a turtle within a few weeks.

In my experience, the best water filters for turtle aquariums are external canister-type filters containing ceramic rings, fibreglass, perlite wool, and activated carbon. Nonetheless, the pig-nosed turtle can produce a surprising amount of waste, so even with a good filter, water changes must be made frequently — at least once every 3 weeks. To help prevent fungal infections, it is also advisable to add some sea salt to the water (1 teaspoon to every 15–20 litres), and to raise the pH to 8–8.3 with a good bio-active cleaner.

Water temperature should be kept at 30°C (86°F) during the day, and can drop to 26–27°C (79–81°F) at night. If the temperature goes below 25°C (77°F) the turtle slows down and stops eating, and its immune system becomes weakened. The blackout that left much of Italy in darkness last September made me really anxious, as all of my reptiles are from the tropics. That night I found my three pig-nosed turtles at the bottom of their tank, almost



motionless. Luckily, power was restored in my city by the following morning, and my animals showed no ill after-effects. The next day I bought a gas stove for fear of another blackout.

If water conditions are maintained as described, fungal infections should never appear. If an infection does occur, and it is not extensive, it can be swabbed daily with Mercurochrome, and should disappear within a month.

I have never observed any intraspecific aggressiveness in this species, but some authors warn of the possibility. It is best to monitor newly acquired turtles carefully. Even young specimens are capable of injuring each other by biting (especially on the edge of the carapace). Minor wounds can be treated with povidone iodine solution, but more serious wounds should be seen by a veterinarian. Keep the turtle dry for a few minutes after each application of iodine solution.

The *Carettochelys* tank can include a few non-aggressive fish, but certain suckerfish (e.g. *Myxocyprinus asiaticus*) and other algae eaters should be avoided, as their scouring activities could damage the delicate carapace of the turtle.

For substrate, I strongly recommend fine sand, which the turtles can dig under to cover themselves when they want to feel secure. It is important to also have other hiding places, such as logs or rocks — these should have no sharp corners or abrasive surfaces.



A UV reptile lamp mounted over the water is helpful for increasing calcium fixation, and ensures optimal development of carapace, plastron, and skeleton.

In captivity, pig-nosed turtles are very docile and never try to bite. Hatchlings are extremely shy, and hide whenever we come near the tank. But as they grow, they learn to associate us with food, and change their attitude, surfacing for a treat when they see us. I suggest feeding in the evening and in the early morning, when the turtles are especially active. Give food in repeated small quantities, and remove leftovers, otherwise the water will quickly become dirty.

*Carettochelys insculpta* must be fed as varied a diet as possible to ensure that it gets all the necessary vitamins and minerals. The ratio of animal prey to plant material as observed in the natural diet should be respected in the captive diet, depending on the age of the turtle. We can offer dandelion greens, raw spinach, carrots, chicory, vegetable marrow, and fruits such as pears, apples, green figs, grapes, kiwis, bananas, and apricots. For animal food, small whole fishes are the best choice (bleaks, minnows, Caspian-sand smelt, etc.), but we can vary the diet with earthworms, and fresh chicken and crab meat. Turtle food pellets should be offered only rarely — a fresh and varied diet is better than the dried mono-diet, which can be detrimental to the health of the animal.

I have read about only one successful breeding of *Carettochelys* in captivity. In 2001, a hatchling was found swimming in the *Carettochelys* pool at the Bronx Zoo, and further investigation led to the discovery of several eggs deposited in the sand of the nesting beach — these eggs never developed, however. I hope that private keepers will soon be reporting successful breeding of this species, giving herpetoculture another chance of importance.

In the last 2 years I have noticed a near lack of pig-nosed turtle in both the European and U.S. markets (based on searches of online herp classified ads). Perhaps illegal traffic from Papua New Guinea and Irian Jaya is being controlled more now. In August 2003, I had the pleasure of admiring a photo of an albino *Carettochelys* specimen, not much more than a hatchling, being offered for sale on the Internet for the hefty price of \$15,000. Any takers?! ■

### Bibliography

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