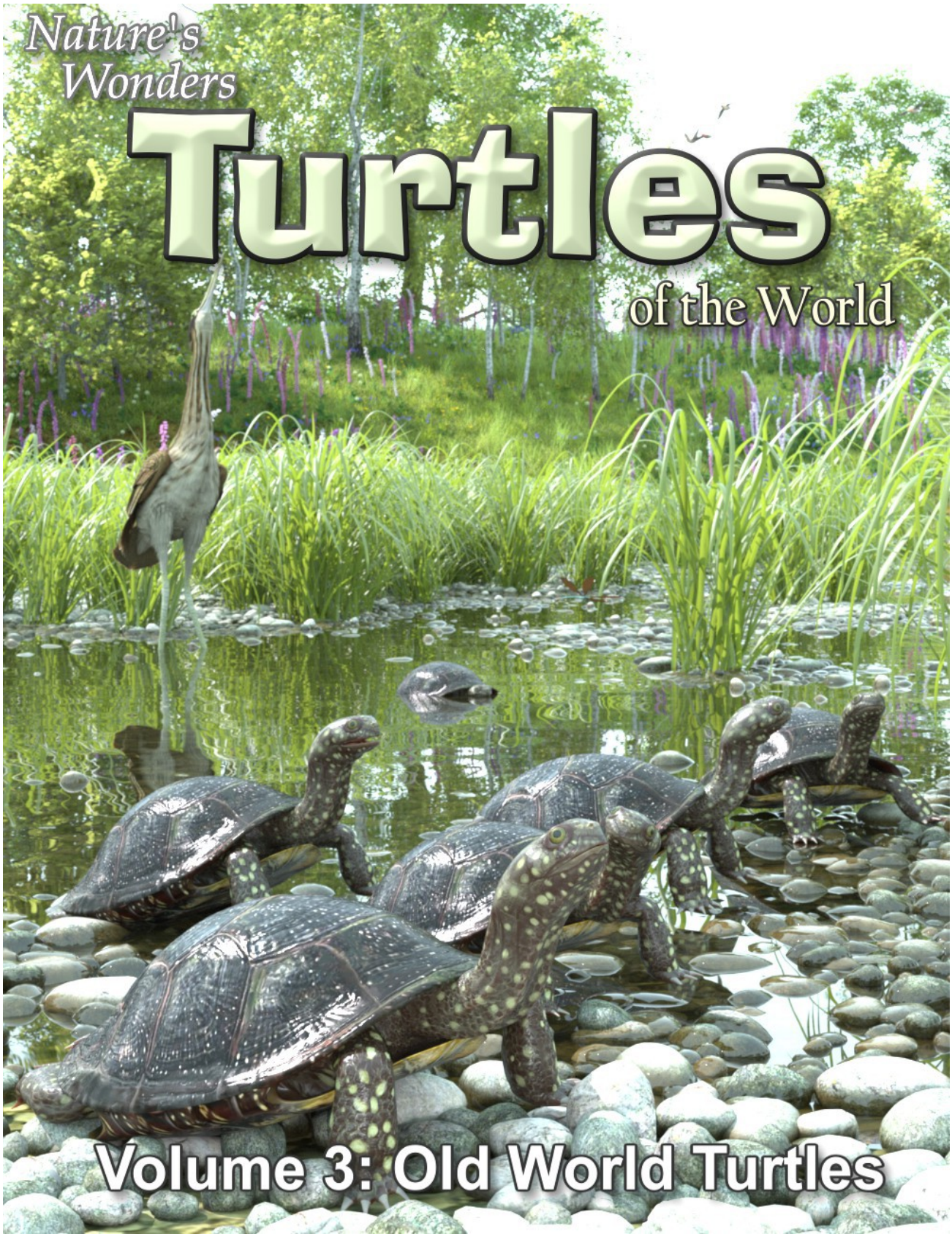


A 3D Model set by Ken Gilliland

Nature's Wonders

Turtles of the World

Volume 3: Old World Turtles

Manual

Field Guide

Nature's Wonders

Turtles of the World

Volume 3: Old World Turtles

Introduction

Turtles are characterized by a special bony shell developed from their ribs and acting as a shield. A "turtle" may refer to the order as a whole (American English) or to fresh-water and sea-dwelling testudines. The earliest known members of this group date from 220 million years ago, making turtles one of the oldest reptile groups and a more ancient group than snakes or crocodilians. There are 356 known living species today, many of which are highly endangered.

The Nature's Wonders Turtles of the World Volume 3 set is an add-on set for the Nature's Wonders Turtle Base model and includes 7 terrapins from the Eurasia and Africa. It includes such iconic turtles as the European Turtles as well as pet shop favorites like the Asian Leaf Turtle. It has the highly endangered, Ryukyu Black-breasted Leaf Turtle, as well as the African Helmeted Turtle, who never stays "turtled" for long. It is one of the few turtles that can right itself with a vigorous flick of its long muscular neck.

The set has both native DAZ Studio and Poser versions and supports Iray, 3Delight, Firefly and Superfly render engines.

Overview and Use

The set is located within the **Animals : Nature's Wonder** folder. Here is where you will find a number of folders, such as **Manuals, Resources** and **Fauna Libraries**. Let's look at what is contained in these folders:

- **Fauna Libraries:** This folder holds the actual species and poses for the "premade" fauna. The fauna for this set can be found in the following folder(s):
  - **Reptiles/Turtles of the World**
- **Manuals:** Contains a link to the online manual for the set.
- **Props:** Contains any props that might be included in the set
- **Resources:** Items in this folder are for creating and customizing your fauna included in the set
  - **… Based Models:** This folder has the blank, untextured model(s) used in this set. These models are primarily for users who wish to experiment with poses or customize their own species. When using physical renderers such as Iray and Superfly, SubD should be turned to at least "3". For DAZ Studios 3Delight renders, the SubD must be turned from the

"High Resolution" setting to the "Base" setting (otherwise some areas will render incorrectly transparent).

Creating a Specific Turtle using Poser

1. For this example, we'll create the Red-eared Slider.
2. Load Poser, select the FIGURES library and go to the "Animals", "Nature's Wonders" and then the Nature's Wonders Fauna Libraries Reptiles folder.
3. Go to the Turtles of the World folder and select the Firefly or Superfly sub-folder.
4. Select the Red-eared Slider (or a turtle of your choice) and load it by clicking the mouse.

Creating a Specific Turtle using DAZ Studio

1. For this example, we'll create the Red-eared Slider.
2. Load DAZ Studio and go to the "Animals", "Nature's Wonders" and then the Nature's Wonders Fauna Libraries Reptiles folder.
3. Go to the Turtles of the World folder and select the 3Delight or Iray sub-folder.
4. Select the Red-eared Slider (or a turtle of your choice) and load it by clicking the mouse.

Leg Joint Issues & Species Master Control

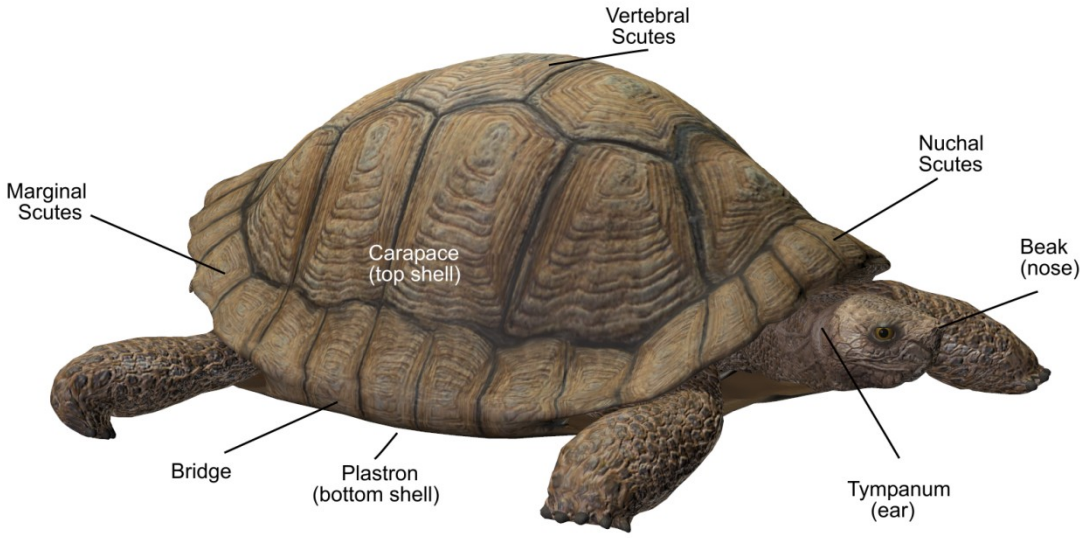
In order to get the legs to tuck into the shell, certain liberties had to be taken with the limits of the leg joints. The limits in these leg areas are very lax to accommodate the bending required to fold the legs. A certain amount of common sense is required in manually posing these areas to avoid poke-through with the legs and shell.

A certain type of turtle species may use a "Master Control". Master controls can be found in the "Creation Controls/Species Shapes" tree in the BODY section of the model. These master controls turn on (use) numerous creation controls to approximate a certain type of species. For example, the "Slider" master control when set to "1" will morph the model into a Slider species. While this is an easy way to get a species shape (rather than individually dialing each Creation Control), it does have limitations.

A Species Master Control may lock out use of some of the Creation Controls when used on top of the dialed Master Control. The reason for this is the individual controls limits. An individual morph with a MIN=0 and MAX=1 which is set to "1" with a Master Control can't dial back to "0" on the individual control because the limits don't allow negative numbers (MIN=0, not MIN=-1). The best work-around for this is to edit the individual dials parameters and edit the limits accordingly.

About Turtles

Turtle, (order *Testudines*), are any reptile with a body encased in a bony shell. Although numerous animals, from invertebrates to mammals, have evolved shells, none has an architecture like that of turtles. The turtle shell has a top (carapace) and a bottom (plastron). The carapace and plastron are bony structures that usually join one another along each side of the body, creating a rigid skeletal box. This box, composed of bone and cartilage, is retained throughout the turtle's life. Because the shell is an integral part of the body, the turtle cannot exit it, nor is the shell shed like the skin of some other reptiles.



There are approximately 356 species of turtles living on land in all continents except Antarctica and in both salt water and fresh water. Tortoises (family *Testudinidae*) live exclusively on land and have anatomic features distinguishing them from other turtles, but the term tortoise has long been used to refer to other terrestrial *testudines* as well, such as the box turtle and the wood turtle. Similarly, terrapin was sometimes used to describe any aquatic turtle but is now largely restricted to the edible diamondback terrapin (*Malaclemys terrapin*) of the eastern United States.

The turtle's shell is an adaptation that protects it from predators, which compensates for the reptile's slow crawling speed. The carapace and plastron each arose from two types of bone: dermal bones that form in the skin and endochondral bone (bone arising from cartilage) derived from the skeleton. Evolution has intricately linked these two types of bone to produce the shell of modern turtles. The carapace consists of 10 trunk vertebrae and their ribs, which are overlain by and fused to dermal plates. Another series of dermal plates forms the perimeter of the carapace. The plastron usually contains four pairs of large plates and a single one centered near the front (the anteromedial plate); these plates are large dermal bones, although the anterior ones may contain parts of the shoulder girdle. The shell is variously modified and shaped to meet the needs of defense, feeding, and movement.

All the turtles senses are well-developed, and they are used in avoiding predators and in finding and capturing food. The eyes have the typical anatomy of other vertebrates having good vision. Aquatic turtles have eyes that quickly adjust for aerial or aquatic vision, seeing well in both situations. Tortoises appear to have colour vision, but colour vision is untested for most turtles. Turtles, particularly aquatic ones, do not have strong olfactory senses, but all are capable of smelling. Tortoises instinctively empty their bowels in water to hide their scent. Some aquatic species have protuberances on the chin in the form of tubercles and papillae. These appear to be mainly tactile, although some are chemosensory (the ability to sense particular chemical stimuli). The turtle ear has

an eardrum flush with the surface of the head. A single bone, the stapes, transmits sound to the inner ear.

In the United Kingdom, the word “turtle” is used for water-dwelling species, including ones known in the US as terrapins, but not for terrestrial species, which are known only as tortoises.

It has been reported that wood turtles are better than white rats at learning to navigate mazes. They do, however, have a very low encephalization quotient (relative brain to body mass), and their hard shells enable them to live without fast reflexes or elaborate predator avoidance strategies. In the laboratory, turtles (*Pseudemys nelsoni*) can learn novel operant tasks and have demonstrated a long-term memory of at least 7.5 months. Case studies even exist of turtles playing.

Some turtles, particularly small terrestrial and freshwater turtles, are kept as pets. Among the most popular are Russian tortoises, spur-thighed tortoises, and red-eared sliders.

The flesh of turtles, calipash or calipee, was and still is considered a delicacy in a number of cultures. Turtle soup has been a prized dish in Anglo-American cuisine, and still remains so in some parts of Asia. Turtle plastrons are widely used in traditional Chinese medicine.

In February 2011, the Tortoise and Freshwater Turtle Specialist Group published a report about the top 25 species of turtles most likely to become extinct, with a further 40 species at very high risk of becoming extinct. This list excludes sea turtles, however, both the leatherback and the Kemp's ridley would make the top 25 list.

Turtles and tortoises are at a much higher risk of extinction than many other vertebrates. Of the 263 species of freshwater and terrestrial turtles, 117 species are considered Threatened, 73 are either Endangered or Critically Endangered and 1 is Extinct. Of the 58 species belonging to the family Testudinidae, 33 species are Threatened, 18 are either Endangered or Critically Endangered, 1 is Extinct in the wild and 7 species are Extinct. 71% of all tortoise species are either gone or almost gone. Asian species are the most endangered, closely followed by the five endemic species from Madagascar. Turtles face many threats, including habitat destruction, harvesting for consumption, and the pet trade. The high extinction risk for Asian species is primarily due to the long-term unsustainable exploitation of turtles and tortoises for consumption and traditional Chinese medicine, and to a lesser extent for the international pet trade.

Asian Leaf Turtle

Cyclemys dentata

It is a species of turtle found in Southeast Asia. The turtle can be found in North India, North-east India (Manipur), Bangladesh, Myanmar (Burma), Thailand, Cambodia, Vietnam, West Malaysia, Indonesia (Sumatra, Java, Borneo, Bali), Philippines (Palawan: Calamian Islands etc.), and China.

This species is found up to 1,200 m of elevation, but the depth range is unknown. They are quite common in the pet trade.

Habitat: They can most often be found in moist forests with plenty of leaf litter and proximity to bodies of shallow freshwater such as streams, rivers, and ponds.

Status: Near Threatened. Its threats are habitat destruction,used as a food source, and over-zealous "in the wild" collection for the pet trade.

Diet: This species is omnivorous and feeds on vegetation and fruits, as well as mollusks, crustaceans, and fish. It is also known to be a scavenger and very often seen to take carrion.

Identification: It can grow 6 to 9.5 inches (15 to 24 cm) long and 4.5 to 6.5 inches in width. Asian leaf turtles have a boxy head with a tapered snout, gently domed shell with serrated posterior scutes, and webbed feet. Coloring and pattern vary by population. The shell is reddish to dark brown with matching skin, and there may be lighter striping on the head and neck. The plastron may be pale, yellow, or reddish, and may be patternless or feature darker radiating markings on each scute.

Breeding and Behavior: The Asian leaf turtle is quite elusive and sighting is uncommon. It is not strong swimmer preferring instead to walk on the bottom of a body of water rather than swimming freely. The adult spends its nights on land and moves to water during the day. It will squirt its digestive system contents when it feels threatened.

Nesting occurs during the dry periods; between the northeast and southwest monsoons. Clutch size is small with relatively large eggs and the reproductive potential is at least six eggs per nesting season. It can also be a seasonal nester (May and June on east coast and at least March on the west coast). They produce one or two clutches of large eggs with a reproductive potential around three to five eggs per season.

European Pond Turtle

Emys orbicularis

The European pond turtle, also called commonly the European pond terrapin and the European pond tortoise, is a species of long-living freshwater turtle in the family *Emydidae.*

The species is endemic to the Western Palearctic. It is found in southern, central, and eastern Europe, West Asia and parts of Mediterranean North Africa. In France, there are six remaining populations of significant size; however, they appear to be in decline. This turtle species is the most endangered reptile of the country. In Switzerland, it was extinct but reintroduced in 2010.

Habitat: It prefers to live in wetlands that are surrounded by an abundance of lush, wooded landscape. They also feed in upland environments. They are usually considered to be only semi-aquatic, as their terrestrial movements can span 1 km (0.62 mi). They are, occasionally, found travelling up to 4 km (2.5 mi) away from a source of water.

Status: Near Threatened. They have been declining over the past century. Their geographic range has diminished and it will most likely continue to decrease duet to habitat destruction. They also have been long maintained as pets; however, this practice has been restricted due to protection laws. Ownership of wild caught specimens is prohibited. Only registered captive bred specimens may be owned by private individuals. Due to human impact, the European pond turtle has been found to be relocated in areas distant from its origin.

Diet: This species eats a mixed diet of plants and animal matter that can increase the efficiency of its digestive process.

Identification: It is a medium-sized turtle, and its straight carapace length varies quite a bit across its geographic range, from 12 to 38 cm (4.7 to 15.0 inches). The carapace is dark brown to blackish, with a hint of green. The head and legs are spotted with yellow. The plastron is yellowish.

An important factor that affects the development of this species is temperature and thermal conditions. It has been reported that differential growth rates of the same species occur, including variation of body size and clutch size, because of varying temperatures in certain areas. Due to evident patterns of sexual dimorphism, adult males are always found to be smaller than females. In males, smaller plastra offer them a wider mobility compared to females. In females, due to their differential diet and foraging habits, there may be a correlation to an adaptive effect on their skull and head morphology.

Breeding and Behavior: Most freshwater turtles lay their eggs on land, typically near a water source. Once an appropriate site is found, females take their time with the construction of the nest, painstakingly excavating a small pit out of the soft substrate purely by usage of her small forelimbs. Once satisfied with the depth of the nest, she will turn around (facing away from the nest) and proceed with egg-laying, gently dropping the eggs down and into a small pile. This process varies in duration; laying can take merely half an hour or upwards of several hours, depending on weather, interference by other animals, humans, etc. When laying is complete (and still facing away from the nest), the female turtle will use her back limbs this time, to cover and close the nest. This is another variable routine which can take up to another four hours.

Nest fidelity is a characteristic that is unique to female European pond turtles—selecting a nesting site based on its ecological characteristics—and then returning there for future laying, so long as the site has not changed. Females tend to look to a new nesting site if there are visible changes to the original nest's surroundings, or because of dietary and metabolic changes. If a female must change from nest to nest, she will typically select a site in relatively close proximity. In addition, females may also lay eggs in an abandoned nesting site if the conditions are an improvement, and deemed to be better suited for egg survival. If the environmental conditions of a nesting site change, this may influence the development of the eggs, the survival of the hatchlings and/or their sex ratio. Due to unforeseen ecological changes, such as thick vegetation growing over a season (and blocking sun to the nest), a nest site may become inadequate for incubating eggs. Females that do not exhibit nesting fidelity, and continue to lay in the same area for long periods of time—even with the ecological changes—may end up producing more male offspring, as the cooler and darker conditions promote more males developing. Since the sex of these turtles is temperature-dependent, a change in temperature may produce a larger number of males or females which may upset the sex ratio.

The following 14 subspecies are recognized as being valid.

- *E. o. capolongoi.* First reported by Fritz, in 1995 – Sardinian pond turtle
- *E. o. colchica.* First reported by Fritz in 1994 – Colchis pond turtle
- *E. o. ceiselti.* First reported by Fritz, Baran, Budak & Amthauer in 1998 – Eiselt's pond turtle
- *E. o. fritzjuergenobstii.* First reported by Fritz in 1993 – Obst's pond turtle
- *E. o. galloitalica.* First reported by Fritz in 1995 – Italian pond turtle
- *E. o. hellenica.* First reported by Valenciennes in 1832) – Western Turkey pond turtle
- *E. o. hispanica.* First reported by Fritz, Keller & Budde in 1996 – Spanish pond turtle
- *E. o. iberica.* First reported by Eichwald in 1831 – Kura Valley pond turtle
- *E. o. ingauna.* First reported by Jesu, Piombo, Salvidio, Lamagni, Ortale & Genta in 2004
- *E. o. lanzai.* First reported by Fritz in 1995 – Corsican pond turtle
- *E. o. luteofusca.* First reported by Fritz in 1989 – Central Turkey pond turtle
- *E. o. occidentalis.* First reported by Fritz in 1993 – North African pond turtle
- *E. o. orbicularis.* First reported by Linnaeus in 1758 – common European pond turtle
- *E. o. persica.* First reported by Eichwald in 1831 – Eastern pond turtle.

Ryukyu Black-breasted Leaf Turtle

Geoemyda japonica

It is endemic to the Ryukyu Islands (Okinawajima, Kumejima, and Tokashikijima) in Japan. Due to its rarity and very attractive appearance, this species is highly coveted by turtle collectors worldwide.

Habitat: This species is primarily terrestrial, occasionally going into freshwater, and it lives around primary or dense secondary forests.

Status: **Endangered.** Its threats are habitat destruction and illegal collection for the pet trade. In 1975, the species was designated a National Natural Monument of Japan, which means trading and captive maintenance is strictly regulated by law. There are no established conservation measures for this species. Japan regards captive populations outside of Japan as illegally sourced.

Diet: In captivity, it feeds on worms, snails, insects, and fruit.

Identification: It grows to about 12.7-15.2 cm (5–6 inches) long. It has a relatively elongate, slightly domed shell with a flattened peak. There are three well-developed keels running down the shell, with the vertebral keel being the highest. The marginals are serrated, which diminishes over time. The carapace coloration may be dark orange, tan, or reddish, but it's often brown overall, and the keels are usually accompanied by attractive black markings.

The plastron is large and almost entirely black. It possess a auxiliary scutes, which are located just behind the front limbs. These little scutes might not seem remarkable, but they are actually used by customs agents as the most straightforward and accurate method for quickly distinguishing this rare species from other closely related turtles, such as G. spengleri.

It has a hooked beak. Both head and neck are adorned with orange and red stripes, and the sides of the head have a yellow streak that extends behind each eye. The exposed surfaces of the limbs are protected by large scales, which can be brightly colored, and the limbs and tail are always darker in color.

Breeding and Behavior: There are no studies on breeding. Captive breeding is tremendously difficult. The turtles must be cooled during the winter months to contribute to successful propagation. they can tolerate winter temperatures into the 40 degree F range as long as they are kept dry. They should be exposed to such low temperatures gradually and only temporarily, however.

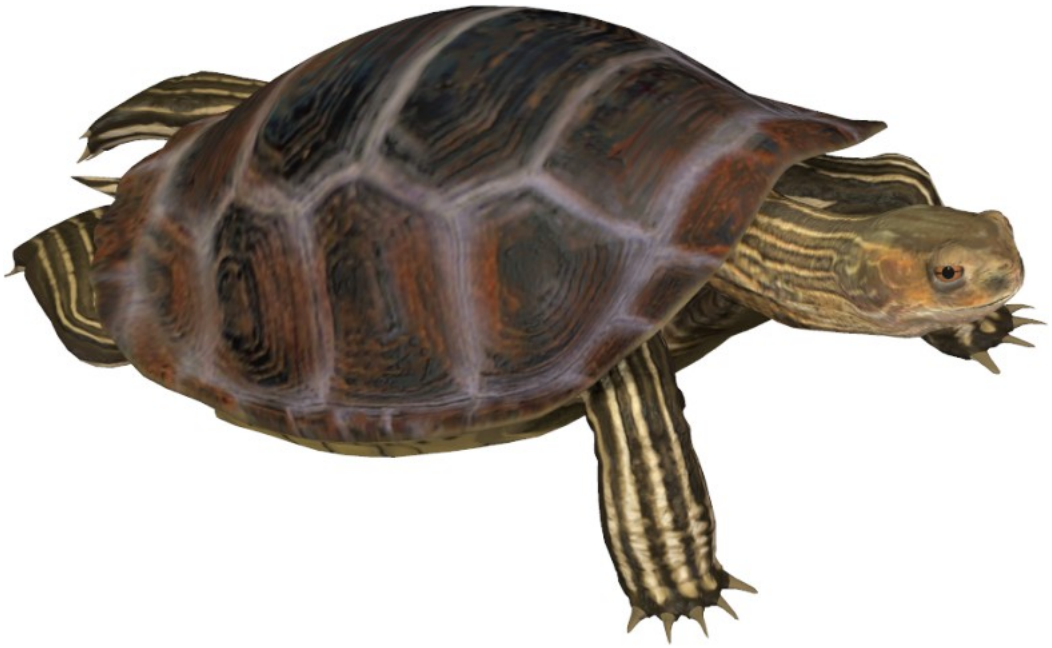
Striped-neck Terrapin

Mauremys caspica

This turtle is also known as the Caspian Turtle and is found in west Asia, in Iran and central Turkey, northward to the Republic of Georgia, Azerbaijan, Russia (Dagestan), eastward to southwestern Turkmenistan, and in Iraq, Saudi Arabia, and Bahrain.

Turtles at one Iraq site lacked the ability to swim. Instead, they would crawl out of the water periodically to breathe and then slide back in again. Scientists believe this behavior to be an adaptation to the extreme variability in the supply of surface water in the area.

Habitat: It occurs in large numbers in almost any permanent freshwater body within its range. It also lives in irrigation canals and is quite tolerant of brackish water. They may occur in large populations in certain areas, especially in permanent water bodies. In temporary waters, they are forced to aestivate in the mud in summer, and the more northern populations hibernate during winter. They are often seen basking on logs or banks but disappear at the least disturbance.



Status: Least Concern. Many Caspian turtles are killed each year by humans who obtain their eggs to use in treating. Storks and vultures also take a heavy toll on juveniles and adults, however they are not currently endangered.

Diet: Adults feed on small invertebrates, aquatic insects, fish, and amphibians, as well as a variety of aquatic and terrestrial plants.

Identification: It is a tan to blackish, medium-sized, semi-aquatic turtle, which may attain a carapace length of 25 cm (9.8 inches). Its low, oval carapace has a slight medial keel (better developed in juveniles) and a smooth, unserrated marginal border, which is slightly upturned and tapered above the tail. A pair of low lateral keels are present on the pleural scutes of hatchlings, but these become lower with age and disappear completely in adults. The carapace is tan to olive or black with yellow to cream-colored reticulations patterning the scutes, and some individuals have yellow vertebral stripes. These light lines fade with age, but the pleural seam borders become darker. The well-developed plastron is notched posteriorly. The plastral formulae are given in the subspecies descriptions under Geographic Variation. The plastron is either yellow with variable reddish to dark-brown blotches, or dark brown or black with a yellow blotch along the lateral scute borders. The bridge is either yellow with dark seam borders and dark spots on the corresponding marginals, or almost totally black with a

few small yellow marks. The head is not enlarged, and is olive to dark brown with yellow or pale cream-colored stripes. Some stripes extend anteriorly from the neck onto the head. One of these on each side passes above the eye and onto the snout where it meets the stripe from the other side. Several others extend across the tympanum to contact the posterior rim of the orbit, and two additional stripes continue across the snout and pass ventral to the orbit. The neck, limbs, and tail are tan gray to olive or black with yellow, cream, or gray stripes or reticulations. Females are generally larger than males, have flat plastra and shorter tails with the vent under the rim of the carapace. The smaller males have concave plastra and longer, thicker tails with a vent beyond the rim of the carapace.

Breeding and Behavior: Caspian turtles usually breed in early spring or in the fall. Nesting occurs in June and July. The female lays a clutch of 4 to 6 elongated brittle-shelled, white eggs. Hatchlings have round carapaces about 33 mm (1.3 in) in length and are brighter colored than the adults.

Three subspecies are recognized: The eastern Caspian turtle, Siebenrock's Caspian turtle, and the spotted-bellied Caspian turtle. The western Caspian turtle was formerly treated as a subspecies but is now recognized as its own species.

- *M. c. caspica.* First reported by Gmelin in 1774. The nominate subspecies is known as the eastern Caspian turtle. It occurs in central Turkey and northern Iran, northward to the Republic of Georgia and eastward to southwestern Turkmenistan.
- *M. c. siebenrocki.* First reported by Günther in 1869. This race is referred to as Siebenrock's Caspian turtle, and it occurs in Iran and Iraq, with relict populations in Saudi Arabia and on the island of Bahrain; it intergrades with the nominate race in Mesopotamia. This light form with contrasting colors resembles the nominate race, but has a yellow-to-orange plastron with a small to medium-sized, regularly shaped dark blotch on each scute. The soft parts are lighter than in the nominate, and, unlike in other subspecies, age-related melanism does not occur in this subspecies.
- *M. c. ventrimaculata.* First reported by Wischuf & Fritz in 1996. This race is known as the spotted-bellied Caspian turtle . It is endemic to the highlands of the Kor and Maharloo basins in southern Iran. It is distinguished from the other races by its yellow plastron with one or several irregularly shaped black spots.

African Helmeted Turtle

Pelomedusa subrufa

It is found throughout much of Sub-Saharan Africa, from the Cape Peninsula to Sudan. It can be found as far west as Ghana and as far south as Cape Town. It has also been found in Madagascar and Yemen. Unlike most turtles, the African helmeted turtle is able, when it finds itself upside down, to right itself with a vigorous flick of its long muscular neck.

Habitat: The species naturally occurs in fresh and stagnant water bodies.

Status: Least Concern. This species has a large population that is widespread.

Diet: It is an omnivorous eater and will eat almost anything mainly involving aquatic invertebrates, small fish, and vegetation. It may feed on carrion. The fine claws on its feet help it tear its prey apart. Hatchlings will eat tadpoles of many frog species

Identification: It is typically less than 20 cm (7.9 inches) in length. It has a black or brown carapace. The top of the tail and feet are a grayish brown, while the underside (plastron) is yellowish.

The male turtle is distinguished by its long, thick tail. A female tends to have a shorter tail and a broader carapace. A hatchling has a shell size of about 3 cm (1.2 inches) in length, and is olive to black in color. It also has two small tubercles under the chin and musk glands in the sides of the carapace.

Uniquely, the genus Pelomedusa does not have a hinged plastron (lower shell). All the other species in the family Pelomedusidae, however, do have this feature with which they can, using muscles, close the plastron to the carapace to cover the head and front limbs.

Breeding and Behavior: Courtship is held year round. The male will follow the female, nodding his head in front of hers. If she is not responsive, she will nip and snap and walk away. If she is willing, she responds by nodding her head or just standing still, so he can mount her. While mating, each of the turtles shakes its head.The female will lay two to ten eggs on average, normally during late spring and early summer. The eggs are placed in a flask-shaped nest about 4 to 7 in (10 to 18 cm) deep. The eggs hatch in 75–90 days.

West African Mud Turtle

Pelusios castaneus

It is also known as the West African side-necked turtle or the swamp terrapin. It is endemic to West and Central Africa, including the countries of Angola, Benin, Burkina Faso, Cameroon, Cape Verde, Democratic Republic of the Congo, Republic of the Congo, Equatorial Guinea, Gabon, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Príncipe, Senegal, Sierra Leone, The Gambia, Togo. Additionally, it has been introduced to Guadeloupe.

Habitat: The species inhabits various water bodies such as streams, ponds, swamps, and lakes, from the west forest to the dry savannah. In the Democratic Republic of the Congo, this species is often found in marshes and swamps loaded with papyrus (Papyrus cyperus). In Gabon this species is confined in shallow, aquatic ecosystems with dense vegetation coverings such as submerged shrubs, savannahs, and lagoon banks but can also be found in swamps and lakes.

This species is mainly active during the rainy season. Despite its poorly webbed limbs, the West African Mud Turtle remains a relatively good swimmer. Highly active both night and day, young specimens are rarely seen basking. They tend to spend most of their time hiding in dense vegetation, swimming underwater, or walking on the bottom of the water.

Status: Least Concern. This species has a large population that is widespread.

Diet: It is carnivorous and feeds on aquatic prey. There are five phases to feeding; preliminary head fixation on the prey, fine-tuning the head fixation, final approach by the head, grasping of the prey followed by manipulation and transportation, and suction, resulting in ingestion after which the prey is swallowed. The final phase varies according to whether the prey is fast-moving, like a fish, or slow-moving like a gastropod mollusc.

Identification: It is a medium sized turtle from Western Africa measuring up to 28 cm (11 inches) for the largest females. The males are smaller and might reach a length of 25 cm (9.8 inches). The

carapace is oblong to elliptical, broadest behind the center and uniformly dark. The first vertebral scute is panduriform and lines up with the first pair of marginals. The plastral hinge usually levels with the middle of the fifth marginal scute. The plastron is typically blackish with a wide, central, poorly defined yellow zone.

There are three forms that are recognized for this species. The "normal form", whose plastron and carapace are the typical coloration, the "rain forest form" that usually has a carapace and a plastron fully dark brown to black. Finally, the "savannah form" often has a carapace very light brown to caramel and a plastron fully yellow. The head is olive to brown with black vermiculating markings, two barbels protrude from the lower jaw, and the outside part of their limbs is a darker color (gray) than the inside (yellow). Limbs are poorly webbed and each foot is equipped with five powerful claws.

Breeding and Behavior: It seems to have some variation in the reproduction period. In Gabon, for instance, females were reported to lay their eggs during the dry season, between July and September, while some females were found gravid around February, too. Therefore, it is believed that this species lays eggs twice a year in the wild. The eggs are uniform white, oblong, and soft-shelled. Large females can lay up to 27 eggs.

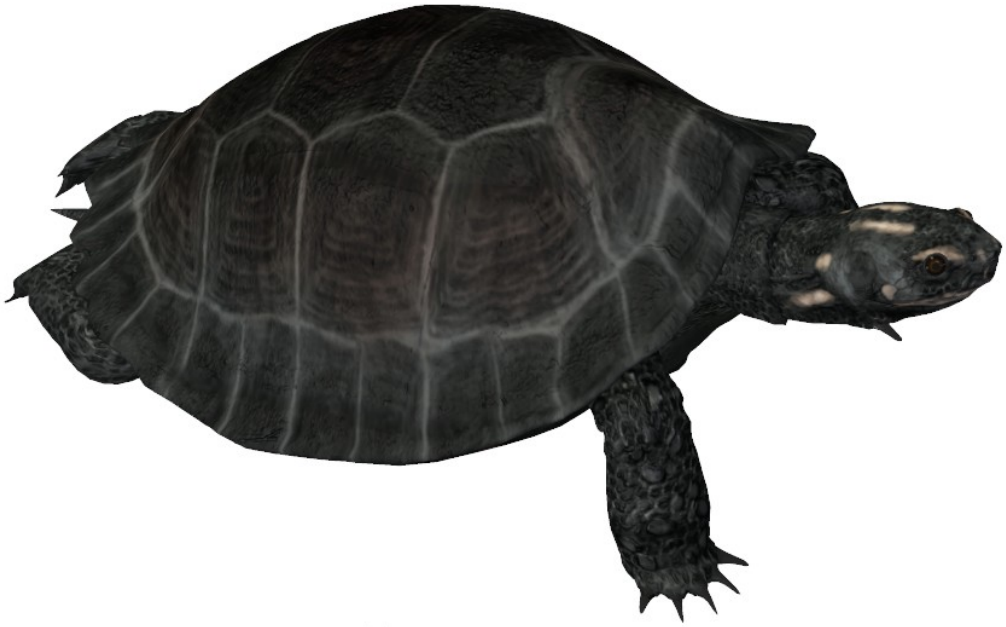
Black Marsh Turtle

Siebenrockiella crassicollis

It is endemic to Southeast Asia. They are found in southern Vietnam, Cambodia, southern Myanmar (Tenasserim), central and peninsular Thailand, eastern and western Malaysia, Singapore, and the Indonesian islands of Java, Kalimantan, and Sumatra. They are also commonly kept as pets and as sacred animals in Southeast Asian Buddhist temples. They are treated as sacred by the public, being believed to contain the souls of people who died while trying to rescue other people from drowning.

Habitat: They are largely aquatic and prefer slow-moving or still bodies of water with heavy vegetation.

Status: Endangered. They are classified as endangered by the IUCN, being one of the several Southeast Asian turtle species heavily exploited for the international wildlife trade, particularly for food and traditional medicine in the Chinese markets. In a study in 2010, black marsh turtles were among the turtles found to contain high levels of mercury in their tissues. Their consumption as food is discouraged as they have the potential to cause mercury poisoning.



Diet: They are predominantly carnivorous and prefer to feed underwater. They prey on insects, worms, molluscs, amphibians, crustaceans, and small fish, though they will occasionally scavenge rotting plants, fruits, or carcasses of larger animals that fall into the water.

They are shy creatures. Mostly aquatic and nocturnal, they will sometimes come out to land at night to forage or mate, and occasionally during the day to bask. Majority of the time they prefer to stay underwater, partially buried in mud in shallow water or swimming near the bottom in deeper still waters.

When threatened, black marsh turtles excrete a foul-smelling secretion from their cloaca to ward off would-be predators. Their powerful jaws are also capable of inflicting wounds if handled roughly.

Identification: They are small to medium-sized turtles that are almost completely black except for white to yellow markings on the head. Adult black marsh turtles average at around 17 cm (6.7 inches) in length and rarely exceeding 20 cm (7.9 inches). The ovoid carapace (the dorsal shell) is widest just

behind the middle portion, with a strongly serrated posterior margin. A prominent central ridge (known as keels) also runs through the middle of the carapace. Two lateral keels are present as well, though they are not always visible. The carapace is almost entirely black or dark brown with black radiating patterns.

The plastron (the ventral shell) is not hinged and has a shallow U-shaped notch in the pair of anal scutes. The bridge (the parts connecting the abdominal and pectoral scutes of the plastron to the carapace) is approximately the same length as the rear part of the plastron (consisting of the femoral and anal scutes). Both the bridge and the plastron can be entirely black, dark brown, or yellowish with splotches or patterns of darker colors.

The forelimbs are covered with large transverse scales. Both the forelimbs and the hind limbs are webbed, reflecting their largely aquatic habits. The necks of black marsh turtles are characteristically thick, forming a collar around the head when it is retracted into the shell. All of the limbs, the tail, and the neck are dark gray to black. The head is broad with a short upwardly pointed snout. It is mostly black on top with cream to yellow markings around the eyes and at the throat. It also has a pair of pale white to yellow spots just behind the tympanum, usually hidden behind the folds of the neck. The powerful jaws are pale yellow to pale brown in color and curves upwards, earning it the charming name of 'smiling terrapin'.

Black marsh turtles are sexually dimorphic. Males have concave plastra in contrast to the flat plastron of females. The markings around the eyes and throat, present in all juveniles, disappear among males upon reaching adulthood while they are retained in females. The tails are also longer and thicker for males than for females.

Breeding and Behavior: Black marsh turtles reach sexual maturity at five years. Nesting season occurs in the summer, between April and the end of June. In courtship, males will bob their heads up and down while chasing a female. It may bite the legs of the females several times before mating. Females will lay three or four clutches. Each clutch consisting usually of one or rarely two relatively large eggs. The eggs are incubated for 68 to 84 days before hatching.

Special Thanks to:

… to my beta testers, Alisa and FlintHawk

Sources:

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