

American Softshell Turtles

American softshell turtles have immense grace and an alert demeanor.

By Patti and Dick Bartlett

When in the "pursuit mode," they glide through their tank, as graceful as swallows and nearly as agile, in pursuit of bait minnows and glass shrimp. When in their "stealth mode," they bury into the gravel substrate. There, they lie, sometimes for half an hour or more, with only nose and eyes exposed until an unwary minnow swims close enough to ambush with just a dart of the head. But at feeding time, which they see as any time we near their tank, they swim to the surface and splashingly paddle, all pretense at grace or agility abandoned, and greedily take chunks of earthworm or minnow from forceps or fingers. "They" are our softshell turtles, our animated flapjacks. All of this year's hatchlings are small at the moment, but are always hungry and quickly growing.

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Photograph by Dick Bartlett

Softshell turtles, with their immense grace and alert demeanor, have always been among our favorite chelonians. Over the years, for one reason or another, often just because we couldn't say no when offered one or another species or subspecies, there have been baby softshells in our aquaria. Babies of these large turtles don't remain babies for long. When adequately fed and given sufficient space to exercise, softshells grow like wildfire. Unless you're lucky enough to have males (by far the smaller sex), these interesting and active turtles quickly outgrow all but the largest facilities, and even the males can push the limit of tolerance of most private keepers.

The family Trionychidae, to which the softshells belong, is well represented in Africa, in Asia and in the United States. There are several well-established genera. Trionyx, the typical softshells, has long been the largest. Some researchers have recently broken Trionyx into several genera (with Apalone being used for the American species). For the purpose of this article, in which we will discuss only the three American species, we will follow Webb (1990) and Ernst, Lovich and Barbour (1994) and retain usage of the name Trionyx. Of these three species, only the Florida softshell has not speciated; the other two—the smooth and the spiny softshells—have two or more subspecies each.

Softshells are particular about the type of habitat they prefer. While the smooth and spiny softshells are usually associated with flowing bodies of water such as large streams and rivers (and associated oxbows and lakes), the Florida softshell diverges in habitat preference by selecting quiet waters—ponds, lakes, swamps and canals.

The softshells in America can easily be differentiated by the silhouette of their shells. The carapace of the smooth softshell turtle is rounded; the spiny softshell is weakly oval, and the Florida softshell is decidedly oval. The carapace of all is covered with a thick, leathery skin rather than keratinized scutes. Although the center of the carapace is comparatively rigid, the edges are flexible. There are only three claws on each of the fully webbed feet. Males have greatly enlarged tails that extend well beyond the edge of their carapaces.

Average, large female softshell turtles of all three species lay from six to 25 (occasionally more than 30) eggs per clutch. Several clutches are laid each summer. The nest is dug in a sandy location near, but often obscured from, the water. Incubation takes somewhat more than two months. The hatchlings measure from about 1.25 inches (smooth softshell) to somewhat more than 1.5 inches (spiny and Florida softshells) in carapace length.

Patterns are best defined and colors are brightest on hatchlings. Since all are clad in tans, browns or olives, this is just a matter of comparison. Colors and pattern are retained best by males, but may be entirely obliterated on old males and on most females of all species. The pattern of head striping, carapacial spots, width of the light carapacial rim and the number of dark rim stripes are used in identifying the different subspecies.

Spiny and Florida softshells have a horizontally oriented ridge on the nasal septum. This ridge is lacking entirely in both races of the smooth softshell. The long neck, strong jaws and raking claws of a large softshell turtle must be carefully reckoned with. These turtles are more aggressive when on shore than in the water.

Florida Softshell

At a documented weight of 71 pounds, the Florida softshell, *Trionyx ferox*, is the largest of the U.S. softshells. It ranges along the southeastern coastal plain from extreme southeastern South Carolina throughout Florida to southwestern

Alabama.

Females regularly exceed a foot in carapace length with a record of 24.75 inches. Males, at a normal adult length of 6 to 10 inches, are by far the smaller sex. However, Moler (1997) has mentioned many that were substantially larger and one that had a length of 18 inches when measured over the curve of the carapace!

Hatchling Florida softshells have a narrow reticulum of light olive-tan separating darker carapacial spots. A yellow to olive-yellow band edges the carapace. The plastron is dark olive-gray, and the dark head is busily spotted and striped with yellow.

As they grow, both sexes fade to a mottled olive-tan to olive-brown. The anterior edge of the carapace is studded with small conical tubercles.

Smooth Softshell

The two races of smooth softshell turtle are the Midland, *Trionyx muticus muticus*, and the Gulf Coast, *T. m. calvatus*.

Both are common but seldom seen. The Midland is found in river systems from eastern Texas to eastern Louisiana and follows the serpentine meanderings of streams far outside the main range to western Pennsylvania and southern North Dakota. A disjunct population occurs in central eastern New Mexico.

The Gulf Coast race ranges westward along the southern coastal plain from Florida's Escambia River to the Pearl River drainage in Louisiana. Both are found in rivers with moderate currents and where extensive, open, sandbars occur. Female smooth softshells reach slightly more than a foot in carapace length; the much smaller males are adult at from 4 to 6 inches.

Juveniles and males of the Gulf Coast subspecies have a dorsal ground color of olive-tan, light olive-brown, or orangish-brown. The carapace of the Midland race bears a variable number of small black dots and dashes and is edged with a lighter marginal color that is bordered on the inside with a single black line. On the face, a dark-bordered light diagonal line extends downward from the posterior orbit to the neck. Light and dark striping usually extends onto the snout, anterior to each eye, for the Midland race; the Gulf Coast race lacks the snout markings and has large rounded dark markings on the carapace. The plastron of the smooth softshell is usually lighter in color than the brownish underside of the carapace and may be white or gray. The anterior edge of the carapace lacks bumps and spines.

Belying their actual robustness, the hatchlings of the smooth softshell turtle are of delicate, almost translucent appearance. The anterior edge of the carapace may fold down and double over on itself when the head is withdrawn, and the ribs may often be seen in outline through the thin carapace. The forelegs are not strongly patterned.

Spiny Softshell

The spiny softshell turtle is the most widely ranging and variably patterned of our softshells. Like the other species, the spiny is dimorphic. Females commonly attain a carapace length of from 7 to 12 inches and occasionally grow to 16 inches. Adult males are about half that size. There are six races. The eastern, *T. s. spiniferus*, the Gulf Coast, *T. s. asperus* and the western, *T. s. hartwegi*, all have dark carapacial markings. The carapace of the Guadalupe, *T. s. guadalupensis*, the Texas, *T. s. emoryi*, and the pallid, *T. s. pallidus*, bears variable amounts of tiny white spots.

The Gulf Coast spiny softshell turtle ranges from southern North Carolina and extreme northern Florida westward to the Mississippi drainage. There are dark ocelli in the central area of the carapace and dark spots closer to the edge. The plastron is about the same color as the underside of the carapace. There are at least two dark lines bordering the edge of the carapace. The two dark-edged yellow lines on each side of the face converge and meet on the neck. It is active, agile, and easily negotiates strong currents.

It is replaced in the north-central and northeastern states by the very similar eastern softshell, which has only a single dark line separating the carapace-rim color from the darker interior.

The western spiny softshell turtle is dark in color and has small black carapacial spots or flecks rather than dark ocelli. The light carapacial border is usually strongly in evidence and bordered on the inside by a thin black line. The typical dark-edged light facial markings are variably prominent. This is the race seen in the various river systems in most of our central states.

The Texas spiny softshell is common in the Rio Grande and Pecos Rivers and in the ponds, lakes and resacas (water-holding depressions left over from periodic river flooding) associated with those river systems. Beyond Texas, the

Texas softshell occurs in restricted areas of Utah, New Mexico, Arizona, southeastern California and south of the international boundary in northern Mexico. The carapacial color of males and young females of the Texas spiny softshell is tan to olive-brown. There are usually tiny white spots on the rear one third of the carapace. These may or may not be (partially) encircled with dark pigment. The light carapacial marginal band is much wider posteriorly than along the sides, and often is edged inside with a single dark line. The dark edged light ocular stripe is present, but may fragment on the cheek.

The Guadalupe spiny softshell turtle differs slightly from the Texas softshell in having tiny white spots covering virtually the entire carapace. Each spot is narrowly ringed with black. The carapacial ground color of this race tends to be olive to brown-in other words, darker than the ground color of the Texas softshell. This race occurs in the drainages of the Guadalupe, Nueces and San Antonio Rivers.

Spiny softshells in the Colorado River drainage are apparently intergrades between the Guadalupe and pallid races. Intergradation between other races is common where ranges abut.

With a record size of 21.25 inches, the pallid spiny softshell is the largest of the six races of spiny softshell. Most specimens, however, are considerably smaller than this. This is also the palest of the spiny softshells. When young, tiny white dots often are present on the posterior half of the carapace. This subspecies has a wide distribution in northeastern Texas. It is also known from southern Oklahoma, western Louisiana and extreme southeastern Arkansas.

Captive Maintenance

Although often found in silted waters, softshell turtles do not long persist in polluted waters. Their soft shells break down with white fungus patches, and once established, the fungus quickly spreads. Death soon follows. We have found it hard to kill the fungus once it is discernible to the naked eye. It is obviously better to prevent the fungus from appearing.

Our setups, whether of 10- or 220-gallon size, are all strongly filtered. Because of the ease with which they can be cleaned, we use sponge filters topped with powerful submergible power heads in each aquarium. We use a substrate of smooth, pea-sized river rock, and have living plants growing in the aquaria. We often start the baby softshells out in a 10-gallon tank, but within a short time, it is necessary increase the tank size. Sometimes, when we wish to avoid an extra step, we simply use a 50- or 75-gallon (now a 220-gallon!) tank as our starter.

We have found that the larger the tank, the easier it is to maintain water quality, and the more fun it is to watch the softshells swim after their meals of earthworm pieces, glass shrimp or Koi chow. They are quick to learn their feeding sites, and the shy examples wait for their meals by propping their chins and forefeet up against a low-lying corkbark log, a la Kilroy, where they may dine in undisturbed peace. Even those that have been resting, wedged into small hiding areas in and under a waterlogged branch, emerge when confronted with the possibility of a fat chunk of earthworm. With such enthusiastic appetites, you may ask what we will do when these charming creatures reach maturity. We're looking at outside facilities, and may practice earthworm farming as a sideline.