

## TURTLES AND THEIR SHELLS

By Tom Ryzewski

A unique shell makes turtles fascinating and often misunderstood critters. What may appear to be a heavy and clumsy encumbrance in a freshwater turtle is more likely to be a lightweight and hydrodynamically efficient body form offering both speed and protection. Land tortoises may look like glacially slow reptiles trapped in rounded cinder blocks, but again, a light, round shell offers the turtle a place to hide from a large jawed predator when speed is not an option. In their various environments, turtles have evolved, through natural selection, shells that have given them survival advantages that have worked for over 200 million years.

The turtle shell is actually an expanded backbone and rib cage covered with a very thin form of skin. The shoulder and pelvic bones have been tucked inside and the neck vertebrae have evolved a flexible 'S' shaped curve to allow the head to be withdrawn along with the legs. Those cartoons we watched as kids that showed a turtle crawling out of its shell and walking away were wrong. A turtle can no more wiggle out from its shell than we humans can jump out from our rib cages!

Our occasionally mistaken view of a turtle as slow and clumsy is usually one of a turtle out of its natural environment. A snapping turtle, *Chelydra serpentina*, is a swift and maneuverable swimmer but on the inhospitable land, we see a hulking, slow behemoth using its remaining weapon, a lightning fast pair of scissors-like jaws to survive. Surprisingly, an eastern box turtle, *Terrapene carolina*, dropped into deep water would sink and flounder almost helplessly and likely drown, its rounded shell and body evolved for the land where it has roamed safely for millenia. As long as the turtle remains in its natural world, where it has survived millions of years, that shell will offer protection and a safe little home.