

# Red-Bellied Turtles Repeat an Ancient Act

by Elaine Friebele

June 15, 2000

The Red-bellied Turtle that I am holding has just laid her eggs in the ground. For this mission, she ventured from her home in the murky waters of the Patuxent River. She is solid and heavy in my hands. A shag carpet of algae covers her dinner-plate-sized shell. Her smell evokes the fertility of the marsh. Her dark head and forelimbs tuck neatly into her shell edged with burnt red. (The species name, *rubriventris*, means red under-surface or belly.) The yellow leg stripes lead horizontally to the vertical stripes on her head, which meet in an inverted V at her mouth. Two perfect nasal openings punctuate the horny, bird-like beak.

Her golden-brown eyes intrigue me with their deceptively simple, yet knowing look. Essentially unchanged for millions of years, turtles seem to be prepared for anything that Nature imposes. The pupils are like pools inviting me to dive in and travel back through time—past views of early humans, giant mammals, the first flying feathered creatures, past an

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era populated with dinosaurs, to a time 250 million years ago when a reptile with ribs and breastbone broadened into a rudimentary shell crawled close to the Earth.

As I look into the turtle's eyes, it is hard to guess what goes on inside that reptilian head. Not much in the way of complex thought, I'd wager, given the size



Red-bellied Turtle populations are limited to the coastal plain of the Mid-Atlantic region and a small area in Massachusetts.

and “primitive” shape of the brain. No matter what “thoughts” a turtle may have, its brain successfully guides the activities needed for reproduction and survival. As this turtle excavated a nest and laid her eggs, she seemed to know exactly what to do and how to go about it. After testing the soil in several places by nudging it with her beak and forelimbs, she found a suitable spot and began scooping out dirt with her webbed hind feet, using them like shovels. Once the nest was excavated, she “backed” into it and deposited ten to 16 oval eggs. While doing this, she entered an almost trance-like state, during which nothing could distract her—perhaps similar to, but far more serene than the delivery of human babies. Then, she carefully replaced the soil, leaving the ground as she found it. If I had not seen her nesting, I would be hard-pressed to locate the nest.

But scattered eggshells confirm that the nests are not so difficult for raccoons, skunks, and foxes to find. Predators eat most (as much as 90 percent!) of the reproductive bounty that the turtles produce. Such a large portion of the female's energy is devoted to developing eggs inside her body, scrambling up the hill, digging, depositing the eggs, covering them, and returning to the river—with a good chance that it will come to naught. How have turtles persisted so long—investing so much in reproduction when so few of their potential offspring survive? A long life with many reproductive years ensures that they will at least replace themselves. In some years, females may lay several clutches of eggs in a gamble to beat the odds.

The journey cannot be easy. This turtle climbed up a forty-foot bluff to reach a nesting place in dry, sandy soil. It is a miracle of evolution that turtles are

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able to walk with bodies fused to this hard suit of armor. As the bony shell developed, the shoulder bones were rearranged to keep the front legs working. This adjustment didn't happen just once way back in the Permian. Every time an embryo becomes a turtle, the shoulder girdle moves back to a position inside the rib case. Voila! Mobile turtles.

Despite the cumbersome shell, turtles do move around in their own unique style. Slow and steady wins the race, the Aesop fable tells us. While turtles exhibit little athletic grace, they remain focused on their goal, so the story goes. Through the centuries, the turtle's shell has signified strength and steadiness to many cultures. In ancient times, the Chinese believed that turtles—with patience, prudence, and constancy—carried the universe on their backs. Sharing more traits with the racing, scattered hare, I tend to envy the turtle's apparent tranquility.

I gently lower the turtle to the ground, and she hurries toward the marsh without looking back. She will never learn the fate of the eggs she has deposited. On webbed feet that will soon propel her through the water, she moves quickly toward the edge of the steep river bluff, where she slides down to the marsh.

Now we wait for her offspring.

### May 2, 2001

A slight movement in the dry dirt. Soon, two dusty nut-sized spheres appear. They shift almost imperceptibly. Yellow stripes become barely visible in the dust. Then a webbed foot, reaching, waving, wiping dirt from newborn eyes. Can they

see? A hard edge emerges, and gradually, pushing upward, the whole, perfect circle of shell. Then the busy back legs, digging, launching from the Earth. This process is repeated over and over—until twelve tiny turtles the size of quarters have emerged.



Red-bellied Turtle hatchlings are the size of a quarter.

At the end of the previous summer, each turtle broke through the leathery shell using the handy egg tooth on the end of its beak—a characteristic that hatchling birds and turtles share. After hatching, the turtles passed the winter as stones in the soil—entering the hibernating state of cold-blooded animals. Adult turtles spend the winter encased in mud at the bottom of ponds, marshes, and rivers. Gradually, their sluggish metabolism slows to a notch above death: their hearts beat once every ten minutes. I wonder how newly-hatched, well-nourished turtles benefit from spending the winter in the ground, risking freezing or dehydration. Perhaps they are postponing being eaten.

Hatchlings from some concurrent nests emerged just after hatching in the fall. What determines the timing when they come to the surface? Maybe the hatchlings are genetically programmed, like little robots, with a timing switch already thrown. Maybe they follow climatic clues. A cold

fall, for example, would keep them in the ground, whereas rains dumped by an autumn hurricane could bring them up gasping for air. However, flukey weather conditions don't explain why hatchlings from two adjacent nests emerge in different seasons—as if insisting on clan autonomy.

The spring sun has stirred these hatchlings in their bed of soil. Born a second time from the Earth, they look dry and thirsty as they clamber out of their hole. They head unerringly, as if following interior compass needles, to the river. Scrambling over blades of grass and low plants, the hatchlings remind me of the miniature characters in the movie, *Honey, I Shrank the Kids*. One hatchling trying to cross a twig topples over, revealing a plastron

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the color of dried chili peppers. Black patterns resembling Chinese script crisscross the red. With alert black eyes and jutting beaks, the hatchlings have a determined, almost bulldog-ish look. They appear strong and fully capable of the long, harrowing journey to the safety of the river 300 feet away. But many things can, and do, go wrong. Catching the eye of a crow while traversing an open space. An unseasonably hot day when dehydration sets in before the journey is finished. To name a few.

I collect the hatchlings, carry them down the bluff, and release them at the river bank. They pause, their beautiful mosaic green shells becoming one with the vegetation. They are cautious and slow. Their movements are jerky as their short legs heave their rigid shells forward. In a few minutes, they have moved to the water's edge. I watch them slip into the marsh, where they become perfectly agile, swimming among bright green grasses. Have a nice life, I think. In ten years, one of you could be climbing the bluff, digging, continuing an act that has been repeated, over and over for hundreds of millions of years.

## Friends of Jug Bay Annual Meeting Sunday, March 17, 2002 3 - 5 p.m.

David Burke, Program Director of the Chesapeake Coastal Watershed Service, will speak on "How Jug Bay Fits Into the GreenPrint Program"

Election of Officers

Presentation of the 2002 Jug Bay Award to wildlife artist Bud Taylor