

# *Introduction*

THE CALL TO ACTION came via e-mail. After the vernal equinox announced the arrival of spring, veteran terrapin researcher Don Lewis, the “Turtleman of Wellfleet,” had monitored daily air and water temperatures. During the preceding week, a significant warming trend was observed. It was time to see if the diamondback terrapins had begun to parade in Blackfish Creek. Twice a month, an hour before each spring tide, the creek becomes passable on foot. Armed with a landing net and protected from the chilly April waters with a pair of thermal waders, I joined Don to trek across the muddy tidal flats into the main channel of the creek. The wind from the northeast whipped up the shallows, limiting our visibility to only a few inches. Our fingers were gripped around the handles of our nets, frozen into place as we waited patiently for the dim silhouettes of drifting turtles.

Soon, we could see their heads: larger heads for the females, smaller ones for the males and juveniles. The terrapins were being flushed from the smaller, innermost creeks into the main channel of Blackfish Creek by the ebbing tide. They bobbed along with the current, occasionally periscoping their heads above the water for a breath of air and maybe a view of their destination ahead. These terrapins had left their winter homes, crypts in the muddy creek bottoms, and had begun to make their twice daily tidal journey downstream, with a return trip upstream, in the creeks of Wellfleet harbor.

Dip netting in Blackfish Creek is an inefficient operation at best and a complete folly when the wind is howling and the air and water temperature are borderline freezing. Standing in water, knee to thigh deep, one can only hope to see a familiar form swimming within netting range as the 8 to 10 foot drop in tide whisks terrapins away from their shallow upstream locations. Occasionally, we are rewarded by a “thunk,” as a terrapin has crashed into one of us, or, even better, has barreled into our net. Sometimes, we actually see and catch one. That April day, weather conditions had turned gloomy. We were cold, wet, and tired, but had nevertheless been rewarded by witnessing the terrapin parade. We knew the turtles had awakened from their winter slumber and were active again. As we prepared to call it quits, I saw a familiar form scooting by my ankles. I swooped down with the net and felt the extra heft as I lifted it from the water. I optimistically peered down and saw her. She was a

large turtle, a familiar one that we had captured two years earlier. Female number 1007 heralded the arrival of another terrapin season.

Getting wet and muddy in the name of science represents a genuine departure for me. Trained as a biochemist and molecular biologist in the pre-cloning era, I had spent most of my career in a white coat at a laboratory bench or in front of a classroom filled with undergraduates. My research was focused on topics with potential applications to human health: the mechanism of action of peptide hormones and the development of fat cells. But the more time I spent outdoors in New England, the more I became concerned about the environment in which my husband and I were raising our children. What good would it be to contribute to our knowledge of human health if we were destined to live in an unhealthy environment?

Many of my friends who had worked in the corporate world had experienced mid-career changes. I asked myself, “Why couldn’t a biochemist take up the challenge of working on a project that might also help to preserve the environment?” As a summer resident of Wellfleet, a small Cape Cod town, I was interested in preserving the nature of the Outer Cape, an endeavor that was also important to the late President John F. Kennedy when he created the Cape Cod National Seashore. As a part-time Wellfleetian, I shared my summers with a number of creatures that are part of the fragile landscape, and I endeavored to learn more about them. This task was made more urgent after my introduction to *Malaaclemys terrapin*, the northern diamondback terrapin.

I had become familiar with our local population of Eastern box turtles, painted turtles, and snapping turtles. Box turtles can be found in their characteristic cavelike forms in the dense pine-needle underbrush; painted and snapping turtles inhabit freshwater ponds and creeks and are plentiful in Eel Creek, on a border of our property. All three species nested in our sandy driveway and under our clothesline. We sometimes found a straggler trapped in one of our window wells. My children spent their summers observing our reptilian neighbors, and occasionally we would come upon hatchlings that had overwintered in their nests. We were even fortunate to get a glimpse of sea turtles during fishing expeditions in Wellfleet Harbor and Cape Cod Bay. But it wasn’t until I attended a field research course with my oldest daughter at the Wellfleet Bay Wildlife Sanctuary (WBWS), a division of the Massachusetts Audubon Society, that I became aware that I was living in the midst of yet another type of turtle, the diamondback terrapin. After one summer of participating in diamondback terrapin research and conservation efforts, I was hooked! This was a turtle that could use more friends. And so, my mid-career change had begun.

I easily recruited undergraduate student interns from Wheaton College

who were excited about the prospect of summer field studies on Cape Cod. We partnered with Wellfleet Bay Wildlife Sanctuary and contributed to its long-term population study of diamondback terrapins in Wellfleet Harbor. The Sanctuary helped to provide housing for interns during the busy summer tourist season. When housing was impossible to find, interns bunked at our house and sometimes slept in tents in our yard. We kayaked, forded creeks, got stuck on mudflats and in ooze that sucked the boots from our feet, and walked many miles of marsh and dirt roads.

We captured terrapins from creeks and coves, followed nesting females and protected their freshly laid eggs, took blood samples for genetic analysis, and participated in WBWS education and outreach activities. Our trips back to Wellfleet in September and October were rewarded by the sight of baby turtles. We came full circle to witness the entire annual activity cycle of Wellfleet terrapins. While they hibernated, we went back to the laboratory and isolated DNA from blood samples and performed genetic analyses.

The finding of terrapin eggs one late October after a fierce nor'easter provided additional opportunities for study. Wind and waves had eroded the home of a future generation of terrapins and exposed the eggs to the elements and to predators. Since it was so late in the season, the viability of the embryos was questionable. The eggs were placed in a bucket of moist sand, and within days, tiny terrapins emerged. Normally, the hatchlings would be released, but these neonates had already survived one close brush with death, and the winter weather was upon us. Freezing temperatures could easily cause their demise. With proper permits from the Massachusetts Department of Fisheries and Wildlife in hand, we brought the hatchlings to the laboratory at Wheaton. Thanks to Dr. Peter Augur, who was also raising terrapins in laboratories at Barnstable High School and Boston College, we received an accelerated lesson on hatchling husbandry. We successfully stewarded the hatchlings through the winter with a warm home, plenty of food, and devoted undergraduate caretakers. This headstarting experience gave us the chance to observe hatchling growth and behaviors and to track the young terrapins when they were released into their natal marshes during the following spring.

As a growing number of interns and volunteers requested background reading information for their terrapin fieldwork and as I endeavored to learn more about these shy turtles, I spent quite a bit of time digging for information. I realized that much of the recorded natural history of diamondback terrapins, including historic records and more recent scientific studies, was scattered in scientific journals representing a variety of fields of study and in various reports written for state, local, and private, nonprofit organizations and agencies. I recognized how useful it would be for naturalists, researchers,

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and environmentalists to have a summary of the information collected in one volume. I decided that this book would be my contribution to the conservation of this elusive species and its rapidly eroding habitat. In addition to describing the natural history and ecology of the diamondback terrapin, I endeavored to trace the intersection of local terrapin populations with the history of the settlement and development of coastal areas.

The tale of the diamondback terrapin cannot be complete without an account of exploitation of this turtle by humans and the challenges to its recovery presented by new and continuing pressures. Conservation assessments point to the current need to develop a proactive stance to protect this species from a declining population trajectory. Perhaps it is a tale with a potential for a happy ending if current threats to the species can be mitigated and new threats can be prevented.