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THE EGGS (TURTLE) AND I

by James A. Peters

"Of Sea-Turtles there are several forts, but we always account the green Turtle to be the Best Meat. They have several Islands and fandy Bays, where they go to lay their Eggs: Which they do in different places at different times . . . In the Bay of Motines on the coast of Mexico, we took them ashore laying their Eggs. The 22nd (November, 1704) we anchored in the Bay of Martaba, under the mountains of Motines. Here we watered our Ship, and found in a small River a great many large green Turtles, the best I ever tasted."

Thus wrote William Funnell in 1707, as part of his fascinating account of one of the voyages for legalized piracy made on the Spanish Main during the late seventeenth and early eighteenth centuries, when he was mate to Captain Dampier on a British privateer from 1703 to 1706. His abbreviated discussion of the egg laying of this particular kind of turtle, known scientifically as *Chelonia mydas agassizii*, is still the only detailed information available, as far as the Pacific Coast of the Americas is concerned. Professor Archie Carr of the University of Florida found it necessary to quote an author writing about turtles found in the Torres Strait in order to give information about this animal in his turtle book published in 1952!

The bay called Martaba by Funnell is now known as Maruata, and is located on the Pacific coast of Michoacan, a state in southwestern Mexico. Although well known to pirates and privateers, who found the steep, beaches and rocky shores much to

their liking as hiding places, the area is forgotten by the world of today. It still looks much as it did to the earliest British and Spanish seamen, with the ruggedness of the mountains on one side and the roughness of the sea on the other preventing the invasion of civilizing influences. In the summer of 1950 the University of Texas started a complete survey of this remote area, studying it in a scientific method. The party sent out included anthropologists, geologists, geographers, biologists, and ethnologists. I was along as one of the biologists, with a special interest in the reptiles and amphibians. The region was chosen because of its isolation and comparative primitiveness. Macadam highways and railroad networks had bypassed it, and the airplane, that covered wagon of the twentieth century, had only begun to invade it. A few mining engineers found their way there, and the Aftosa Commission had sent their hoof and mouth disease specialists in there as into the rest of Mexico. Biological exploration had been confined to a half dozen men since Funnell visited these shores. My fellow biologists (two ornithologists) and I entered the area with high spirits, hoping to see much of biological interest, and we were not disappointed.

We found more than our share of the species we had expected to live there, quite a few of those we had hoped to find, and several that we had not anticipated at all. We saw rare and little-known species such as *Diaglena reticulata*, a weird, bony headed frog with a row of sharp spines around its lip, so uncommon that it does not even possess a local name. It is a not too distant relative of the tree frogs and spring

peepers we know in North America, and is found only on the Pacific coast of Mexico. But one of the most fascinating and what might have been the most embarrassing (for me!) experiences was with the giant sea turtles that still abounded on the Mexican Pacific, practically undisturbed since Dampier replenished his provisions with their flesh.

In August, after spending eight days in the higher portion of the coastal Sierra, in the little city of Coalcoman, we hired a string of mules and rode off to the seashore. Although it is only forty miles as the crow flies from Coalcoman to the coast, our mules lacked the wings of a bird (or anything else at all soft or feathery!). It took us almost three days to reach salt water. Once there, we spent a delightful, cool night at the light house on the Point of San Telmo, first watching the coastal steamers pass in revue. Then we spent the night sleeping on our stomachs, as befits those who have been three days on a mule. Early the next morning we started off along the coast, which runs a little east of southeast in that part of Mexico. The sandy beach is regularly interrupted in this area by long, fingerlike projections from the inland mountains. These fingers run down at right angles to the beach and coast and often extend well into the ocean past the beaches, forming the "Points." Riding down the beach is made rough by these limestone ridges, for they cannot be bypassed on the water side. One must climb steep, rock-strewn paths that rise as much as four or five hundred feet above sea level and then drop precipitously down the other side to the sandy beach. A short half-mile's ride brings one up against another stringer. There are no protected bays or coves along this coast; on the contrary, the sea beats remorselessly and eternally on the high sandy beaches. The aftosa commission for hoof and mouth disease found this out when it tried to land supplies on Funnell's beach at Maruata. Apparently their seamanship was not on a par with that of Dampier and Funnell, for only a few pieces of blue-painted board remained of the wreckage of their LST when we arrived at Maruata, the rest having long since gone as salvage into the homes of the coastal Indians. We pitched our camp on this piratical shore, and spent two nights there.

The situation of isolated beaches, protected on two sides by the mountain stringers, on the third by a heavy surf, and on the fourth by sparsely inhabited lowlands followed by a rugged mountain mass, is obviously considered a gift from Heaven by the green turtles. They flock ashore by the hundreds to lay their eggs in the sand of this natural nursery. The evidences of

turtle activity were everywhere on this hot August day. A broad, shallow groove in the sand, paralleled by a row of marks like those left by the treads of a tank, marked the place where a female had heaved herself from the sea. Her heavy shell had dragged through the sand, with her flippers working hard and fast to gain a push-hold in the beach. In a half mile stretch between two stringers I counted 472 such tracks, which would indicate that almost 250 individual turtles had climbed that section of beach with egg-laying their end and aim. Many turtles return to the ocean via the track they made on the way up, so I'm sure my estimate is not high.

With the arrival of twilight at Maruata, the turtles began to appear off shore, just as they had 250 years before, when Funnell stood and waited for the best-tasting turtles he had ever eaten. They craned their necks to look at the beach, and sculled about in the heavy surf. The first turtle was spotted at 6:30 P.M., and before long had been joined by three or four more. All stayed out beyond the first row of breakers. Finally, after the night had become pitch black, the first of them approached the shore. She was finally beached at ten p.m., after a tremendous buffeting about by the heavy surf. Several times what appeared to be a successful foothold was broken by a large wave, and the turtle was washed back into the sea.

After ranging up and down the beach, watching landing tactics, I located a large female in the low thorny scrub that grows behind the crest of the beach. We were about thirty yards from shoreline. She was throwing large quantities of sand about, with both fore and aft flippers. By 10:15 she had dug a hole much larger than her upper shell, and deep enough that she was not visible above its sandy edge. The hole was about six feet in diameter. After completing the hole, she began a series of exploratory movements with her tail, pressing it deeply into the sand. The hind feet moved rhythmically, with one or the other always covering the tail. Every few minutes she crawled forward a few inches, and re-buried her tail by jamming it straight down into the sand. By 10:22 she had crawled so far forward her head was at the front edge of the hole, and at 10:23 she began to dig.

All the digging was done with the hind flippers, in a mechanical and rhythmic way. Each foot reaches into the hole, scoops up a bit of sand by curling the toe inward, and is raised and braced at the lip of the hole. The sand on the foot is dropped, the foot is placed behind it, and the other foot scoops. As soon as the other foot is braced, the first foot is kicked forward with a vio-

lent motion, and the little pile of sand showers over the shell. This cycle takes from five to eight seconds, and is usually repeated six to eight times. Then she stops to rest. By 10:33 the hole was so deep that her toenails just scraped the bottom of it when her leg was fully extended. Seven minutes later she stopped digging, after enlarging the bottom of the hole by excavating the sides. This created a chamber with a narrower tube leading into it. She dangled her tail in the tube, and immediately the first egg was dropped, at 10:43. Now the eggs popped out like ping-pong balls from a factory machine, one every nine or ten seconds. They dropped into the hole and rolled about until every nook and cranny was filled. The last couple of eggs, which arrived at 11:03 P. M., were very small, and the final one had a spiral twist in its shell. The hind flippers immediately went into action, neatly filling the neck of the chamber and smoothing it down. The job was completed in six minutes, and at 11:10 the fore feet began throwing sand over her shell and the larger hole she had dug to lie in.

This was the beginning of the hardest job of the evening, that of camouflaging the spot. While there are few predators, with the exception of man, capable of destroying an adult sea turtle, there is a multitude of animals that knows how tasty a turtle egg can be. By far the greatest destruction of turtle life takes place before the eggs hatch. So Mrs. Chelonia now began to cast mountains of sand back with all four feet. Soon the original hole, which had contained the entire turtle, was filled to the brim with sand. The turtle herself was still in an equally deep and large hole, however, created by scooping out the sand she had thrown back. She continued these earthworm tactics for almost fifteen feet, keeping the hole about two and a half feet deep all the way, until 00:37 A.M., that is an hour and twenty-seven minutes. The original nest site was covered with sand and littered with sticks and other debris, and was completely lost to sight. She then dragged herself back to the sea, arriving at the water line at 01:10. I imagined I heard a huge sigh of relief as she swam straight way out to sea.

My fellow witness to the egg laying and I had long since lost count of the total number of eggs. I needed measurements on the dimensions of the nest as well as the size of the clutch, so we now decided to dig it up and check it. Although we had no tools for digging, we were sufficiently confident that we could find the nest with little trouble, so we went back and began to dig with our hands. We had both triangulated the hole, referring to nearby shrubs, so we

expected to turn up the eggs in a jiffy. Half an hour later we had excavated a hole large enough to stand in, with a wall of sand around us that constantly slipped back into the hole. We saw no sign of the eggs. Obviously, the old lady of the sea had done a little more clever job of hiding the nest than we had supposed. We called a halt, straightened our backs with a creak, and decided to return to the camp for digging tools. The only useful things in sight were our tin plates. We resigned ourselves to the effort of moving sand with such a shovel, and returned to the nest. At first, about 2:00 A.M., the hole was large enough for only one of us, but it rapidly took on much more capacious dimensions. Soon it was necessary to fill the plates full and throw the sand high over the towering mound above our heads to keep it from sliding back in on us. We had now dug out as large a hole as the turtle had started with, and it was four or five feet deep. We couldn't judge the actual depth, since the mound around the edge was too high.

At three o'clock my partner straightened up with a grunt and a groan, and stood massaging the small of his back. It was too dark for me to see the pondering look in his eye, but his next remark proved it was there. He said, "Y'know, I don't really care how many eggs that confounded turtle laid, at all. I'm going to bed." I commiserated with him for a moment, gave him a leg up out of the hole, and started him on his way.

Although the mound was too high to watch him go, I listened to him crash through the brush, and allowed myself a few seconds of pure, green-eyed jealousy for him and his comfortable bedroll. I wanted little more than to collapse and sleep right then myself. I couldn't, however, because I am cursed with a too vivid imagination. The scientific urge to get as complete and accurate a set of data as possible played a part in my remaining to dig, of course. But an even stronger push came from the awareness that it would be extremely embarrassing to relate the story of the egg laying to any of my colleagues. I could picture the entire scene, as they listened to my detailed account of the passage of the turtle, the selection of a nesting site, the procedure of excavation, the hiding of the nest, and the return to the ocean. It was a pretty picture, but in my mind's eye someone invariably asked me, "Yes, but how many eggs did she lay?" And I could feel the shame of saying, "Well, I don't really know for sure." "Why not?" "Well, you see, I just couldn't find the nest again!" This was invariably followed in my imagination by a short but appalling silence, while they looked at one

another, and one or two poorly suppressed snickers sneaked out.

No, obviously, I had to find the nest. I dug with renewed vigor, and the hole became large enough to accommodate the Cardiff Giant. By four o'clock I had dug as much as I could without getting clear out of the hole and moving the mound on the edges back to keep it from sliding in on me. This called for a more efficient earth mover than a pie plate, so I scrambled out of the hole to catch forty winks, and then trap one of the other members of the party into helping complete the job. I crawled into my bedroll with sad misgivings that a skunk or some other moonlight marauder would beat me to the spoils—but the flesh was too weak to do anything about it.

I slept until the camp began to stir for breakfast, shortly before seven. It took only a minute to acquaint one of the geographers with the situation. The bait of fresh eggs for breakfast was enough to draw him to the scene of my "scientific" studies of the night before. Although the hole didn't look nearly as large in broad daylight as I had supposed it to be, it was still big enough to draw a few snide remarks about the expertness of our careful observations. The daylight showed up my triangulation points a little more clearly, so I decided to dig more to the south. After putting the geographer to work moving the sand back on the south lip of the hole, I jumped in and started scraping away on the south wall. Sure enough, a half dozen scrapes disclosed the first egg, in a nest that was a good three feet higher than the lowest level of my hole. From then on in it was easy. We counted the eggs as we removed them, with a final total of 125 full-sized ones, two smaller ones, and one with a spiral end. The nest proper was about ten and a half inches deep, and about a foot square. It had been completely filled, so she had deposited about a cubic foot of eggs. The top of the nest was fourteen

inches from the surface, which indicates that she dug to a depth of about twenty-six inches. The eggs themselves were from 1 $\frac{1}{2}$ to 1 $\frac{3}{4}$ inches in diameter.

Having successfully completed my investigations, and prevented the embarrassment conjured up in my imagination, I felt the need of some gustatory researches. None of my companions had ever eaten turtle eggs before, nor had I, so we experimented with all the ways of preparing eggs that were practical in the camp. From this vast experience (I ate three dozen personally), I can say that boiling and poaching are not only unsatisfactory, they are impossible. The white of turtle's eggs is sufficiently different in its composition from that of hen's eggs that it will not congeal at all when boiled. I kept water boiling on one batch for three hours just to see if it would ever harden, but it never did. Our guide, whose home was not far from the beach, accepted our offer of some eggs with a happy smile, and demonstrated a method of consumption that, while efficient, was not particularly attractive to me. The shell of a turtle's egg is not hard, but is quite rubbery and soft, as is necessary for them to be dropped into the nest. The guide would pinch up one edge of the egg, bite off this edge, and suck out the contents. He went through a dozen eggs in considerably less time than it takes to write about it, and with much more gusto and relish.

The eggs, prepared properly, can be quite tasty, however. I found that frying did not work too well, since again it was hard to get the white to solidify. If the eggs are broken into a pan, beaten into a lather to mix the yolk and white, some diced Vienna sausage or bacon is added, and the whole then scrambled in a well greased frying pan, the result is quite edible. Salt them while they fry, and serve piping hot. Although quite mealy in consistency, they taste not unlike hen's eggs. I think you'll like 'em!