

TRAVELER'S NOTEBOOK

Galapagos: Following in Darwin's footsteps

BY HOLMES ROLSTON III
For the Coloradoan

"We call those Darwin's toilets," my guide, Boli, said, pointing to a couple of rounded vent holes in the black lava rock.

Sea water was sloshing up in them, in and out, kept flushing by the incoming tidal waves through an underground passageway. I was on the island of Santiago, in the Galapagos, following in the footsteps of Charles Darwin.

Trying to pitch his tent on this island in 1835, Darwin complained that there were too many huge "most disgusting, clumsy lizards." During his voyage on the *Beagle*, Darwin stayed here over a week, keeping busy during his longest stay on any island.

A quarter mile out to sea, my comfortable 26-passenger ship-hotel, a converted fishing boat, now appropriately named the *M.V. Evolution*, framed the "toilets" on a scenic coastline.

Wildlife galore

We landed on the island using a panga, a pontoon dingy, to get ashore. I had Darwin's experience. This was a wet landing, where you jump off the panga into knee-deep surf.

Gaining the shore, we faced hundreds of these marine iguanas, each about three feet long. They were densely packed, even lying on top of each other, sunning themselves in an acre-sized opening. Avoiding both iguanas and jagged lava, we had to figure a way through them.

As I did, I was trying to convince myself that Darwin was wrong: Iguanas are neither clumsy nor disgusting. These marine iguanas are the only lizard on Earth that can feed underwater in salt water, swimming down six feet to feed on marine algae.

The males in breeding color have an iridescent reddish-blue hue glistening on their black skin. I watched one bobbing its head in territorial display. Not "pretty," but then again, not "disgusting."

Galapagos wildlife is anomalous, strikingly different, surprising, tame and pretty much "in your face." We also found it difficult to land on Espanola Island,



Courtesy of Holmes Rolston III

Lizards pile up on the shores of the Galapagos Islands.



Courtesy of Holmes Rolston III

A frigate bird puts on a courting display on Galapagos Island.

the oldest and southernmost, because of 200 sea lions, sprawled all over the beach. Half were nursing small pups. On shore, we had to take care not to step on nesting blue-footed boobies, with an egg or a chick underneath.

On Bartolome Island, I confronted penguins, from a unique species, standing in front of a unique species of cactus. Penguins and cactus? Six feet away at surf's edge was a lava gull, endemic to the Galapagos, a threatened species.

Tortoise treasure trove

From the panga, in a red mangrove lagoon I watched mating sea turtles not far away. The female mates with many males, carrying a gallon of sperm for a year. When she lays eggs, up to 80 the size of a ping pong ball, the sex of the hatchling is determined by the temperature of the sand.

I was not surprised that the weird wildlife had set to thinking the young Darwin — then only 23 years old. The Galapagos Islands have, so to speak, the

wildest of the wildlife, owing the oddities to their isolation and the rapid adaptive evolution of animals and birds there.

"Hence, both in space and time," Darwin wrote in his journal, "we seem to be brought somewhat nearer to that great fact — that mystery of mysteries — the first appearance of new beings on this earth." Over a century later, standing on Darwin's shoulders, Edward O. Wilson exclaimed that the islands "shout the truth

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of evolution."

On Santa Cruz Island, in the highland interior, we found the giant tortoises, largest on Earth. "That one is really old," Boli said of an especially large one, its humped shell a third of my own height. "Maybe the biggest I have ever seen. You can tell its age from the size, also the long tail. See the old cracks in the shell."

I did some figuring. Darwin was here 173 years ago. Tortoises live for centuries. Captain Cook gave one to the Queen of Tonga in the 1770s, and it died in 1977, 196 years later. But nobody knows how old it was in the 1770s when Cook captured it.

I looked again at the boulder-sized tortoise, its head drawn back into its shell. I could see its beady eyes. Maybe this one was alive when Darwin was here. Darwin turned one of the largest upside down to see if it could get back on its feet by itself. If I did that now, I would be arrested. It did — and maybe lived to hatch this one. We fed one a guava fruit, which brought its head out of the shell.

"Galapagos" in Spanish refers to a saddle, from the saddle-shaped front of the shell on some tortoises. Tortoises here have no competition with mammals. Land mammals never made it here. This is more of a dinosaur world. The tortoises can live so long, growing bigger, and the biggest naturally selected, because nothing eats them or their food.

Or at least nothing ate them until the Europeans came. Unlike Hawaii, there were no humans here either, until de Berlanga discovered the islands in 1535. Sailors, often pirates and buccaneers, afterward took hundreds of thousands of tortoises on board. With slow metabolism, they could live without food or water for months and then provide fresh meat.

Deep in Darwin

Darwin was on four of the islands. I was on three of his four, and on four more. The ship travelled over 500 miles in 10 days. I visited Fernandina, youngest of the islands.

Picking a tricky route over rough volcanic rocks, slick with algae, in a wet rain, I was thinking it a pity that Darwin did not get here. This is the largest pristine island on Earth — no human habitation and no introduced plants or animals.

Darwin would have objected to the still more thousands of "disgusting" marine iguanas, but would have wondered why the flightless cormorants, with their unusable "tatty" wings, are found only in the Galapagos. I was even lucky enough to see a small, thin black snake, the Fernandez snake, found only here.

Darwin upset science; he upset religion. Following his footsteps, I wondered about relating the two. I found a metaphor. The Galapagos Islands are on the equator. There the two hemispheres meet with surface currents opposite, owing to the Coriolis force.

Subsurface, this opposing flow produces a rich upwelling of nutrients for the flourishing of life, exacerbated in El Nino years. When science and religion meet here, they clash at the surface, but maybe with upwelling from the depths they become complements, helping us celebrate and conserve this wonderland Earth.

Darwin took decades to convince himself about natural selection, not publishing his *Origin of Species* until 1859. He also came increasingly to doubt his Christian faith. David Lack converted to Christianity in the same year in which his classical book on Darwin's finches was published.

Galapagos was declared a national park in 1959 on the 100th anniversary of the *Origin of Species*. On the island of San Cristobal, in the small port, I stood at a statue of Darwin, erected in 1935 to commemorate the 100th anniversary of his landing. Darwin's arrival and mine were in the same waters.

I continued thinking, as did he. Strangely, Darwin's genius at recognizing these most remote, uninhabited islands as an evolutionary hotspot led to a revolution in the human view of who we are, where we are and even of life itself.