

THE
GALÁPAGOS

A Natural History

HENRY NICHOLLS

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THE GALÁPAGOS ISLANDS



Darwin

Wolf

P A C I F I C

O C E A N

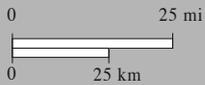
Galápagos National Park

0° Equator

0°

1°S

1°S



92°W

91°W

90°W



Prologue

On the morning of 7 December 1941, the Japanese bombed the United States naval base at Pearl Harbor in Hawaii, an event that brought the full force of the United States into World War II. It was also an event that played a major role in opening up the isolated Galápagos Islands to the rest of the world.

The Galápagos archipelago lies in the eastern Pacific Ocean, straddling the equator some 925 km off the west coast of South America. For the United States, this was the perfect location to establish a military base from which to defend the Panama Canal—a strategic lifeline—against a German or Japanese offensive. Reluctantly, Ecuador agreed to give the United States access to the Galápagos Islands for ‘the establishment of such military bases as may be necessary’.

The Galápagos is made up of thirteen islands of notable size, ranging from the circular island of Genovesa (at just under 5 km in diameter) to the seahorse-shaped Isabela (more than 130 km from top to bottom). The other rocks, outcrops and islets in the archipelago—of which there are more than one hundred—would have been no place to build a military base. The US Navy Department’s Office of Naval Intelligence was quick to produce a report on the Galápagos, identifying sources of freshwater (springs, lakes, streams, wells, pools), trails and roads, details of human settlements and their inhabitants, possible anchorage sites for vessels, seaplanes and submarines, and the most suitable spots to situate an airfield. The classified report identified two possible sites for a landing strip on Baltra, one of the smaller islands located in the centre of the archipelago, adding that ‘both require considerable clearing’.

Prologue

By April 1942, crushed lava had been compacted and sealed with hot asphalt and the first airstrip was ready to receive its first plane. The US forces began to arrive a month later and the runway remained in continual use until Ecuador ushered the North Americans out of their territory after the war. Still, it's an important moment in the strange history of these islands, one that paved the way—quite literally—for the arrival of commercial flights to the Galápagos (although visitors flying into Baltra today have a smoother landing on a second runway constructed on the other side of the island).

Before the United States gave up its stronghold, however, Franklin D. Roosevelt expressed his vision for the future of the archipelago. From a memorandum written to Secretary of State Cordell Hull in February 1944, it's clear that the Galápagos mattered to the president. 'These Islands represent the oldest form of animal life and should, therefore, be preserved for all time as a kind of international park,' he wrote. 'I have been at this for six or seven years and I would die happy if the State Department could accomplish something on it!' he urged a little later.



FIGURE 1. *Franklin D. Roosevelt*. The US president looks chuffed with his catch off Santiago in July 1938. *US Naval Historical Center*.

Unfortunately for Roosevelt, who died a year later, just before the end of hostilities, he never got to realise this dream. In time, though, Ecuador embraced the idea of protecting these islands and today the Galápagos archipelago matters to us all. It matters to those who live there (the plants, the animals, the humans whose lives depend on it). It matters to Ecuador (whose tourism industry is based on it). It matters to hundreds of thousands of non-Ecuadorians (who have had the good fortune to visit). It matters to the rest of the world as a model system (for what it might yet teach us).

Let me expand.

The landscape is both hostile and beautiful; the wildlife is sparse yet striking. Scientists have documented just over 4,000 species native to the Galápagos, around 40 percent of them endemic, found here and only here. It's not just this 40 percent, these 1,600 species, that owe their existence to the Galápagos. There are now around 30,000 people living in this far-flung constellation of islands whose livelihoods depend—either directly or indirectly—on the integrity of the ecosystem and the tourism-based economy it fuels.

More widely, Ecuador cares deeply about this otherworldly territory it acquired in 1832. For its small size (occupying less than 2 percent of South America), Ecuador has an impressive range of habitats, making it one of the most biodiverse countries in the world (thought, for instance, to be home to almost half of all the bird species on the continent). Yet when it comes to international tourism, these other offerings just can't compete with the pulling power of the Galápagos. For many travellers, it's the sole reason for paying Ecuador a visit at all.

For those who have been lucky enough to visit, a trip to the Galápagos is likely to be up there amongst the most memorable experiences of their lifetime. The animals show no prejudice, no fear, but accept humans for what they are, just another species attempting to live in this inhospitable outpost. Experiencing this equanimity with nature is so moving that it has the power to alter the course of human lives, to transform the way we think about our place in the world and the way we behave towards its other inhabitants, human and non-human alike. Since tourism to the islands began less than fifty years ago,

over 1.5 million people have had the chance to see these ‘Enchanted Islands’. In 2003, I became one of them, a visit that inspired my first book in which I used the tale of the Galápagos’ most famous resident (a solitary giant tortoise called Lonesome George) to explore the challenges facing conservationists in the archipelago and beyond. I have been back again, but my main contact with the islands has been from afar: I have continued to write about the Galápagos; I became an ambassador for the Galápagos Conservation Trust and the editor of its magazine, *Galápagos Matters*. Hardly a day goes by when I do not think about these wonderful islands.

If you haven’t been fortunate enough to visit, the Galápagos still matters. There are several reasons. By virtue of the ecological erosion that humans have caused elsewhere, the Galápagos now stands out. Of those 4,000 native species, only 17 are known to have gone extinct. This makes the Galápagos the most pristine archipelago to be found anywhere in the tropics. It is so remote, so relatively untouched, that the act of wading ashore to one of its islands can feel like you are the first to do so. In an increasingly disturbed world, it will be of increasing value that we still have places like the Galápagos that offer this kind of experience. There just aren’t many of these left.

There is another, farther-reaching reason why we should value the Galápagos, even if only from a distance. Its relatively simple and pristine nature makes it a brilliant place to get to grips with the relationship between different species, uncomplicated by the heavy hand of humankind. In particular, the isolation of the Galápagos from the South American continent and the proximity of the islands to one another make it a perfect place to detect the origin of new species. The Galápagos remains one of the best places to study the process of evolution in the field, how natural selection can result in biological novelty.

The contribution the Galápagos made to the genesis of Charles Darwin’s ideas on evolution is another reason to pay these islands special attention. The naturalists he inspired, a succession of Darwin anniversaries and our eagerness for a simple story mean that the Galápagos has become intertwined with Darwinian evolution. Learning about the Galápagos then is a great way to learn about what is

arguably the most influential idea in the history of human thought. The Galápagos finches have been flitting around the schoolrooms of the world for decades, avian evangelists for the power of evolution by natural selection.

Just as the Galápagos became a model for Darwin, so it is a model for anyone who cares about our future. In spite of its relatively pristine state, humans have had a profound impact on these islands, eating its tortoises in the hundreds of thousands, hacking down the highland habitats to make way for farms and introducing non-native species with devastating consequences. On the plus side, there have been plenty of achievements to celebrate over the last century, notably the designation of 97 percent of its landmass as national park in 1959, the creation of the Galápagos Marine Reserve in 1998, and some of the world's most ambitious attempts at ecological restoration.

In recent years, there has been increasing talk of the Galápagos playing a kind of inspirational, transformative role, serving as a perfect testing ground for what is known as sustainable development. As yet, there is only a handful of cases that suggest humans are capable of development without destruction, and these are relatively small-scale. The Galápagos offers a crucial test of a truly important idea. In an archipelago stamped with UNESCO's World Heritage seal of approval, blessed with the Darwin brand, bolstered by solid international support and fed by a steady stream of tourist dollars, is it really beyond the wit of humankind to meet the wants of the current generation without compromising the needs of the next? The Galápagos really matters because what happens in these islands is an honest, unfalsifiable look at the future that faces our children, our grandchildren and our species.

* * *

I have structured my account of the Galápagos around the natural history for which the islands are famous. So we begin with volcanoes, for without them there would be no islands at all. The bleak, lava-strewn world is certainly impressive. The bishop of Panama, one of the first people to set foot in the Galápagos in 1535, felt as though God had showered stones upon the landscape. What soil there is, he wrote, 'is like