

# A brief history of the Indian Ocean giant tortoises

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This is a BRIEF history of the Indian Ocean Giant Tortoises in the sense that it covers a mere 1200 years in the history of a species that had existed for 14 million years. A species that had its origin on the island of Madagascar and had over time, and with the changes in sea-level and sea currents, found itself the sole and dominant herbivore on many of the islands in this once uncharted ocean (Fig. 1). Madagascar had other herbivorous species, but on the islands to the east and north the ecosystems had evolved in harmony with the giant tortoises. For the most part the tortoises lived without the danger of predators except on Madagascar, Aldabra and the Seychelles where crocodiles were present and may have preyed on the smaller juvenile tortoises. For millions of years the giant tortoises were an important, dominant species that contributed to the natural evolution of these beautiful uninhabited islands

Around 1,200 years ago a new aggressive invasive predator arrived on the shores of Madagascar. In the great tradition of those adventurous Polynesians who, in their outrigger canoes, had colonised the remote Pacific islands, a group of Malayonesian people made landfall on Madagascar after an epic 6,400 kilometre voyage. They found themselves on an island teeming with wildlife: the huge ostrich-like elephant bird, chameleons, lemurs, pygmy hippos and, of course, several species of tortoise, including giant tortoises.

By the time the first European explorers arrived in the Indian Ocean in 1502, the elephant bird and the giant tortoises were extinct. All that remained were sub-fossil bones from various sites in southern Madagascar.

The beautiful detailed navigation charts that were produced as a result of Vasco da Gama's 1502 expedition opened the way for trade with the East Indies. In 1598 a small fleet of Dutch East India ships made landfall on the uninhabited island of Mauritius. Theirs was the first report of abundant gigantic tortoises and the very tasty Dodo birds.

The island became an important provisioning station for the Dutch fleets and several unsuccessful attempts were made to establish a permanent settlement there. Provisioning meant not only exploiting the giant tortoises and Dodo, but also the introduction of a food competitor in the form of feral goats and a predator of tortoise hatchlings and eggs – feral pigs. We have some sense of the scale of the increasing exploitation of the giant tortoises when we read in a report from one of the Dutch governors, in 1670, that



Fig. 1. A view of the once uninhabited Indian Ocean islands.

tortoises were being killed not for their flesh, but only for their tasty liver and their fat. It took, he wrote, between 400 and 500 tortoises to obtain half a barrel of fat.

When the Dutch abandoned the island in 1710 there were still giant tortoises but, of the Dodo, all that remained were a few sketches, some paintings, one skeleton, some partial skeletons and a lot of bones.

In 1715, the ascending power in the region, the French, took possession of Mauritius. They established a permanent settlement much as they had done on Reunion Island. The easily accessible agricultural land and the remaining herds of giant tortoise augured well for this new provisioning station for the French East India Company. Within five years the tortoises had disappeared from the main island, but were said to be relatively common on some of the satellite islands, providing some support to the economy of the islands through sales to passing ships. This trade continued until 1735 when the tortoise population on these smaller islands ceased to exist – the Mauritian giant tortoises were extinct. The very last specimens were seen on Round Island but they too disappeared.

The same over-exploitation and extinction of giant tortoises had taken place on the other large Mascarene island, Reunion. The first visitors in 1612

reported that there was an infinite number of giant tortoises on the island. By the time Reunion was settled in 1665 tortoises were still abundant but thirty years later they were in obvious decline with introduced feral pigs being blamed for digging up the nests and eating the eggs and hatchlings. This may have been part of the problem but, as usual, the trade in live tortoises was a thriving business. A fleet of ships called in 1671 and are on record as having collected 8,400 tortoises in a six week stay. One of the residents complained that in 1700 thousands of tortoises were being slaughtered to feed the pigs and there is evidence of the mass slaughter of tortoises for their liver, tripe and eggs by the crew of three ships who spent three months in the forest prospecting for timber to repair their ships. The last record of Reunion giant tortoises was around 1764.... then extinction.

As the tortoise population on Mauritius began to drift towards extinction and the Reunion tortoises were in obvious decline, the tortoise trade turned to what was assumed to be the last abundant tortoise population on the island of Rodrigues. This island had first been visited in 1601 but remained uninhabited until in 1691 ten French Huguenot gentlemen were given permission to establish a small commune on the island – their wives were to follow once the men were settled. The reality of island life and the utter isolation proved not to be the paradise they had dreamt of and they made their escape after only two years. One of the colonists, Francois Leguat, wrote an account of their adventure in which he described in great detail a slender, less comical-looking Dodo-like bird that became known as the Solitaire. He thought, and this was ultimately confirmed, that there were three different types of giant tortoise on the island.

An interesting observation that he made and which all of us would have been intrigued to share, was the occasional gathering of tortoises in the sheltered valleys – possibly, I would speculate, during the cyclone season. Gatherings of which he said, 'We saw two or three thousand tortoises in a flock, so many that one may go more than one hundred paces on their backs without setting foot on the ground'.

The departure of the unhappy band of would-be colonists left Rodrigues open to passing ships eager to collect both tortoises and the unwary Solitaire birds.

In 1735, at the time of the demise of tortoises on Mauritius and its islands, La Bourdonnais, the governor of Reunion, established the tortoise-collecting camp on Rodrigues. He tried to impose a limit of 400 tortoises per vessel on their return journey to France. But shipments to Mauritius to support the tortoise trade often carried as many as 3,500 tortoises.

In 1763, raiding British warships took some 3,000 tortoises from the holding pens. The Solitaire slipped unnoticed into extinction around 1770, followed by the Rodrigues giant tortoise sometime between 1786 and 1802.

With the gradual disappearance of the giant tortoise from the Mascarene islands, the focus shifted to the islands to the north and west – Seychelles and Aldabra – where French expeditions had recorded abundant herds of giant tortoises. The central Seychelles – a scattering of lush granite islands – had been settled in 1770. Initially the authorities permitted the traders and passing ships to take unlimited cargoes of live tortoises but when some of the smaller islands had lost all their tortoises, attempts were made to limit the numbers taken.

In 1787, the French governor in Reunion sent a surveyor, de Malavois, to assess the natural resources of the Seychelles islands. He estimated that only 6-8,000 tortoises remained on the islands. He proposed establishing a reserve on Cerf Island, close to the anchorage, where tortoises could be bred for export. Unfortunately this reserve did not materialise and the trade and local consumption continued until in 1800 it was no longer viable and the only surviving giant tortoises were those in captivity.

One last source of wild giant tortoises remained. That was the raised coral atoll of Aldabra, which lies well to the west of the granite islands of Seychelles. Only about 400km from the African coast, its giant tortoises may have been subjected to centuries of exploitation. We know that the transport of slaves from the African coast to the French colonies often included calls at Aldabra, presumably to secure enough food for their onward journeys. The exploitation of the tortoises on the atoll persisted unabated until concern was raised in 1874 by a group of eminent scientists including Darwin, Hooker and Owen. They were concerned that the tortoises on Aldabra were headed along the same road to extinction as the tortoises in the Mascarenes.

It was not until 1891, acting on reports that tortoises were few and difficult to find, that the new lessee of the atoll, James Spurs, was required to preserve the giant tortoises. Spurs estimated that there were about 1,000 tortoises but other visiting scientists thought this a considerable over-estimate. A serious attempt at protecting the tortoises came into force when Lord Walter Rothschild agreed to pay half of the lease of Aldabra, on condition that the tortoises were protected. Subsequent leases of the atoll for the harvesting of mangroves meant that the tortoises were protected on paper but were consumed by the workers and illegally sold, until a government decree in the 1970s put an end to the exploitation of the giant tortoises of the Indian Ocean.

At this point, I would like to take a step back to consider the magnitude of the exploitation of the tortoises on these islands. The Dodo is our symbol for extinction – one bird species on one island. The greater catastrophe, never mentioned, is that eight species of giant tortoises, possibly ten, disappeared at the same time.

It is impossible to be precise about the number of tortoises exterminated but forty years of monitoring the tortoise population on Aldabra may give us a clue. In the harsh environment on this raised coral atoll with its poor soil and scrubby vegetation the maximum tortoise population lies somewhere between 100,000 and 120,000.

The land area of the lush tropical islands of Seychelles and the Mascarene islands is thirty times greater than that of Aldabra. If we assume a very conservative maximum population of say, 50,000 tortoises on Aldabra and apply it to other islands, the total number of tortoises exterminated is in excess of 1,500,000. This rates among the worst human-driven exterminations in our history. It is comparable to the mass extinction of the great flocks of American passenger pigeons where billions of birds were slaughtered to satisfy the human palate.

The remnants of the only surviving wild population narrowly escaped disaster when in 1962 Aldabra was under consideration by the British government as the site for an Anglo-American military base. Aldabra and its fauna and flora were saved from this vastly destructive proposal by the intervention of the Royal Society and the dogged determination of Labour M.P. Tam Dalyell. The subsequent Royal Society scientific expeditions and the construction of a research station ensured the future of Aldabra and its giant tortoises and earned it the privilege of being declared a UNESCO World Heritage Site in 1982, under the management of the Seychelles Islands Foundation and a reprieve for the only surviving species of Indian Ocean giant tortoises.

International interest in tortoise conservation in Galapagos and Seychelles prompted the Seychelles government to embark on an experimental translocation of 250 giant tortoises to the Curieuse National Park in the 1980s. This well-intentioned attempt to establish a second wild population has not proved to be a great success. Lax security along the easily accessible beaches and the close proximity to the second most populated island in Seychelles has resulted in the current tortoise population falling to 150 because of poaching of adults and theft of hatchlings and juveniles.

I mention Curieuse with its easy access and lax security because it was used as a pretext to forbid the reintroduction of tortoises into the wild on the mostly inaccessible and much more secure nature reserve of Silhouette island where our Seychelles Giant Tortoise Conservation Project was based (Figs 2 & 3).

Tortoise conservation in Seychelles has always been a low priority with several thousand tortoises kept in captivity in less than optimal conditions. Even on Curieuse and the four small privately owned islands where the tortoises are living in the wild, they are seen as a tourist attraction rather than a species worthy of study. This even applies to Aldabra where little meaningful research has been done since the Royal Society days.



Fig. 2. Saddle-backed tortoise 'Hector', one of the Seychelles Giant Tortoise Conservation Project tortoises.



Fig. 3. Domed Seychelles giant tortoise 'Eve', adopted by the BCG.

On Silhouette we had taken a different approach – close monitoring of all the captive bred hatchlings, analysis of the food plants and a preparatory vegetation and ecosystem study of the area we had chosen as the initial reintroduction site – all to no avail following our, and the tortoises', eviction from the island. Such a pity as there was so much to learn.

Take, for example, what was happening on Mauritius at that time. An observer on a small off-shore island, where the Mauritius Wildlife Foundation were attempting to restore the natural vegetation, noticed that the lone giant tortoise allowed to wander free was grazing the grass and eating the fallen leaves and fruit of the native plants but avoiding the seedlings of those same plants. The seedlings of many of the endemic and native plants of the islands are heterophylic – that is to say, they produce leaves that are a different shape, colour and texture from the mature trees and do not appeal to the tortoise palate – a survival strategy that has allowed these plants to survive alongside their ecosystem partners – giant tortoises.

Today, Aldabra giant tortoises are being used as ecological replacements for the extinct Mauritian tortoises. This augurs well for the re-wilding of the island and returns three small islands in this once uncharted ocean to their rightful inhabitants – the Indian Ocean giant tortoises.