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From evolutionary time to the early days of the Charles Darwin Foundation in Galápagos

by Roger PERRY [1]

Many years ago, shortly after we began our educational programmes at the station, it was suggested to me that we might adopt the idea of the world having been created by Divine Hand — *but that the Galápagos Islands came afterwards* — thus giving us a level playing field on which to develop our teaching of the understanding of life. It was a happy, if novel, compromise and one that I shall heed by beginning my talk at a point in history that we more or less know about, and then touch on earlier events, conjectural or otherwise, as they fall into place in the unfolding story of our organization.

It is, I suppose, an intriguing and rather noteworthy circumstance that the person credited with the discovery of the Galápagos Islands was a bishop during the course of his diocesan duties. When Tomás de Berlanga, Bishop of Panama, embarked on a voyage to Peru in 1535 he already had under his jurisdiction a territory that embraced all the lands discovered, and yet to be discovered, on the west coast of South America. On the way to the south his ship was becalmed and carried by a strong westward-flowing current out to this group of hitherto unsuspected volcanic islands. It was hardly a propitious landfall. There were no people there; there was precious little water; and the land, as the bishop later wrote to the King of Spain, looked as though God had showered it with stones. Yet among these desolate islands, which have "not the power of raising a little grass, but only...thistles like prickly pears", there lived huge tortoises, or *galápagos*, so big that men could ride on their backs, iguanas like serpents, and birds that appeared so silly that they allowed themselves to be caught in the hand (SLEVIN, 1959). Such were the marvels of the Galápagos as they were perceived in the 16th century. It was an austere yet timeless picture that the bishop portrayed, and one, we may assume, that influenced the Spaniards never to colonize these islands.

British pirates

Instead, for the greater part of the next 300 years, the archipelago became the haunt of adventurers of one nationality or another. It was a favourite refuge of British pirates and privateers when they were raiding the Spanish colonies in the 17th and 18th centuries. They made the first maps and gave the islands their English names; they also helped themselves liberally to the giant tortoises, which provided a welcome source of fresh meat,

There were never enough pirates to do irreparable harm to the teeming wildlife of the archipelago. But around the end of the 18th century a far more serious threat began to emerge when the whaling fleets of Europe and North America moved into the Pacific. There were many hundreds of ships in these combined fleets and as they were often away from home ports for two or three years at a time it was necessary for supplies of food to be replenished on board. Once again, the Galápagos tortoises came to be regarded as an ideal source of ship-borne provender. They were abundant, free for the taking, and, above all, could be kept alive for as long as a year stowed away without food or water in the dark holds of ships. So Galápagos became a regular port-of-call and in the space of a few decades hundreds of thousands of tortoises were removed from the archipelago: two island races were wiped out, and others brought to the verge of extinction. The whalemen only ceased to call when because of over-exploitation they found it no longer profitable to cruise in these seas.

At a time when there might have appeared some respite in the fortunes of the tortoises, there now occurred two events, each very different in its way, that were to have far-reaching consequences for Galápagos. In 1832, the government of the newly independent Republic of Ecuador, seeing the prospect of these unoccupied and unclaimed islands passing into other hands, sent out the first group of settlers. Three years later, the British survey ship HMS *Beagle* arrived in the archipelago, with the young naturalist Charles Darwin on board.

Charles Darwin's visit

The story of Darwin's visit needs but a brief retelling here. He spent just five weeks among the islands, yet what emerged was a remarkably perceptive account of their origins and biological diversity. That perception encompassed the isolation of the islands, the geological youth-

fulness of the land, and the character of plants and animals that had found their way there from the mainland of South America. Darwin's interest had been focused by what he had already seen and learned of life on the mainland, where many species were similar to those he now saw on the islands, yet differed in marked ways. Somehow, in a not so very remote past, chance migrants must have traversed 1000 km of sea to colonize these islands; and, once there, descendants of these had changed, or become modified, each to its own ends. As Darwin later wrote in a famous passage, in that "little world within itself...we seem to be brought near to that great fact — that mystery of mysteries — the first appearance of new beings on this earth".

Contrary to popular belief, Charles Darwin did not leave the Galápagos Islands with this sudden dawn of enlightenment. Rather, he still upheld the traditional view of the creation of life along the lines of the Biblical genesis. But the seeds of enquiry had been sown and these were to mature in his mind over many years. So, although the significance of his Galápagos findings came to be recognized by Darwin largely in retrospect, they were decisive to his thinking, the catalyst, as it were, that led him so inexorably to question the doctrine of the fixity of species. When he finally set forth his explanation, he established both the process of evolution and the mechanism of natural selection as the force operating to create new species. The epochal paper outlining his thesis, together with that of the contemporary biogeographer, Alfred Russel Wallace, who had arrived at much the same conclusions, was presented to the Linnean Society of London at a meeting on 1 July 1858. The following year, the *Origin of Species* burst upon a complacent society still slumbering in the view of man's unique place in the scheme of things. The ensuing controversy raged well into this century, and incidentally brought recognition to the Galápagos as a remarkable natural laboratory of evolution.

The first settlers

While this battle occupied the intellectual minds of the world, another was being waged in the islands that had been the source of Charles Darwin's inspiration. The first settlers came to Floreana Island where they tried to make a living in the only way they knew — by subduing the wilderness and introducing agriculture and animal husbandry. It was a desperate venture of hardship and privation, which was to be more or less the pattern of all early attempts at settlement in the islands. A century after their annexation, the total human population, on four islands, numbered hardly more than a few hundreds, and poverty was rife. It was marginal, subsistence-living at best; and when for one reason or another the colonists left or died, their domestic animals and plants escaped into the wild, where they proliferated and brought even greater threats to the fragile environment of the islands.

Meanwhile, the debate fired by the writings of Darwin had brought a spate of collecting expeditions to the islands. Scientific endeavour in those years arose in large part from collecting for the enrichment of our museums and from the study of new species based on those collections. The prospect of the plethora of new things to be found in Galápagos had almost unprecedented appeal; and with the collecting and the research there gradually came fresh insights into the conditions moulding the formation of new life on the islands.

The Galápagos Islands are not old in geological terms. They are the tops of volcanoes that rose above the sea some three to five million years ago, with most of the land surfaces visible today generally very much younger. Volcanic activity still continues, with frequent eruptions occurring on the westernmost islands of Isabela and Fernandina. It is now accepted that the islands never had any closer contact with the mainland and that the various agents of long-distance dispersal — wind and air currents, birds, and oceanic drift by means of swimming, floating, or natural rafts of vegetation — were responsible for bringing the original chance colonists to the islands. The hazards of these journeys, the exigencies of landing on such barren shores, and how successful plants and animals adapted to the conditions they encountered are the themes that underlie the enduring interest of science in these islands.

Already by the early years of this century it had become apparent that the effects of settlement and introduced animals posed a new and comprehensive threat, driving the more vulnerable native species relentlessly towards extinction. The foreign expeditions which came now were keen to collect as many specimens as possible for preservation before it was too late. The fact that a major expedition from California recorded only a single sighting of the endemic fur seal during a year-long survey in the islands unfortunately lent all too ready support to the worst fears of scientists. In 1928, almost as a gesture of despair, an attempt was made to gather surviving remnants of the different island races of tortoises and to establish these as breeding colonies outside the country. Although 180 tortoises were collected, the experiment was not a success. Whilst, today, we may well question the wisdom of collecting on this scale in the name of science, the motives at the time appeared all too readily understandable and justified. There was simply no reason to believe that things could change for the better in the islands.

First protective measures

This widely held sense of pessimism was to continue for a few more years. Then, with the approach of the centenary of Darwin's visit, questions began to be asked in Ecuador and elsewhere about whether the destruction of the islands' wildlife was indeed inevitable. In California a group of prominent naturalists came together with the Consul of Ecuador and drew up recommendations for protective legislation. Another group with similar

thoughts formed the London Galápagos Committee with the object of raising funds to endow a research station on the islands. In August 1934, the government of President Aberlardo Montalvo responded by passing legislation protecting the tortoises and other species, controlling the importation of domestic animals, and listing areas to be set aside as sanctuaries. Unfortunately, there was little possibility of coordinating these largely disparate efforts, and the new laws were to prove ineffective because of the lack of an appropriate authority on the ground to enforce them. The Second World War came and brought new priorities to govern life in the archipelago.

Once again, it was a centenary that concentrated minds and finally harnessed effective action for the Galápagos. The occasion was the worldwide interest in celebrating the anniversary of the publication of the *Origin of Species* and its impact on mankind's view of nature. By the mid-1950s, the constraints of war had also receded and it was a time of widening horizons for a new generation of scientists and travellers.

Scenes of persecution

A young German ethologist who visited the islands during a scientific cruise wrote a report of his findings to the International Union for the Conservation of Nature and Natural Resources (IUCN), which was then located in Brussels. Irenäus Eibl-Eibesfeldt had been fascinated by the wildlife yet at the same time appalled by the scenes of persecution. Giant tortoises were being slaughtered for food, sea lions killed, and the fearless native birds stoned for sport; the skins of fur seals, and even young tortoises and penguins, had been openly offered to him for sale. ''The situation'', he wrote, ''was serious and the prospect that one of the most interesting areas of the world would be devastated in the near future impressed us deeply'' (EIBL-EIBESFELDT, 1959).

The government of the host country, once again sharing the gathering international concern, gave approval for the crucial involvement of UNESCO. This organization, as a first step, agreed to send Eibl-Eibesfeldt back to the islands to collate a full report on the status of the fauna. During a four-month exploratory tour in 1957, in company with the American ornithologist Robert I. Bowman, he found that, despite the depredations, most of the characteristic Galápagos species still seemed to survive in sustainable numbers. The two men reiterated the call for a scientific research station, which they recommended should be set up on the central island of Santa Cruz.

By good fortune, the latest report and proposals were submitted in time to be considered by delegates to the 15th International Congress of Zoology, which was gathering in London to celebrate the centenary of the presentation of the evolutionary theories of Darwin and Wallace. The first-hand account of what was happening in Galápagos and the alarm bells it sounded found immediate and sympathetic response, bringing the unprecedented involvement of the congress in endorsing the call ''*for establishing on the islands an international biological station associated with the name of Darwin for research and for assisting the authorities of Ecuador in the task of conservation*'' (Corley SMITH, 1990). This was the turning point, which led to the formation of the Charles Darwin Foundation for the Galápagos Islands, independent, international, and non-governmental, which was incorporated under Belgian law on 23 July 1959. The first president — whose memory we have so appropriately honoured today in this ancient city — was Professor Victor Van Straelen, while Sir Julian Huxley, the first director general of UNESCO and a long and active protagonist of protecting the Galápagos Islands, was appointed honorary president. At the same time, the government of Ecuador formally declared all unsettled areas of the archipelago to be the territory of a national park.

The establishment of the research station was a far from easy undertaking in those early years. The first director, a Swiss biologist named Raymond Lévêque, went out to the Galápagos in the early part of 1960. He had little more than instructions to build a station, the blessing of the Ecuadorean government, a grant from UNESCO, and a bank account in Guayaquil. To appreciate the nature of the task let me say that there were only very infrequent supply ships, no roads, no telephones, not even a landing stage on the shores of Academy Bay where it was proposed to set up the station. But gradually, after many frustrations and delays, the equipment and wherewithal for building had appeared among the lava and cactus-scrub. Four years and two directors later, the basic structure of the Charles Darwin Research Station had been completed and a ceremony of dedication was held. This took place on 20 January 1964, attended by members of the ruling junta of Ecuador, Professor Van Straelen, ambassadors of the countries supporting the foundation, and representatives of UNESCO and the universities of Ecuador. After 30 years of discussion and frustrated hopes a scientific presence was now formally established in the islands.

The story of how the station developed over succeeding years to meet the needs of science and conservation belongs more properly to my old friend, Hendrik Hoeck, who is the next speaker. But I will conclude with a few remarks and recollections that I hope will help set the scene and elucidate the path of our joint endeavours with the authorities of Ecuador.

The difficulties of eradication

When I went out to Galápagos in the months after the inauguration I soon saw for myself the immensity of the task of eradicating introduced animals. I shall cite one example that greatly impressed me at the time. Pinta or Abingdon is one of the smaller, uninhabited, and more remote islands in the northern part of the archipelago. We know that there were no goats there before 1959, the year in which a male and two females were taken and released ashore by fishermen, ostensibly to provide fresh meat for

the occasional boat fishing in the vicinity. I went to Pinta in August 1968 — just ten years later — when we estimated that there were between 4,000 and 5,000 goats on the island. There had been no control whatsoever; and the devastation was such that, where once there had been a close canopy of scrub, we could now walk through open, parklike terrain quite devoid of vegetation. It was an incredible scene of desolation even on these naturally arid islands. Since then, I believe that the Galápagos National Park Service has shot some 40,000 goats on Pinta in order to achieve their eradication.

Until this time, responsibility for executive duties in the national park had been vested in the Charles Darwin Research Station acting in conjunction with island authorities — in effect, usually with the naval commander or his deputies, the port captains, on inhabited islands. It was a practical solution that met the needs of the time, although subject, as always, to the station's very limited financial resources. To assist with the tasks of controlling animals, protecting the tortoises, and preventing land-clearance and further incursions into the park, we appointed a local man as the first conservation officer for the islands. It was not quite a case of "poacher turned gamekeeper" but Miguel Castro had an uphill task trying to persuade some of his fellow islanders to change their ways. I was always conscious of the burden we so obviously placed on him.

In time, however, even Miguel's excellent qualities were not up to the task. The pressures of new settlers, counter claims on land, and development projects of one kind or another were all growing, and these added to the lengthening dialogue about the need of some special service to be responsible for running the national park. Like all good things, this began in a deceptively inauspicious way.

On 23 September 1968, two young forestry officials, Juan Black and José Villa, arrived at Santa Cruz aboard a navy ship. Accompanying them, their chaperon so to speak — for they had literally been given into his charge on the quayside at Guayaquil — was Sir Thomas Barlow, a great-grandson of Charles Darwin and the new Secretary-General of the Foundation, who was making his first official visit to the Galápagos. At the station it was soon revealed that Black and Villa had no equipment, no funds, no department, and little idea even of the tasks that lay before them. But the two men were keen and perceptive, and they brought with them the inestimable advantages of having governmental appointments. They were provided with board and lodging at the station, while the late Lars-Eric Lindblad, whose tourist cruises were just then becoming a part of the Galápagos scene, found the money to pay their salaries for the first year. Gradually, these two took over the crucial duties and became, in effect, the nucleus of Ecuador's future National Park Service. So, in the year of its 30th anniversary, it is a particular pleasure to recall the founding of this service, and to wish it well for the future.

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Note

[1] Former Director, Charles Darwin Research Station, 1964-70.

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