

The last forty years

by Hendrik HOECK¹

Introduction

The Galápagos archipelago lies some 1,000 km west of the South American continent on the equator. It consists of 13 major islands (ranging from 14 to 4,500 km²) and about 115 smaller islands and rocks, for a total land area of 8,000 km². These islands of volcanic origin contain a unique biodiversity found nowhere else in the world. Here Charles Darwin in 1835 made his observations that contributed to the formulation of the theory of evolution by natural selection.

After a visit to the islands in 1957 Irenäus Eibl-Eibesfeldt and Robert Bowman reported to UNESCO and IUCN on the alarming state of wildlife in Galápagos. As Roger Perry has pointed out, this led to the foundation of the Charles Darwin Foundation (CDF) in 1959. Meanwhile in Quito, Ecuador, Mr Cristóbal Bonifaz drafted a law, underlining three crucial points:

1. That these islands possess a unique flora and fauna of outstanding importance to science.
2. That the Galápagos Islands have strictly limited potential for agricultural development.
3. That the archipelago has an incalculable potential for tourism.

On the basis of this law an Emergency Decree was passed on 4 July 1959 marking the legal establishment of the Galápagos National Park (GNP). Later that month the CDF was legally established under Belgian law. Right from the beginning, it was clear that scientific information would be needed in order to conserve this unique flora and fauna. Hence the decision to build the station in Galápagos as the operational arm of the CDF.

THE FIRST DECADE:

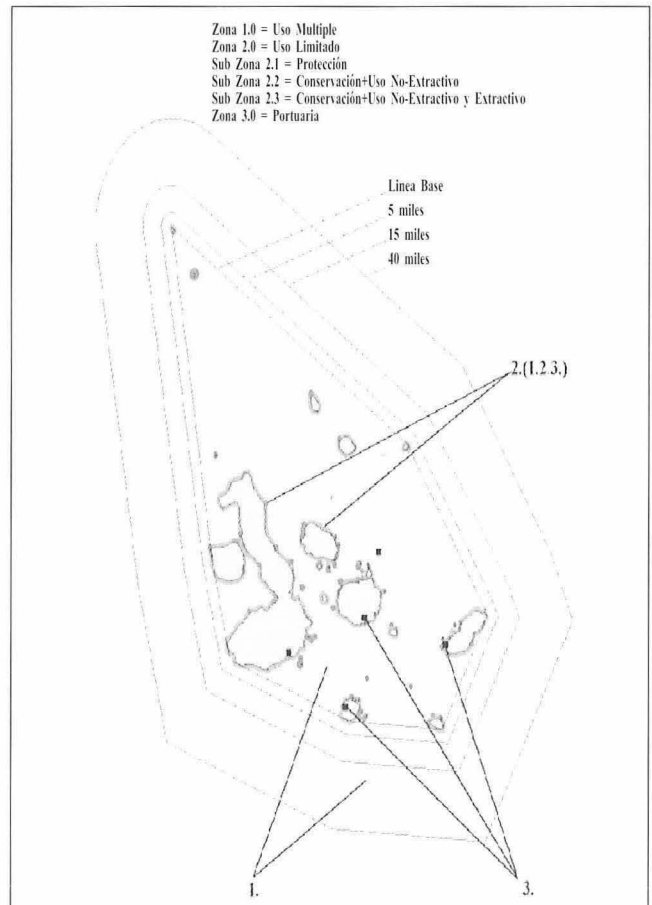
Putting the framework in place

Between 1960 and 1964, work was concentrated on setting up the Charles Darwin Research Station (CDRS). Following its official inauguration in January 1964, an agreement was signed in Quito between the government and the CDF setting out the duties and functions of the

CDRS. Because there was as yet no administrative body for the National Park in Galápagos, the CDRS was granted the authority to determine the reserve zones and conservation priorities, such as the control of feral animals.

The first conservation projects

With a shoe-string budget of US\$25,000 per year there were obvious limits to the projects that could be undertaken in the early years. Therefore Santa Cruz and nearby



Galápagos Marine Reserve

islands were chosen as the first priority for conservation action. In the second year of operation feral goats were exterminated successfully from the small island of South Plaza, off the eastern coast of Santa Cruz. A bounty system for the control of feral pigs on Santa Cruz was established, so that local farmers would hunt these mammals that prey on the eggs of important reptile species, including sea turtles, tortoises, and land iguanas.

Conservation projects on the endangered giant tortoise populations of Pinzón (Duncan) and Española (Hood) islands were initiated in 1965. These became the most successful and renowned projects in Galápagos. The last 15 giant tortoises on Española were taken to the Station, where a captive breeding programme was set up. Today, these 15 individuals are still kept at the Station and the programme continues. Over 800 young tortoises have been set free on Española so far, and the first ones released have already reproduced.

Since the introduction of the black rat in 1880 on Pinzón Island the tortoise population there failed to reproduce, as the rats ate all the hatchlings as soon as they emerged from the nest. Since 1965, however, tortoise eggs have been taken from the island to the Station where they are incubated and the resulting young tortoises are kept until they are five years old. At this age, the rats are no longer able to eat them, so it is safe to release them on their native island of Pinzón. Thanks to the success of these long-term conservation projects, the tortoise races of Española and Pinzón are no longer in danger of extinction.

The birth of the Galápagos National Park Service (GNPS)

In 1967 the CDRS sent a document to the Government of Ecuador, signed by the Foundation's honorary president, Sir Julian Huxley. In this document it advised that an inviolate reserve status should be decreed on all unpopulated islands and that protected zones should be established on the islands with farming communities. A year later the GNPS was established with the arrival of two officials from the Forestry Service. Interestingly, this became the nucleus of the National Park Service for the whole of Ecuador. During the first 18 months, the GNPS worked closely with and used the facilities of the CDRS. In this period the national park boundaries were demarcated, with the park covering 97% of the land surface of the archipelago. The alliance between the national government and international science was established. This unique symbiotic relationship has been working ever since.

THE SECOND DECADE:

Creating a management plan, organizing tourism, and promoting education

During the second decade rules had to be established

on how to implement the conservation laws, on how to convince the local population of about 5,000 farmers, fisherman, and sailors of the need to protect wildlife, and on how to deal with the steady increase of visitors.

Management Plan

By 1972 the GNPS had solved the demarcation problems and extended its activities to the programmes for protection of the tortoises and control of introduced animals. A long-term conservation policy for Galápagos was produced by a group of national and international experts in 1973, which became the first Master Plan. The main targets were:

- * total protection of the landscapes and ecosystems of the islands;
- * suppression of harmful feral species and incompatible human activities;
- * development of facilities and explanatory information for visitors.

Development of tourism

From the birth of the CDF there has been a clear relationship between science and conservation on one hand and the tourist industry on the other. One of the highest priorities of the CDRS and GNPS has been the promotion and regulation of national and international tourism in the Galápagos National Park. A well-designed tourist management system was established in the early 1970s, with the park being divided into different zones according to the type of tourist use. Today there are 54 different land and 64 marine visitor sites. During the early 1960s, only about 80 tourists visited the islands each year. Neither the transportation nor the infrastructure were then available. This changed in 1967 when visits by organized tour groups began. The numbers increased steadily. In 1978 there were about 10,000, in 1985 20,000, and today over 60,000 tourists visit the islands every year.

Craig MacFarland deals with tourism in more detail, but I would like to emphasise that Galápagos was probably the first national park in the world to pioneer green tourism, or eco-tourism. People were able to travel to a relatively pristine area of great natural beauty, with a well-developed organisation and information system, and with strict regulations about where they could go and what they could do. Furthermore, tourism has become a very important source of income for Ecuador. In 1992 the value of Galápagos tourism to the national economy was conservatively estimated at over US\$130 million per year, of which almost half is in direct economic benefits. Donations by tourists have been an important source of income for conservation programmes, such as captive breeding of tortoises and land

iguanas, and for meeting the operational costs of the CDRS.

Education

Appropriate educational activities were developed for the different communities and age groups of the local population. The local people had to be convinced about the significance and fragility of the environment they were living on, therefore biology teachers for local schools were trained and their salaries paid. Courses on environmental issues were given to fishermen and farmers. Park wardens from all Ecuador received an annual training course, and a 4-week course for naturalist guides was developed and offered annually. Agreements were signed with the major Ecuadorean universities, offering scholarships to undergraduate and postgraduate students, enabling them to work at the CDRS. Often they worked on projects with visiting scientists. Today, several of those students have key positions in the government, as university professors, and as resident staff scientists at the CDRS. Publications of all kinds, including books, articles, and films, have been published to spread the knowledge of Galápagos both nationally and internationally.

Conservation projects

The GNPS together with the CDRS developed over the years important aspects of the programmes to control introduced mammals, through research and improvement of logistics, and training of park wardens and provision of equipment. Goats were eradicated from the islands of Santa Fé, Rábida, Marchena, and Española, and greatly reduced on Pinta Island. But on the other hand, the spread of goats onto Alcedo Volcano in the 1970s could not be prevented. Today, goats have spread over the entire central and northern part of Isabela and a special plan for the protection of this area has recently been produced.

Research on feral mammals such as donkeys, goats, dogs, cats, and black rats was carried out in the 1970s. Feral dogs were then eradicated successfully on southern Isabela. A breeding project was set up to save several endangered land iguana populations on Isabela, Santa Cruz, and Seymour, which had been decimated by dogs and cats. Similar to the tortoise project, this captive breeding programme succeeded in saving these threatened species. Research and monitoring projects were established for bird species with relatively low population sizes, such as the albatross, penguin, flightless cormorant, lava gull, red-footed booby, dark-rumped petrel, flamingo, and mangrove finch.

During these years several visiting scientists started long-term research programmes; for example, Peter and Rosemary Grant on the ecology of Darwin finches, Fritz Trillmich on sea lions, fur seals, and marine igua-

nas, and Ole Hamann on threatened Galápagos plant species.

Establishing a national network

When Juan Black, one of the first GNPS forestry officers, later joined the CDF he established a representation for the CDF at the Ministry of Foreign Affairs in Quito. This evolved into the secretary general's office a few years later, with Juan as the first Ecuadorean secretary general. His political skills and constant networking contributed greatly to making Galápagos and the CDF known within the national political system.

World Heritage Site

Given their geographic situation, their unique biology, and the symbiotic co-operation between an international foundation and the national park, Galápagos became a model for the world. It was no great surprise that it was the first nomination to be received by UNESCO for designation as a World Heritage Site, which it duly became on 28 July 1979.

THE THIRD DECADE:

Tackling the marine environment and the search for financial security

Marine research started in the mid-1970s following a survey of the marine resources and management recommendations for underwater visitor sites. Agreements were signed between the CDRS and the National Fisheries Institute (INP) and the Oceanographic Institute of the Navy (INOCAR) for joint research projects on the population ecology of commercially important white fish and lobster species, as well as on the East Pacific green turtle. Today, a modern laboratory for marine research and coastal conservation (Biomar) is operating at the CDRS.

This research has shown that the waters around the islands are extremely rich in fish and other marine species. Of the 3,000 known marine species, 20% are endemic to Galápagos. Uncontrolled industrial fishing of lobster in recent years has led to the near extinction of this once very common species.

The very strong El Niño phenomenon of 1982-83 showed how such an extreme climatic event had a powerful effect on the ecology of the islands. After heavy rainfall during the El Niño, a prolonged drought followed which culminated with an extensive fire on southern Isabela in 1985. The information gathered during those months in Galápagos became a key for understanding the complexity of El Niño, which has again impacted the Pacific region during the last few months.

In 1986 Ecuador decreed the Galápagos Marine Re-

sources Reserve (GMRR), an area of more than 70,000 km² of near and offshore waters surrounding the islands. The GMRR management plan was prepared and approved by presidential decree in 1992; however, it was not implemented until very recently. In 1990 the Ecuadorean President declared the interior waters of the GMRR as a Whale Sanctuary.

Economic uncertainty

From the beginning the CDF and CDRS had to cope with financial instability. No long-term plans could be made as there was no capital or guaranteed income. Core funding has always been especially vulnerable. During the late 1980s the low purchasing power of the sucre (the Ecuadorean currency) coupled with a fall in contributions from the government of Ecuador, made matters even more difficult. As a result, the CDF decided in 1986 to set up a US-based Campaign for Galápagos and to create an endowment fund, the Darwin Scientific Foundation, Inc. So far some \$2 million has been raised, which is useful but is far from enough to cover the basic CDRS expenses. Later another U.S. organization was set up, the Charles Darwin Foundation, Inc., to raise funds for immediate operating needs. More recently European fund-raising organizations have been established, first in Luxembourg and then in Switzerland, the Netherlands, and Britain. These Friends of Galápagos organizations all aim to raise funds to support the operations of the CDF and the CDRS.

THE FOURTH DECADE:

Coping with over-exploitation of resources and uncontrolled development

While the economy of Ecuador was suffering during the late 1980s, the number of tourists visiting Galápagos increased sharply. At the same time, world demand for certain marine species, such as sea cucumbers, shark fins, sea horses, etc, suddenly created a market in the region. Consequently, the province of Galápagos became the richest in the country causing a surge of immigrants in search of work and/or quick wealth — i.e. a gold-rush mentality.

Within a few years the population of Galápagos increased substantially, especially on Santa Cruz Island. Today between 16,000 and 17,000 people live on five islands: Santa Cruz, San Cristobal, Isabela, Floreana, and Baltra. This sudden increase brought with it many of the problems of continental suburbia. Most immigrants had a very low level of education and had no understanding of the uniqueness and fragility of these islands. This unrestricted immigration caused serious social and economic problems, increasing pressure on the Park boundaries and bringing with it the introduction of new exotic species.

Certain corrupt politicians took advantage of this situation and the GNPS and CDRS were confronted with open animosity by islanders. Even worse, the funds provided by the government of Ecuador to the GNPS decreased steadily, so that the Park was unable to cope effectively with these problems. For the last five years, shark fins, sea cucumbers, sea horses, and several fish species have been over-exploited by national and international industrial fishing interests, thus threatening the very existence of the Galápagos Islands' unique biodiversity.

Fortunately, within the past 18 months the political climate has changed. Instead of being antagonistic, the local communities now understand the necessity for a more moderate use of resources. The local fishermen realise that the protection of the marine environment is vital for their future existence and that the national and international fishing industry was plundering their future.

With active participation by the CDF and CDRS a Special Law for Galápagos was drawn up, and as you will hear in more detail from Jorge Anhalzer, its culmination was the formal approval by Congress a few weeks ago. Hopefully, the CDF and all friends of Galápagos can now contemplate the future with more optimism. There is, and probably always will be, a lot for the CDF and the CDRS to do. To continue this operation and to enter into the fifth decade, the single most important task we have to accomplish, however, is to ensure the financial resources to cover at least the core expenses of the Foundation and the Station.

Summary

1. The CDF set the pace in conservation. It established the National Park Service, not only in Galápagos but for the whole of Ecuador. These islands have become a worldwide model for conservation and for ecotourism.
2. The CDF advises the government of Ecuador on the development of appropriate policies and programmes for conservation and seeks international financial and technical support to accomplish these goals.
3. The CDF established education projects. More than 500 Ecuadorean university students have received training at the CDRS, either as undergraduates or post-graduates. Many have benefited from CDF scholarship programmes.
4. The CDF has made a significant contribution to science and to the general knowledge of the geology, climatology, oceanography, and biology of the islands. Over 700 scientific missions to Galápagos have used the CDRS as a logistics base. Over 7,500 scientific publications on Galápagos have been published and over 100 scientists from around the world have received degrees based on their research in Galápagos.
5. During the past four decades the CDF and CDRS have:

- set the pace of development on Santa Cruz Island, mainly in the village of Puerto Ayora;
 - contributed to the local economy by being for many years the most important provider of work;
 - seen staff at the CDRS grow to about 50 employees and some 30 scientists and students;
 - expanded from an annual budget of US\$25,000 to nearly \$3 million;
 - had five CDF presidents, namely Victor van Straelen (Belgium), Jean Dorst (France), Peter Kramer (Germany), Craig MacFarland (USA), and Jorge Anhalzer (Ecuador);
 - had 12 directors of the CDRS, respected scientists from around the world: 3 from Britain, 3 from Germany, 3 from the USA, 1 from France, 1 from Switzerland, and 1 from Colombia.
- an infrastructure comprising laboratories, offices, dormitories and houses, lecture and computer rooms, a museum, an information centre, breeding facilities for several endangered species, a research vessel, a modern marine laboratory, and the best library in Ecuador.

Note

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