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A Brief History of the Charles Darwin Foundation for The Galapagos Islands 1959–1988

by

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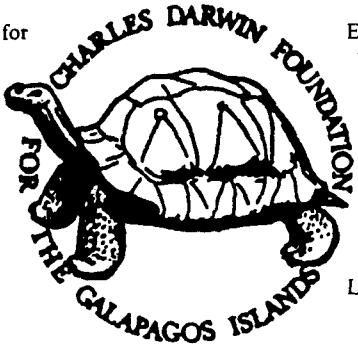

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H.R.H. The Prince Philip, Duke of Edinburgh,
Patron of the Charles Darwin Foundation
and
President of the World Wide Fund for Nature.

When the Duke of Edinburgh paid the first of his three visits to the Galapagos Islands in 1964, he was immediately impressed by their extraordinary natural riches but at the same time deeply concerned about the dangers that threatened their unique ecosystems. He wrote in "Wildlife Crisis" (1970):

> *"Perhaps the most fascinating expedition of all was a four-day visit to the Galapagos Islands, forever associated with Darwin's great work, the Mecca of naturalists and a veritable paradise for bird - and animal - photographers. It is here above all that the whole problem of conservation becomes most obvious".*

INTRODUCTION

Just a few weeks ago I came back from a short, too short, visit to the Galapagos Islands. With my wife, I saw many tortoises, marine iguanas, sun bathing seals and listened to the songs of several species of Darwin Finches. I visited once again the Charles Darwin Research Station.

What a wonderful experience, the sixth or seventh in my life! I remember my first travel to the Enchanted Islands, in 1958, when I was sent by UNESCO to negotiate our first agreement with the Ecuadorean government and to propose the exact site where our Station should be built. Nothing existed. Everything had to be done.

Since that time, the Galapagos Islands are not only the place where a fabulous natural evolution found its showcase, with their tortoises, iguanas and finches. At the same time they are the site of a human and scientific success story. Due to world-wide cooperation, a renowned Research Station has been built and expanded year after year. Scientists from all over the world have been coming for thirty years to investigate biological problems, in the field of evolution or adaptations to particular habitats, in one of the most privileged places in the world.

Marine Iguanas
Photograph by I. Eibl-Eibesfeldt

The first aim of the Foundation was, and still is, to protect Galapagos wildlife and habitats from human impact. It has perfectly played its role. The greatest satisfaction of the international community was to see that the Ecuadorean government and the responsible authorities cooperated since the early beginnings with great enthusiasm. The Galapagos National Park is working in the most efficient way to protect what is under its own responsibility. Our Ecuadorean friends are aware that the Galapagos are a unique part of the common heritage of mankind.

I have the highest consideration for the part taken nowadays by enthusiastic young Ecuadorean research workers in the scientific programmes, all more or less oriented towards a better protection of nature or sound land management.

However, many menaces still survive. The consequences of introduced plants or animals are still without definite solution. Land encroachment by settlers is still a potential threat. The impact of an increasing number of tourists needs to find a solution satisfactory for all.

Nevertheless, for decades the situation in the Galapagos Islands has improved and is still improving, due to a close cooperation between the Ecuadorean authorities and the international community of scientists and conservationists.

On these pages you will read the names of many of those who contributed to our success. We all should keep them in our memory, as many have left us forever.

We are particularly grateful to Corley Smith, who acted so efficiently as Secretary General, for having written this vivid story of our Foundation, a very difficult task due to the manifold aspects of an international enterprise in which so many people and organizations were involved.

Jean DORST,
Membre de l'Institut
Past President

PREFACE

During the 25 years in which I have been actively involved in the promotion of Galapagos conservation and science there have been such radical developments that I could not hope to give a catalogue of all the Charles Darwin Foundation's manifold activities within the pages of a slim volume. It was therefore necessary for me to be selective in various ways. I suspect that I have given undue emphasis to those projects in which I have been personally concerned and for this I apologise. On the other hand it was quite deliberately that I concentrated on certain aspects of our work. Conservation has been given priority over science, so that the hundreds of visiting scientists who have used the Charles Darwin Research Station's facilities have been allotted relatively small space: after all, their results, usually addressed to a restricted audience, have been published in their specialist journals.

This was not intended as a natural history of the Galapagos: there are an increasing number of excellent works of that kind on the bookstalls in several languages. I have taken the liberty of devoting a disproportionate amount of attention to a few species while ignoring others because this reflects the Foundation's principal concerns over the years. For instance, the Lava Gull of the Galapagos may be the rarest gull in the world but, not being in any danger, it has not required the CDF's intervention and I have not even mentioned it: whereas the still numerous Dark-rumped Petrel is under threat of extinction and receives considerable attention. The giant tortoises and iguanas were not only endangered but were also the very symbols of the Galapagos and consequently play an exaggerated role in this story.

Most of these pages are devoted to the activities of the Charles Darwin Research Station and deal chronologically with developments under successive Directors. This was a convenient narrative method as the station has been the cutting edge of the operation and its day by day problems, setbacks and successes tell the story more graphically than would accounts of the transactions of the Foundation's officers and executive council, although they bore the ultimate responsibility. I have consulted surviving Presidents and Founder Members and all former Directors in order to get the facts as nearly correct as possible but any opinions expresssed are entirely my own.

Within the available space it has not been possible to acknowledge the generous contributions of all the many individuals and institutions who have made possible the successs of this adventure. A few of the major benefactors, including UNESCO, our mainstay in the early years, fall naturally into the story, but little mention has been made of WWF, simply in order to avoid endless repetition. Since its establishment, WWF has been a constant source of funds, encouragement and advice and no year has passed without its substantial support.

Looking back over 30 years of endeavour, the surviving founders of the organization must be surprised at the way their enterprise has grown and the degree of success that it has achieved. This has been largely due to the peculiar alliance between national government and international science, which has been at the heart of the whole project. The warmth of the welcome and the tolerance shown by the Ecuadorean authorities and people to the activities of a band of foreign scientists was extraordinary and has been followed by an ever-increasing national participation in the Foundation's affairs at every level. The development of a prosperous tourist industry since the inauguration of the research station has become a factor of very considerable importance in the national economy, but this material benefit was anything but obvious in the early years of co-operation. Moreover, successive governments have resisted all temptations to exploit this advantage by turning their unique National Park into a conventional beach resort. It was no accident that the Galapagos Archipelago was one of the first four natural areas to be awarded World Heritage status.

Despite the many triumphs, much still remains to be done to protect the exceptional environment of the islands and more funds are urgently needed.

But it is good to be able to record that the Government has recently extended the area under protection to include the entire internal waters of the archipelago, and that it has renewed its original twenty-five year agreement with the Charles Darwin Foundation for a further period of five years.

In an age when so many of our planet's natural resources are being destroyed, it is comforting to know that great strides have been taken towards saving and restoring one of the world's key environments. It is alarming to think what would have happend to the extraordinary ecological wealth of the islands if the Galapagos National Park and the international Charles Darwin Foundation had not come into being in 1959. Together, Government and Foundation have not merely halted but have actually turned back the tide of degradation, thus offering bright prospects for future generations. It has been a fortunate partnership. The Galapagos, Ecuador and the world have been the beneficiaries.

G.T. Corley Smith
Greensted Hall, Ongar, Essex. 1989.

Flightless Cormorant
Drawing by Peter Scott

ACKNOWLEDGEMENTS

I am deeply indebted to I. Eibl-Eibesfeldt, Robert I. Bowman, the late Peter Scott, S. Dillon Ripley and Kai Curry-Lindahl for information about the creation and early days of the Charles Darwin Foundation: to Raymond Lévêque, André Brosset, David Snow, Peter Kramer, Craig MacFarland, Hendrik N. Hoeck, Friedemann Köster and Günther Reck for reports on their periods as Directors of the Research Station: to Roger Perry, J-P Harroy, Richard D. Keynes, A. Gille, David Challinor, Thomas H. Fritts and Ole Hamann for help with the text and illustrations: and to Linda Dunwell for patiently typing my untidy manuscript.

GTCS

EARLY ATTEMPTS AT GALAPAGOS CONSERVATION

When the 20th century began there was an attitude of hopelessness among the few people who were aware of the scientific importance of the Galapagos Archipelago. The foreign whalers and sealers had ceased to be a threat as they had slaughtered so many whales, seals and giant tortoises that their industry had become unprofitable, but the survivors of the various attempts at human settlement, together with their domestic animals, were driving the native species of the islands relentlessly towards extinction. And there was no authority to prevent this tragedy.

Scientists concluded that their best course was to collect as many specimens as possible for preservation in the museums before it was too late. Around the turn of the century Lord Rothschild, using California as a base, mounted collecting expeditions for his museum at Tring in England. The California Academy of Sciences followed this initiative and collected on an even larger scale. The Academy's 1905-06 expedition made the first comprehensive census of Galapagos wildlife and the fact that its team of first-rate scientists recorded only one sighting of the endemic fur seal during a year-long survey gave a hint of the impending threats to the islands' unique wildlife. The large-scale collecting in the name of science may have made a bad situation worse but, however mistaken, these early expeditions at least exemplify the enduring interest of England and California in the Galapagos.

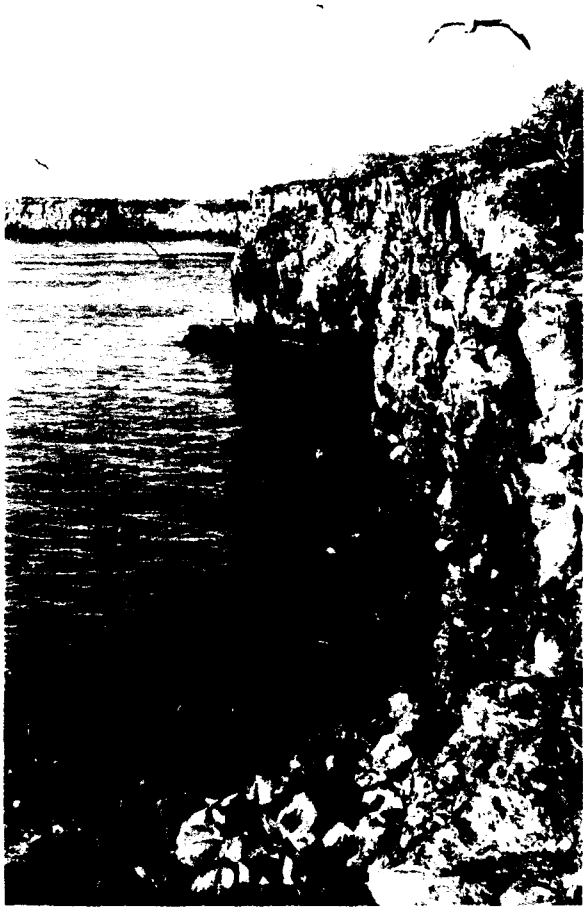
The pessimism persisted between the two world wars until, as the centenary of Charles Darwin's 1835 visit approached, questions began to be asked in Ecuador and elsewhere about whether the destruction of the islands' extraordinary natural resources was indeed inevitable. In Ecuador, A Corporación Científica Nacional proposed studies with a view to promoting the protection of nature and the establishment of a scientific station. The University of Guayaquil and Misael Acosta-Solís of Quito were active in this movement. In California, the Consul of Ecuador, C.M. Egas, not only urged his government to enact conservation legislation but also recruited the support of influential individuals and institutions such as Harry S. Swarth of the California Academy of Sciences, Robert T. Moore of the California Institute of Technology and Harold J. Coolidge of the International Wildlife Committee.

A separate initiative, which stimulated interest both in Ecuador and Europe, was the "Charles Darwin Memorial Expedition", organised and led by Victor Wolfgang von Hagen. The party sailed from Guayaquil and erected a monument to Darwin on the shore of San Cristóbal Island, where the young naturalist had landed exactly a hundred years previously. Von Hagen later carried his message to the United Kingdom, where Julian Huxley promoted the London Galapagos Committee, on which the Royal Society, the British Association and other leading scientific bodies were represented. The committee proposed to raise £100,000 to endow a research station in the islands but this had still not been achieved when war in Europe broke out in 1939. In the United States efforts nevertheless continued and in 1941 Waldo Schmidt of the Smithsonian Institution actually went to the islands with the enthusiastic approval of President Roosevelt, who was deeply interested in the Galapagos which he had visited in 1938. The object of the expedition was to set up a laboratory and meteorological station on South Seymour Island (Baltra) but Pearl Harbour intervened and instead of a research station the United States built an air base. Its construction was later to prove of critical importance in the story of the Galapagos.

One thread running through these diverse proposals was that the archipelago needed both legal protection for its wildlife and a scientific research station. Unfortunately there was little or no co-ordination between the various initiatives. The government enacted forward-looking legislation, listing areas that were to be considered as wildlife sanctuaries and forbidding the killing of certain species; but there was no administration in the sparsely populated archipelago capable of implementing these laws. For their part, the international scientists never got together to organise a non-governmental association which could have

provided a partial substitute for a national authority. In the 1930's the need for conservation was scarcely appreciated even by scientists. Few countries had created national parks and, with no national or international body capable of dealing with the Galapagos problem, the degradation continued. Another quarter of a century was to pass before effective action was taken.

Drawing of Charles Darwin made in 1840
by George Richmond
Reproduced by courtesy of the Syndics of Cambridge University Library



Darwin Bay, Tower Island
Photograph by Roger Perry

THE DARWIN FOUNDATION IS ORGANIZED

In 1954 a young ethologist from the Max-Planck Institute, Irenäus Eibl-Eibesfeldt, landed in the Galapagos while on a scientific cruise. He was fascinated by the wildlife but at the same time alarmed about its poor chances of survival unless it could be given protection. Giant tortoises were being slaughtered for food and their young ones sold as pets. Sea lions were killed for sport. The fearless native birds were stoned for fun while introduced domestic animals had run wild and were destroying the unique fauna and flora.

Eibl reported his alarm to the recently formed International Union for Protection of Nature, now International Union for Conservation of Nature and Natural Resources (IUCN), located at that time in Brussels. He also expressed his concern to the Government of Ecuador and corresponded with many potential sympathisers, notably with Robert I. Bowman in San Francisco, urging the establishment of a biological research station on one of the islands. He obtained the support of a number of distinguished scientists in Europe and the Americas, including Julian Huxley, Roger Heim, S. Dillon Ripley, Jean Delacour and Misael Acosta-Solís. Delacour and Ripley, on behalf of the International Council for Bird Preservation (ICBP), went to Quito and won the approval of the Government of Ecuador for the proposal.

The main organisational drive came from Eibl's friend, Marguerite Caram, Assistant Secretary General of the IUCN. Her outstanding administrative talents enabled her to pull together the various initiatives and achieve speedy action. In particular, she won the moral and financial backing of the United Nations Educational, Scientific and Cultural Organisation (UNESCO). This support remained of crucial importance throughout the first decade of Galapagos conservation. As a first step, UNESCO agreed to send Eibl back to the Galapagos to survey the surviving animal populations and make recommendations for the establishment of a field research station. At the same time Dillon Ripley raised funds from Life magazine on behalf of the ICBP, the University of California and the New York Zoological Society. This made it possible to include Bowman and also a photographer (Alfred Eisenstaedt) and an artist (Rudolf Freund) in the mission.

The little group visited most of the archipelago's islands during a four month exploratory tour in 1957. They discovered that, in spite of all the depredations, most characteristic Galapagos species still seemed to exist in sustainable numbers. The choice of a site for a field station was difficult as each island presented different problems but in the end Santa Cruz was judged to have the least disadvantages.

By fortunate chance, the 15th International Congress of Zoology was meeting in London in 1958 to celebrate the centenary of the public presentation of the evolutionary theories of Darwin and Wallace. The reports and proposals of both Eibl and Bowman were produced in time for submission to the Congress.

The case for establishing a research station would be greatly strengthened if it could be endorsed by the prestigious Congress but the Congress had a rule that it did not vote resolutions. To subvert this rule and promote action, a band of enthusiasts met at the British Museum of Natural History. Together they represented the international conservation organisations and a good cross-section of European and North American countries:

Roger Heim, President of IUCN.
Phyllis Barclay-Smith, ICPB.
E.W. Barrington, U.K.
M.C. Bloemers, Netherlands.
C.L. Boyle, Fauna Preservation Society, U.K.
J. Dorst, France.
E.P. Dottrens, Switzerland.
Mlle. Dux, UNESCO.
Lord Hurcomb, Vice-President, IUCN.
Sir Julian Huxley, Royal Society, U.K.
K. Curry-Lindahl, Sweden.
Th. Monod, Dakar-Paris.
Tracey Phillips, Secretary General, IUCN.
B. Rensch, International Union of Biological Sciences.
S. Dillon Ripley, President ICBP.

Peter Scott, U.K.

Marguerite Caram, IUCN.

The group prepared the following resolution, edited by Huxley and Ripley, for submission to the Congress:

"That this widely representative meeting of zoologists from many nations participating in the fifteenth International Congress of Zoology wishes to place on record in plenary session the great urgency of safeguarding the fauna and flora of the Galapagos Islands; and welcomes the project, initiated by the International Union for the Conservation of Nature and Natural Resources, 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; and trusts that every support will be given by all concerned to the early and successful realization of this vital project."

It is a point of some significance that in 1958, for the first time in its history, the International Congress of Zoology had a section on conservation; and it was convenient that one of the promoters of the resolution, Curry-Lindahl, was its chairman. In a crowded session he accepted the resolution, proposed by Dillon Ripley. It was carried by acclamation and subsequently confirmed unanimously by the Congress in plenary session. The importance of this resolution should not be underestimated. At a time when the need for wildlife conservation was still little understood, the benediction of this eminent international congress carried weight with the Government of Ecuador, UNESCO, IUCN and other potential sources of support. Moreover the sponsors of the resolution individually held influential posts in such bodies as IUCN, ICBP, Yale University, the Royal Society and the Max-Planck Institute. With this backing, the conditions for a successful take-off for Galapagos conservation were at last present.

A distinguished organising committee of zealous supporters was set up under the acting chairmanship of Julian Huxley. Their problems were enormous but, thanks especially to the energy, skill and prestige of Victor Van Straelen, the Charles Darwin Foundation for the Galapagos Islands, independent, international and non-governmental, was established under Belgian Law on 23rd July, 1959, in the centenary year of the publication of Darwin's *On the Origin of Species.*

The first Executive Council (1959-1964) was composed of:

Honorary President:	Sir Julian Huxley
President:	Victor Van Straelen
Vice-President:	Luis Jaramillo
Secretary-General:	Jean Dorst
Secretary for the Americas:	Robert I Bowman

Members: Jean-G. Baer, Cristóbal Bonifaz Jijon, François Boulière, Harold J. Coolidge, Bernhard Rensch, S. Dillon Ripley, Peter Scott, Wm. Randolph Taylor.

Settlement at Wreck Bay where Charles Darwin landed in 1835
Photograph by I. Eibl-Eibesfeldt

THE BIRTH OF THE RESEARCH STATION

In 1959 the Charles Darwin Foundation existed as a legal entity in Belgium but everything still remained to be done to make it an operative organisation in the remote Galapagos. The biological resources and geology of the islands had been only sketchily explored and little was known of the conservation problems that would have to be faced. Before action could be taken, funds had to be raised. Victor Van Straelen was the driving force in this operation, while Jean Dorst and Peter Scott were largely responsible for administrative matters, with assistance from Bob Bowman in North America. The remarkable exertions of this team, with the support of the Council members, allowed the CDF to begin operations in the islands early in 1960.

RAYMOND LÉVÊQUE (1960-61)

Funded by UNESCO, a young Swiss ornithologist, Raymond Lévêque, was appointed Director and charged with the construction of a research station on Santa Cruz Island. Like all his successors, he was a scientist and he had little experience of the technical side of this daunting task. At CDF headquarters in Europe there was enormous ignorance about conditions in the Galapagos and some of Lévêque's instructions proved unworkable. Communications between Santa Cruz and the mainland were infrequent, irregular and always slow, so he had to take his own decisions. He soon discovered that wood was vulnerable to termites and he had to build with blocks of lava and concrete despite instructions to the contrary. He decided to establish the station at Academy Bay instead of Tortuga Bay, which he considered an impractical site for logistic reasons. With the help of the United Nations Andean Mission, he imported a team of building workers from the continent and organised the purchase and transport of the cement, metal, glass and other materials that were not available in the islands. He was fortunate in recruiting a resourceful station manager, Edgard Pots, whose help in the actual building operations was invaluable. Everything was lacking. There was no wharf to unload supplies, no roads across the arid stretch of cactus and scrub to the building site, no water supply and no electricity. All these basic services had to be organised. In spite of the difficulties and delays, a laboratory and a workshop were roughly finished when, due to failing health, Lévêque had to leave. In addition to overseeing the building operations, he had managed to do some preliminary investigation of the ecology of the archipelago. He began to compile a herbarium and even took the first step in controlling the destructive feral animals by eliminating the goats on little South Plaza Island.

Lévêque was very much on his own but he did receive an encouraging visit from Victor Van Straelen and Peter Scott in 1961. They had been in Quito to win the support of President Velasco Ibarra for the development of a National Park. Scott already knew the islands as he had been there in 1959 to make a film for the British Broadcasting Corporation and so was well qualified to explain the urgent need for conservation. Van Straelen, with his prestige as founder of the Congo National Park, deeply impressed the President of the Republic and thus effectively won at the highest level national co-operation with the Darwin Foundation's scheme. The former U.S. airfield on Baltra Island, though rarely used, was still operational and the President lent the little mission his official plane, which made it possible for them to visit the islands. During their brief stay, Van Straelen and Scott sorted out the administrative problems of the embryonic station, such as budget, buildings, supplies and equipment. While these two pioneers were naturally ambitious to promote science and conservation in the Galapagos, they can hardly have hoped at that time for success on the scale that was eventually achieved.

ANDRÉ BROSSET, 1962

André Brosset, the second Director, arrived from France early in 1962. The difficulties of those early days are illustrated by the fact that he was held up for three months in Guayaquil waiting for a ship sailing to the Galapagos. During his brief residence, Brosset pushed forward with the building activities and added a meteorological station. He continued

Lévêque's efforts to assess the surviving animal populations but neither of them had the facilities or the staff to obtain reliable results. For instance, he was wrongly led to believe that the races of giant tortoises on Española and San Cristóbal were extinct. Nevertheless, his reports, while having little to contribute about the largely unexplored islands of Santiago and Isabela, gave the CDF Council the first comprehensive account of the wildlife situation. *(Noticias de Galápagos No. 1).* For lack of manpower and transport, his positive conservation activities were largely confined to Santa Cruz Island, where he concentrated on the promotion of a "strict tortoise reserve", to preserve the substantial population of perhaps 2,000 giant tortoises that survived there. Some protection was afforded in this limited area by hunting the destructive feral pigs, though it was accepted that the hunting of goats had to be restricted to avoid depriving the local population of an important source of food. At that time it was man who was considered the chief predator of the tortoise, whether on Santa Cruz or the other islands. The fishermen killed adults for food and there was a lively pet trade in younger animals. The very tame Galapagos doves were hunted for food but the other birds were in less danger as they were only killed for target practice, whether by islanders or visitors. One bright feature was that Brosset could confirm Lévêque's estimate that, as well as plenty of sea lions, there were upwards of 500 Galapagos fur seals, an endemic species previously considered doomed to extinction. He also investigated the situation of the endemic rice rats and concluded that, due to the introduction of alien black rats *(Rattus rattus),* the only survivors of the six recorded species were *Oryzomys bauri* on Santa Fe and *Nesoryzomys narboroughi* on Fernandina. *(Noticias de Galápagos No. 2).*

During these early years, the CDF's chief concern was the establishment of the station. Little time was left for active conservation and, indeed, with no clear notion of how much of the archipelago was to be protected, both the Directors and the CDF Council concentrated on such limited problems as whether to fence in the relatively small area of the Santa Cruz "strict tortoise reserve" in order to guard its population against poachers.

DAVID SNOW 1963-64

By 1963, when David Snow arrived from England with his wife and small child, construction was well under way, and by the time he left the original Charles Darwin Research Station was virtually complete and operational. Already the first visiting scientists had begun to use the station's modest facilities. Some of these early researchers continued to return in various capacities for many years, among them were Mike Harris, Tjitte de Vries, Syuzo Itow, Bob Bowman, I. Eibl-Eibesfeldt and Peter Kramer.

Victor Van Straelen at the Inauguration of the Charles Darwin Research Station in 1964
Photograph by A. Gille (UNESCO)

A laboratory, a storehouse, dormitories, roads, electricity supply and tanks to collect rainwater for drinking were completed and progress was made with the organisation of a library, a herbarium and a collection of zoological specimens. With the installation of a second generator it became possible to operate a seismographic unit, furnished and financed by the U.S. Coast and Geodetic Survey, a development of some significance as the Galapagos are among the most active oceanic volcano groups in the world.

The systematic marking and registering of the Santa Cruz tortoises went steadily ahead and the defence of the "strict tortoise reserve" was made more effective. Snow considered that the protection of this "inviolable sanctuary" should continue to be given the highest priority with no human development allowed within its boundaries. The concentration of effort on the one race in this restricted area illustrates how limited were the conservation expectations in those early years. However, there was some mildly encouraging news of the continued existence of two other races of giant tortoise previously thought to be extinct. A Norwegian settler informed the station that he had seen two young tortoises on San Cristóbal Island and, about the same time, Snow was able to report that "one tortoise was found on Hood (Española) feeding on a fallen *Opuntia* in company, and in competition with 15 goats". Neither observation guaranteed that either of these subspecies could be saved but at least they were not already extinct. Snow's later explorations revealed the existence of at least a few surviving tortoises on Santiago and other islands but he lacked the means to make a thorough survey. *(Noticias de Galápagos No. 2).* Before Snow left, the New York Zoological Society voted funds to employ a full time conservation officer. This three year appointment, enabled the station to initiate a more positive and wide ranging conservation programme. The long-term outlook was further improved by Snow's largely successful efforts to reconcile the 2000 or so local inhabitants to the research station's conservation projects.

Among Snow's parting recommendations was the eradication of goats on Española and Santa Fe islands, projects which took several years to achieve. His proposal for a marine laboratory took even longer. Despite some opposition, his insistence that even scientists should not be allowed to collect specimens without specific permission in each case became effective almost immediately.

The Author speaking during the Inauguration Ceremony and partially obscuring General Gándara and Victor Van Straelen. Left, Col. Freile, right, Robert Valeur, Ambassador of France, behind (bearded), David Snow, Station Director

Photograph by A. Gille (UNESCO)

THE INAUGURATION

Progress with the construction work made it possible to hold the formal inauguration of the Charles Darwin Station (CDRS) on 20 January 1964. The ceremony was attended by General Gándara and Colonel Freile, (members of the ruling Military Government), Victor Van Straelen, the Ambassadors of the countries supporting the Foundation and representatives of UNESCO and the universities of Ecuador. The inauguration was planned to coincide with the arrival by sea from California of 66 members of the Galapagos International Scientific Project. This project, administered by Robert L. Usinger and Robert I. Bowman, was funded by the University of California with support from the National Science Foundation. From the beginning, a trickle of visiting scientists had been using the station as a base for their investigations but this invasion put Galapagos research on a new scale. There was no building big enough to house the gathering so the ceremony, marshalled by Harold J. Coolidge, was held in a clearing amid the cactus under the blazing equatorial sun.

A few weeks later, on 14th February 1964, the basic agreement between the Republic of Ecuador and the Charles Darwin Foundation was signed in Quito by the acting Minister for External Affairs, Armando Pesantes García, and Victor Van Straelen. The agreement defined the terms on which the Foundation could own and operate the Charles Darwin Research Station and promote conservation and scientific investigation in the Galapagos for the next 25 years, and was renewable for further periods of 5 years. This was a day of triumph for Van Straelen as the agreement crowned his years of devoted labour to save the Galapagos for posterity. Alas, his signature on the document was his last achievement as he died on his return to Belgium.

The inauguration marked the end of the first, one might even say the heroic stage of the CDRS. Life was still difficult and, later that year, David Snow reluctantly left as his wife was expecting a second child. Although being an ornithologist herself made life more bearable, she found that the combined effects of isolation, the daily struggle with primitive living conditions and the difficulty of obtaining suitable food were too extreme for her to raise her family. It would require a separate chapter to pay adequate tribute to the contribution of Directors' wives to the success of the CDRS. Living conditions gradually improved, but for the next six years the Director was an English bachelor, Roger Perry.

A brief visit in 1964 by H.R.H. Prince Philip, Duke of Edinburgh, had consequences in later years. He made his first tour of the islands accompanied by Aubrey Buxton of Anglia Television and G.T. Corley Smith, the British Ambassador in Quito. All three became and remain devoted supporters of Galapagos conservation. Prince Philip eventually became Patron of the Foundation as well as President of WWF International. Corley Smith served for ten years as Secretary General of the CDF and for twelve as editor of *Noticias*. Buxton sent out his crack camera team (Alan and Joan Root) to make a brilliant, hour-long, colour film in Anglia Television's "Survival" series for which Prince Philip wrote and spoke the commentary. This film, "The Enchanted Isles", brought the Galapagos into millions of homes all over the world.

Galapagos Fur Seal
Photograph by The Duke of Edinburgh

CONSERVATION ACTIVITY EXPANDS CAPTIVE BREEDING

ROGER PERRY 1964-70

With the initial building programme virtually complete, the next Director could devote more of his attention to specific conservation projects. Perry inherited from Snow the services of a full time conservation officer, Miguel Castro, a wildlife enthusiast born in the islands, and the Foundation was also able to provide him with an elderly research vessel, piously named Beagle II and captained by Carl Angermeyer, who had a long experience of the archipelago's treacherous waters. This combination of advantages gave the CDRS greater mobility and allowed a more extensive exploration of the scattered islands and a more reliable assessment of their fauna and flora than had previously been possible. The staff was further strengthened by the appointment of Tjitte de Vries as resident ecologist and of Rolf-D. Sievers as station manager.

Human interference was still considered the main threat to the ecosystems. Perry continued Snow's efforts to protect the Santa Cruz tortoises as one of the two remaining populations which seemed capable of perpetuating themselves, but there was considerable local opposition, as some residents wanted the "strict reserve" opened up to cattle ranching. In co-operation with Lucio Saltos Gomez, the supervisor of primary education in the archipelago, Perry organised natural history lessons in the local schools and gave courses in biology and conservation for teachers and officials. By such means, further progress was made in reconciling local opinion with the idea of conservation and this reduced resentment at what must have appeared to the islanders an unwarranted intrusion by foreign scientists. Human predation on wildlife slowly declined.

Tortoise surveys eventually covered the whole archipelago, and although it was found that 10 of the original 14 or 15 races still survived, only those on Santa Cruz Island and the Alcedo volcano were believed capable of sustaining themselves indefinitely without active support. Apart from direct human interference, the rats, pigs and dogs that man had introduced, preyed on the eggs and young, while goats ravaged the vegetation on which the tortoises fed. On Pinzon Island there was a small but vigorous breeding population but none apparently under 40 years of age, as the rats were killing off every hatchling: with no young reaching breeding age, the extinction of the Pinzon race was merely a question of time. As an experiment, a number of tortoise eggs were dug up in 1965, taken to the station and incubated in converted bird cages. When, by trial and error, a hundred young had been successfully raised, Perry decided to extend the programme to include all the endangered races, each to be bred pure with no crossing. This was facilitated by the support of the San Diego Zoological Society which, surprised and impressed by a hatching success much greater than that of its own professionals, generously provided the CDRS with funds for a purpose-built rearing centre. When the Pinzon tortoises were about 5 years old, they were considered strong enough to stand up to the rats and were returned to their home island.

Different protective measures had to be devised to meet the peculiar threats to each of the endangered tortoise races. The menace of extinction was particularly acute for the race on Española. Although there were no introduced predators on this arid island, the tortoise population was extremely small and the naturally scanty vegetation was further reduced by large herds of introduced goats. Either because of malnutrition or because the few surviving tortoises were so scattered that male and female never met, there was no evidence of any Española tortoises breeding during the previous half-century. So Perry collected the few survivors he could find, one male and three females, and transported them to the CDRS where, confined in a corral and copiously fed, they eventually bred. Further searches in the end increased the breeding stock to two males and ten females. Again by trial and error, hatching success was finally

achieved in 1969 and the otherwise doomed race of *Geochelone elephantopus hoodensis* was given a chance of survival. From 1969 to 1973 the tortoise preservation programme had expert guidance from the herpetologist, Craig MacFarland, who later became Director of the CDRS and then President of the CDF.

When Roger Perry took over the direction of the CDRS the basic agreement between the Darwin Foundation and the Government of Ecuador had been signed but there remained large areas of uncertainity about its implementation. For instance, no boundaries of the proposed National Park had been defined; new colonists still occupied land without permission; and there were schemes to settle and farm the large and scientifically important island of Santiago and to develop sulphur mines in the uninhabited but ecologically outstanding parts of Isabela. The Ecuadorean authorities asked the British Ambassador whether the United Kingdom, which had experience with the planning of national parks in its dependent territories, could offer advice about the Galapagos park under its Overseas Development programme. This was readily agreed and in 1965 a small mission was sent consisting of Ian Grimwood, a noted expert on national parks, and the recent CDRS Director, David Snow, who possessed unrivalled local experience. Their report, presented to President Yerovi in 1966, was entitled *"Recommendations on the Administration of the proposed Galapagos National Park and the Development of its Tourist Potential"*. Among the report's key recommendations were:

That a National Park Service should be established.

That the boundaries of the National Park should be speedily and clearly defined.

That there should be a protected marine zone 1000 metres wide surrounding the park's boundaries.

That tours by ship should be organised with the visitors sleeping on board.

That tourists, when going on shore, should be accompanied by trained guides.

By the time Perry left, much of this programme had been carried out. In 1968 the nucleus of a

Giant Tortoise and Galapagos Buzzard
Photograph by Tjitte de Vries

Galapagos National Park Service (GNPS) had been formed under the control of the Forestry Service of the Ministry of Agriculture. The GNPS was housed for the time being with the CDRS and used its facilities. This had the advantage of building a close relationship between the GNPS and the CDRS as well as bringing to the conservation programme the authority of the sovereign government, which an international scientific body could not and should not exercise. The local co-operation between the CDRS and the GNPS was paralleled by the fruitful relationship between Perry and Pablo Rosero of the Forestry Service in Quito. *(Noticias de Galápagos 7/8).*

The arrival of the first members of the GNPS, Juan Black and José Villa, was very timely as regular trips to the Galapagos were being planned by travel companies, which meant the beginning of an organised tourist industry. Both the Grimwood-Snow report and the United Nations' office in Quito considered that the prospect of a tourist industry was a highly desirable if not an essential factor in promoting support for conservation. There were however serious doubts in official quarters whether

the very specialised tourism that the wild Galapagos could offer would be commercially viable. Nobody at all foresaw the speed with which tourists would be attracted, whether to the Galapagos or eventually to continental Ecuador.

Between 1969 and 1970 the boundaries of the National Park were drawn by a commission from the *Instituto Ecuatoriano de Reforma Agraria y Colonización (IERAC).* These boundaries corresponded very closely with those recommended in 1966 by the CDF and thus amply fulfilled the Foundation's hopes so far as the land area was concerned. Some 97% of the land - 3,000 square miles - was declared to be a National Park, including the whole of the controversial island of Santiago, where all individual property rights were extinguished. There were to be no residents, private property or developments outside the clearly defined and limited areas of settlement, though for the next few years squatters continued to encroach on the National Park boundaries on Santa Cruz. The Commission's adjudications gave much satisfaction to the GNPS and the CDRS and the looming threats of land speculation, cattle raising, mining and the development of recreational facilities within the National Park were averted.

The only omission was that no steps were taken to establish a protected marine zone, but thanks to the co-operation between the CDRS, the GNPS and the National Institute of Fisheries, little harm was done and twenty years later the whole internal waters of the archipelago were declared a reserve, not just the 1000 metre zone proposed in the Grimwood-Snow report.

As the report's recommendation that all visits to the National Park should be by ship with the visitors sleeping on board was adopted in practice, no accommodation on shore within the park was necessary. The modest hotels, restaurants and other tourist facilities that have since grown up have been confined to the relatively small settlement areas. (Even the CDRS and GNPS buildings are situated outside the National Park boundaries). Thus conservation problems arising from tourist visits were reduced in scale and character. At first the larger cruise ships were foreign-based (particularly those operated by Lars Lindblad, an early supporter of Galapagos conservation) but gradually the traffic was taken over by national vessels based in Guayaquil or in the archipelago itself.

Perry had a natural bent for exploration and, aided by Castro, Harris, Sievers, De Vries and the growing number of visiting scientists, he greatly increased the Station's knowledge of the islands and their flora and fauna. During his six years' residence, fears of direct human threats to the environment began to take second place to concern at the damage caused by the feral animals man had introduced. In the later years of his tenure he had a surprising amount of good news to report to the Foundation's officers, as one ecological menace after another was thwarted. But there were troubles enough on other fronts, particularly those arising from the Foundation's precarious finances. At times there was no cash to pay either CDRS or GNPS wages and Perry himself served unpaid for his last year. CDF finances were on a hand to mouth basis. Ship maintenance is a constant problem in the Galapagos and there were no reserves on which to draw to take the elderly Beagle II to the mainland for an overhaul. In the end, for lack of maintenance, the CDF's first research vessel became unfit for navigation and had to be dismantled and sunk. The CDRS lost mobility for a considerable period and the Foundation was faced with the uphill task of raising funds to pay for the purpose-built Beagle III, a steel-hull ship specifically designed for the Station's purposes.

As the archipelago is one of the world's most active volcanic regions, eruptions are frequent. One of unusual violence occurred on 11 June 1968 when the floor of the volcano Fernandina's caldera, already 800 metres below its 1,500 metre rim, dropped a further 300 metres. This was the world's second biggest caldera collapse since that of Krakatoa in 1883. A CDRS team led by Roger Perry reached the rim on 19 June and a party of geologists, led by Tom Simkin of the Smithsonian Institution, investigated the tectonic event 10-13 July. *(Noticias de Galápagos 12 and 13).*

THE MANAGEMENT OF THE NATIONAL PARK

PETER KRAMER, 1970-73

When Peter Kramer, Perry's successor as Director, arrived with his wife, he already had the advantage of knowing the archipelago as he had been a junior member of the German Galapagos Expedition of 1962/63. He found that human predation on the wildlife had somewhat decreased since his first visit and that, thanks to the efforts of Snow and Perry to improve public relations, there was a better local understanding of the need for conservation. He pressed forward with Perry's educational programme, which he broadened, institutionalised and extended to mainland Ecuador. Aided by better communications due to somewhat more frequent flights to the Baltra airfield (though he himself was held up for a month in Guayaquil waiting for a passage) he was able to bring continental institutions into a working relationship with the Darwin Research Station. Until then, scientific investigation in the Galapagos had been the virtual monopoly of foreigners. Kramer involved Ecuador in Galapagos science by offering scholarships to enable national university students to work at the CDRS. Students were often attached to senior visiting scientists to gain experience in field research and live for a few months in a scientific atmosphere. This may not have been an ideal system but it was all that funds would permit at that time and it was the beginning of what was to become one of the main activities of the CDRS. Over the years, the educational programme grew and provided an increasingly important link between the Darwin Foundation and public opinion in mainland Ecuador. Galapagos science became increasingly Ecuadorean science and, in turn, gave a stimulus to the teaching of biology and geology in the nation's schools and universities. The CDRS became more and more an Ecuadorean institution.

A complementary development was the establishment, with the support of the Frankfurt Zoological Society, of a CDRS information centre in Quito. Snow and Perry had maintained excellent relations with the authorities on the mainland but distance and poor communications made meetings rare and irregular. The new centre served to arouse official, academic and public awareness through contacts with the ministries, the media and the educational world, providing information about Galapagos conservation and science that was not available through any other channel. In the past there had been books in many languages about Galapagos science but not a single one in Spanish. Juan Black, formerly of the GNPS and now in charge of the Darwin Foundation's information centre in Quito, published the first Spanish natural history of the islands, entitled *"Galápagos: Archipielago del Ecuador"*. Copies of this and illustrated brochures were distributed to schools and colleges as well as being sold to a wider public.

This period was critical in the development of the Galapagos National Park Service. The embryonic staff was gradually expanded and in 1972 the first Superintendent, Jaime Torres, was appointed. Work was begun to provide the service with its own buildings, which were situated close to the Darwin Station. Co-operation remained as cordial as when both organisations were under one roof and led to a considerable expansion of conservation activity.

Although the legal delimitation of the boundaries had been completed, squatting inside the National Park still continued, particularly on Santa Cruz. But now, with the authority of the state behind the GNPS, it became possible not only to prevent further incursions but also to expel illegal squatters and funds were found to settle them elsewhere. The threat of farming activities spreading out from the settled areas, which had caused so much anxiety in the 1960's, ceased to be a major concern, though cattle strayed across the boundaries, carrying seeds of introduced plants. Attention was no longer focussed on the protection of the "strict tortoise reserve", it was the whole National Park that was to be preserved.

The patrolling of the park and the protection of its wildlife became the prime duty of the GNPS and, as direct human predation decreased, control of the spread of introduced animals and plants assumed greater and greater importance. With the

co-operation of the CDRS, the park wardens freed the arid island of Santa Fe from the goats that were destroying the scanty vegetation and endangering the existence of the island's endemic species of land iguana. Goats were also eliminated from Rábida, where they had recently been introduced by visiting fishermen as a source of food. Encouraged by these successes, campaigns were begun against the goats on Española and Pinta, where the problem had previously been considered, if not insoluble, at any rate beyond the available resources of funds and manpower.

Once the GNPS was firmly established, it became possible to draw up a comprehensive scheme for the management of the National Park. To prepare this, a small committee was appointed in 1973, representing the recently formed Department of National Parks and Wildlife, the National Planning Board, FAO and UNESCO (the last represented by Peter Kramer). Their report, "The Master Plan for the Protection and Use of the Galapagos National Park", followed the general lines of the Grimwood-Snow recommendations but went into much greater administrative detail and was a milestone in the history of the archipelago. It called for the absolute integrity of the 1969 boundaries and the extension of the park to include a two mile-wide marine zone. No buildings were to be allowed in the park apart from discreetly hidden cabins for GNPS wardens at sensitive points on three of the islands. (In fact these have never been built). The report re-affirmed that tourists should be accommodated aboard ships and, when landing, should be accompanied by qualified guides, trained by the GNPS and CDRS. Groups of visitors permitted to land at any one time should not exceed 60. With these precautions it was considered that up to 12,000 tourists a year could be accepted without harm, though "tourist impact" should be constantly monitored. Visitors should be charged a fee to enter the National Park and a reception centre should be built on the airfield on Baltra, an island which should remain a military reserve. Transport facilities for both tourists and residents should be increased.

To simplify management, the Master Plan called for the zoning of the park for five specific purposes:

Primitive-scientific Zones: areas that had remained essentially free from introduced species were to b e given the strictest protection to ensure their ecological integrity.

Primitive Zones: the largest areas of the park which, though somewhat altered ecologically, needed special protection as the maintenance of their primitive character was necessary to guarantee the preservation of the Galapagos ecosystems.

Extensive Use Zones: areas which, although of interest to visitors, could not support a high load of tourist traffic.

Intensive Use Zones: a considerable number of carefully selected areas, small in extent but of prime interest to visitors and capable of withstanding substantial tourist traffic.

Special Use Zones: lands bordering the settled areas which had suffered considerable alteration but which nevertheless would require careful management.

Some of the Master Plan's proposals required further legislation but meanwhile they were accepted by the administration as a broad basis for future policy. The plan was published in an illustrated edition and, with modifications, has determined the lines on which the park has subsequently developed.

During this period there was a steady growth of tourist traffic and the GNPS and CDRS organized courses to train "naturalist guides" to accompany all parties of visitors. The Research Station itself became a tourist attraction. It had never been so intended, but visitors naturally wanted to see the tortoise rearing centre, particularly as tortoises were still difficult to see elsewhere. They were made welcome and, thanks to the generosity of Mrs. Anne Byron Waud, an exhibition and lecture building, the Van Straelen Hall, was inaugurated in 1973. The Station's library, herbarium and collections of zoological specimens were expanded and improved and a new house was built for the Director. The

new research vessel, Beagle III, arrived from England and was registered under the Ecuadorean flag. Work went ahead on building the headquarters of the GNPS.

Long-term botanical monitoring had begun when Tjitte de Vries established the first permanent study quadrats (measured plots) in 1966. This initiative was expanded and improved by Ole Hamann in 1971-72 and has been developed by him and a succession of Danish botanists ever since.

Bull Sea Lion
Photograph by I. Eibl-Eibesfeldt

Blue-footed Boobies
Photograph by Tjitte de Vries

A WIDENING OF HORIZONS

CRAIG MacFARLAND, 1974-78

Craig MacFarland and his wife were familiar with the Galapagos when Craig took over the direction of the CDRS in 1974, as he had previoulsy done four years of basic research on the giant tortoises. His published papers, in association with J. Villa and B. Toro, had provided for the first time a comprehensive account of the surviving tortoise populations and methods of preserving them. While his responsibilities were now much wider, his concern for the tortoises was undiminished and the captive-breeding programme at the Station was expanded and technically improved. Further support was received from the San Diego Zoological Society which donated a rare Española tortoise from its collection, raising the number of Española males at the breeding centre from two to three; this substantially increased the genetic variability of the stock and thus the chances of survival of the race.

In 1975 the oldest of the captive-bred youngsters of the Española and Santiago races were released on their ancestral islands, where they prospered. There was also good news from San Cristóbal where, as the farmers had exterminated the wild dogs, the island's endangered sub-species of tortoise was again breeding successfully in the wild. On the debit side there was a sudden incursion of dogs into the "strict tortoise reserve" on Santa Cruz, which led to the destruction of most of the young tortoises hatched there between 1971 and 1975: this was not one of the rarer races but the loss of four years' increment was a serious disappointment.

This upsurge of the dog population had a much more disastrous effect on the Santa Cruz land iguanas, which were very nearly wiped out. There was a similar invasion of feral dogs at Cartago Bay on Isabela, which almost annihilated the local community of land iguanas. Fortunately, Dagmar Werner, a visiting scientist who was doing research on the iguanas, realised the danger. She nobly abandoned her research project for the time being and devoted herself to the rescue of both these populations. Whether they were separate races or species was not the immediate question: the important issue was to preserve every remaining community. Werner organized the collection of all the survivors that could be found. They were taken to the CDRS, where primitive pens were hastily built. Tortoises had been saved by captive breeding, so why not iguanas? Within four years the first land iguanas ever bred in captivity were hatched at the Darwin Station. *(Noticias de Galápagos, Nos. 25-29).*

There were plenty of problems and many setbacks as the iguanas were more difficult to keep in captivity than the tortoises. On the other hand, once the problems had been mastered, they bred much more rapidly so that eventually the pens, though extended, were suffering from overcrowding. By this time Dagmar Werner had resumed her research project and her function as advisor to the GNPS and CDRS on the rescue programme had been taken over by Howard and Heidi Snell, U.S. Peace Corps volunteers, who little suspected how many years the land iguanas were to occupy their attention. The ideal solution was to release the young iguanas in the wild as soon as they were big enough, but this could not be begun until the packs of dogs were brought under control. There was no point in rearing iguanas to feed wild dogs.

The dogs were only one part of the intractible problem of the introduced mammals - rats, cats, pigs, goats, donkeys - which came to take a more and more dominant place in the preoccupations of the CDRS and the GNPS. Before effective action to control them could be taken, a great deal of research was necessary, particularly as each island had its individual mixture of native and introduced species. Advice was sought and generously given by such bodies as the U.S. Fish and Wildlife Service, the New Zealand Wildlife Service and the Institute of Terrestrial Ecology in Scotland. The size and diversity of the problems made progress slow, particularly as interruptions in control campaigns for lack of funds gave these prolific feral animals the opportunity to recover their numbers.

While it had been accepted from the beginning that the purpose of the Darwin Foundation was, so far as possible, to preserve the entire Galapagos ecosystems, the fauna had been given the highest priority, if only because it seemed to be in the most immediate danger. The islands extraordinary flora had taken second place but had not been entirely neglected. Research by L. Calvopina and Tj. de Vries had revealed the enormous size of the goat herds on Santiago Island (estimated at 100,000) and the irreversible damage that they and thousands of pigs were inflicting on the vegetation. As resources were not available to control these pests, goat-proof enclosures were built in the hope that, by fencing in critical areas, rare endemic species of trees and plants could be saved from extinction until a solution could be found to the goat and pig problem. Henning Adsersen reported that, in a mere 15 years, recently introduced goats had come near to destroying Pinta Island's unique plant community, which had taken thousands of years to become established. Progress was made throughout this period in reducing the numbers of goats, first on the smaller, then on the medium-sized islands, but on the large and rugged Santiago, resources of funds and manpower did not permit more than preliminary studies. Similarly, Deborah and David Clark, who were studying the black rats, succeeded in eliminating them on tiny Bartolomé, but it was at that time thought impracticable to attempt an extermination campaign on the larger islands with the known techniques.

The other main threat to the botanical integrity of the National Park was the steady spread of alien plants and trees from the farming settlements. The GNPS went to work to stem the invasion but by this time introduced species, such as citrus, guava, avocado and cinchona, already covered large areas and were competing with the native species. Cutting them down was almost useless; digging out the roots was a slow process and arboricides were not entirely effective. The CDRS tried to devise better methods and the GNPS wardens worked heroically, but their efforts were not adequate to turn back the tide. On some islands such as Floreana, where there had been human settlements for over a century, the spread of introduced species seemed irreversible. Meanwhile

Tree Cactus on Santa Fe Island
Photograph by Roger Perry

research went on with a view both to conservation and to the widening of knowledge of the islands' botanical resources. *(Noticias de Galápagos Nos. 24-27).* Many specialist botanical papers were written by visiting scientists and in 1971 Wiggins and Porter published their classic *Flora of the Galapagos,* which provided the tool for more ecological and management-orientated botanical research.

As the volcanoes did not require a conservation programme, geology received a low priority in the CDRS's budget, though it attracted a great deal of scientific attention. The Galapagos are one of the world's most active volcanic areas and they drew repeated expeditions, often led by Tom Simkin, one of the CDF's Secretaries for the Americas. Whenever there was a major eruption on one of the islands, there was a notable exodus of staff from the Station,

anxious to get a close look at the spectacle. Recording the seismograph was part of the daily routine of the CDRS and Freddy Herrera, a local teacher who was also in charge of the Station's meteorology, looked after it for six years until he was appointed Governor of the Galapagos in 1981.

Paul Colinvaux carried out investigations on the climatic history of the islands and vegetational succession. By coring the sediments of lakes and bogs in the islands and studying the deposits of spores and pollen, Colinvaux obtained a history from time too old to be dated by the radiocarbon method. His evidence suggests that in ice-age times the Galapagos Islands were drier than now, which is of great importance to an understanding of the evolution of the unique Galapagos plants and animals.

The marine ecosystems were relatively undisturbed and seemed in little immediate danger, so not much had been done to explore the underwater resources of the archipelago, even though pioneer investigations suggested that these might prove to be at least as important as the terrestrial ecosystems. The government had still not included a marine zone in the National Park and the CDF had not found funds to build even a modest marine laboratory. It was simply a question of priorities. However, in 1974, Gerard Wellington, a U.S. Peace Corps volunteer, was assigned jointly to the CDRS and the GNPS for two years and, with the aid of the Director, Craig MacFarland, produced a massive study, *The Galapagos Marine Coastal Environments: a Resource Report to the Department of National Parks and Wildlife.* He emphasised the complex and fragile relationship between the fauna, flora and habitats of the terrestrial and the marine areas and pointed out the unexploited potential of the latter for education and tourism.

He proposed:

1. the extension of the National Park boundaries to two nautical miles from the shore.
2. the division of this marine area into zones, comparable to those proposed in the Master Plan for the land area, to facilitate the regulation of potentially disturbing activities.
3 the protection of the continuity of habitats within the National Park.

Wellington lamented the continuing lack of scientific information about the marine resources but at least he had made a brave effort to reduce that ignorance. *(Noticias de Galápagos Nos. 24 & 25).*

Two groups of scientists who undertook extensive research on the marine fauna and flora during this period were the California Academy of Sciences Ichtyological Expedition and the Smithsonian Marine Algal Program for the Galapagos. *(Noticias de Galápagos No. 27).*

In March 1978 a number of interlocking agreements were concluded between the National Institute of Fisheries, the University of Guayaquil and the Darwin Station to co-ordinate their research work and, where appropriate, to pool resources, equipment and manpower. In the absence of a legally protected marine zone, these agreements provided a substantial safeguard against harmful exploitation and promised fruitful collaboration in both conservation and scientific investigation.

In 1971 and 1972 there had been disturbing incursions into Galapagos waters by a Japanese refrigerator ship which, with the aid of local fishermen, collected some thousands of the East Pacific green turtles that breed and feed in the islands. The then CDRS Director, Peter Kramer, made representations to the government and an indefinite ban was imposed on commercial exploitation to give time for a full investigation of the population dynamics of the turtles.

Peter Pritchard, Miguel Cifuentes and Judy Webb began this study. They were followed by Derek Green who, with the support of a succession of teams of volunteers from 11 countries and with the financial aid of the National Geographic Society, devoted much of the next 8 years to the investigation. The teams spent periods of months under Spartan conditions, camping on the beaches where the turtles lay their eggs, in order to estimate hatching success. They also tagged 3,000 adults and notched 12,000 hatchlings, to provide a basis for the long term study of the turtle population. Given protection from commercial exploitation, the Galapagos turtles were not considered to be in any imminent danger. *(Noticias de Galápagos, Nos. 33, 38).*

Fritz Trillmich of the Max-Planck Institute began

a "two year" study of the Galapagos fur seals and sea lions, which he was still continuing a dozen years later with the help of a series of assistants. One by-product of his ethological research (and a most welcome surprise) was his estimate that the numbers of the endemic fur seal, once considered doomed to extinction, had risen to 40,000, roughly the same number as for the sea lion. **(Noticias de Galápagos No. 29).**

Such long term projects were unfortunately few and far between but, as the Galapagos offer exceptional opportunties for evolutionary research, over the years hundreds of visiting scientists from every continent made use of the facilities of the Darwin Research Station. Some came only once for a brief or longer period, others returned year after year. They were independently funded and were not a charge on the Darwin Foundation's budget.

Annual courses to train park wardens continued to be run jointly by the GNPS and the CDRS. In addition, courses and examinations were organised for tourist guides, as every party of visitors landing in the National Park was now obliged to be led by a certified guide. Courses for "naturalist guides" lasted four weeks, one week for "auxillary guides". It became increasingly evident that these qualified and licensed guides were the first line of defence against potential harm by tourists. The touring companies, who actually employed the guides, were most co-operative.

In 1976 Eduardo Andrade was succeeded by Miguel Cifuentes as Superintendent of the Galapagos National Park Service. Cifuentes had previously worked for the CDRS on the marine turtles project and relations between the two bodies became, if anything, even closer. By this time the GNPS headquarters were substantially completed, with an intercom connection to the CDRS, while the gift of three patrol boats by the Frankfurt Zoological Society gave the park wardens increased mobility. With the growth of organised tourism, the pressure of visitors on the environment had become a source of anxiety, but years of scientific monitoring of "tourist impact" by M.P. Harris, Tj. de Vries, C. MacFarland, J. Gordillo, R.W. Tindle, A. Tupiza and others had concluded that, for the foreseeable future, the main threat to the ecosystems was not man himself but the alien animals and plants that he had introduced. *(Noticias de Galápagos No. 24-27).*

Land Iguana on rim of Fernandina Crater
Photograph by Roger Perry

PLANNING CONSERVATION

HENDRICK HOECK, 1978-80

When Hendrik Hoeck was appointed Director of the CDRS, he did not know the Galapagos but was well acquainted with South America having been born in Colombia. Two decades had passed since the establishment of the Galapagos National Park and the creation of the Charles Darwin Foundation and many problems of conservation could now be seen more clearly. The 3,000 square miles of rugged volcanic islands, scattered over 30,000 square miles of ocean, had been gradually explored and there was a better understanding of the complex ecological problems that varied from island to island. It was time to take stock and a seminar of independent experts was held in Quito, which produced a report: *Twenty Years of Conservation in the Galapagos.* The report assessed the balance of past achievement and suggested the future course of CDF policies.

At the CDRS and GNPS, conservation strategy was already being revised. It was accepted that the control of introduced species must remain the top priority but with the proviso that it was impracticable to tackle all the feral animals simultaneously and, in particular, unrealistic to expect that adequate resources would be forthcoming in the foreseeable future to control the enormous herds of goats and pigs on Santiago. Therefore efforts should be concentrated on smaller islands where, taking them one by one, the goats could be completely eradicated, thus providing a final solution. The GNPS team of hardy hunters, with improved tactics and weapons, finally suceeded in eliminating the last of the goats on Española (1978), and then on Marchena (1979). Next they moved on to Pinta and began with considerable success the uphill task of controlling the 20,000 goats that were rapidly destroying the island's unique ecosystems. Meanwhile the most that was attempted on Santiago was a holding operation with critically endangered plant communities protected by goat-proof fences, though studies of the habits and breeding cycles of the goats and pigs were continued with a view to providing a scientific basis for eventual action.

But action on the feral dog menance could not wait. Hans Kruuk, an expert on canines, and the herpetologist, Howard Snell, made a three month study of the situation. They concluded that a swift and drastic campaign was needed to control the upsurge of packs of feral dogs along the western coast of Isabela. These dogs were attacking the endemic species – marine iguanas, fur seals, flightless cormorants and penguins – which were not adapted to coping with this new form of predation; the marine iguanas, in particular, could not long sustain the current rate of attrition. Kruuk and Snell also pointed out that, unless checked, the dogs might cross the lava wastelands of the Perry Isthmus and invade the vitally important ecological areas of northern Isabela. They further recommended another urgent campaign against the wild dogs on Santa Cruz, which had recently killed so many land iguanas and young tortoises. On the basis of this advice, the CDRS and the GNPS began pilot studies to work out tactics for an all-out operation to eliminate both lots of dogs. The Kruuk-Snell report also recommended

Waved Albatross
Photograph by The Duke of Edinburgh

long-term research into the population dynamics of the marine iguanas, about which surprisingly little was known in spite of their prominence on the Galapagos scene.

Research on a number of species of sea birds was pursued and special attention was devoted to the dark-rumped petrel, the only sea bird that appeared in danger of extinction. There was still a substantial population of these large pelagic birds and they were safe as long as they stayed at sea, but devoted research under harsh conditions by M.P. Harris, Robert Tomkins, Ruth Baker and Fiona Bass revealed that, when they came ashore to nest in the burrows they dug in the moist soil of the uplands of the larger islands, they were under increasing attack from rats, pigs and dogs. Breeding success was dismally low and the petrels' numbers were declining ominously.

Various improvements were made to the Station's buildings. The large Van Straelen Hall, which had served for training courses and seminars, was now filled out as an exhibition and information centre for visitors. It was inaugurated by the Vice-President, Oswaldo Hurtado (later President of the Republic). With staff still increasing, a much needed administration building was completed and named in honour of Cristóbal Bonifaz, one of the CDF's founders. Extensions were made to the laboratory, the library, the workshops and the accommodation for scientists. A mariographic station was installed.

For the first time, the CDRS published a large annual report in both English and Spanish. As little of the vast amount of literature on Galapagos science was available in the Spanish language, a substantial volume of translations of outstanding articles was compiled and published to give Ecuadoreans a better idea of the scientific work being done in their island province.

While still awaiting a government decision on the creation of a protected marine zone, a seminar was held attended by all the interested organisations, local and national, to consider interim measures for the preservation of the marine resources. In order to further scientific activity on this front, the CDF decided to sell Beagle III and buy another vessel better adapted to marine research.

Feral Goats
Photograph by I. Eibl-Eibesfeldt

EDUCATION AND RESEARCH - THE "EL NINO" YEARS

FRIEDEMAN KÖSTER, 1981-83

Although a German citizen, Friedemann Köster, the next Director, had had years of experience of South America both as a schoolboy and as a nature conservationist. There was an interregnum of some months before he and his wife and children could take up residence and during this period David Duffy, the staff ornithologist, took charge of the Station.

There were significant changes at the CDRS during Köster's years, particularly in the related fields of education and scientific staff. Eugénia del Pino, a lecturer at the Catholic University in Quito, had pointed out to the CDF's Executive Council that, while the scholarships introduced by Kramer to enable Ecuadorean students to work at the station had marked an admirable advance in collaboration with the national universities, the scheme still fell short of the contribution that the Darwin Foundation was capable of making to Ecuadorean education and development. **(Noticias de Galápagos No. 31).** The difficulty was that the CDF lacked the funds to employ more international scientific staff to do the teaching. Fortunately the state of the oil market produced a brief boom in the Ecuadorean economy and the government, anxious to promote scientific education, greatly increased its financial contribution: indeed, for a brief period it met more than half the expenses of the CDRS. While this bonanza lasted, the Darwin Foundation could afford to enlarge the Station's scientific staff to include a herpetologist, a marine biologist, a botanist, an ornithologist, an entomologist, an officer in charge of feral mammal control, a human ecologist and a co-ordinator of education. Each served for about three years. This strengthening of the resident staff enabled the CDRS to increase the number of its students and to improve the standard of teaching. More research could also be devoted to conservation. Contacts with the universities on the mainland grew closer. With the help of Gonzalo Oviedo, the education co-ordinator, environmental education in the Galapagos schools was re-organised and new text books provided.

Seminar in the Van Straelen (lecture & exhibition) Hall, CDRS

Conservation projects which had been researched in previous years were now put into operation. To the general surprise, the campaigns to eradicate the dogs in key areas were completed in less time than planned. Thanks to the labours of the GNPS and CDRS teams, the dogs were virtually eliminated within two years both from the Conway Bay area of Santa Cruz and from the coast of Isabela. While it was not certain that no dog had escaped and there was no guarantee that domestic dogs would not turn wild in the future, the new situation clearly encouraged the release of some of the captive-bred land iguanas in their traditional habitats. Cats were still a threat to the young ones but risks had to be taken and careful monitoring showed that the risks were justified. *(Noticias de Galápagos No. 36).*

While the dogs were being brought under control, another holding project had also proved successful. As there was no space for them in the CDRS pens, 38 of the recued iguanas were transferred to a tiny islet just off the coast of Santa Cruz, where it was hoped that they would be beyond the reach of the dogs. The GNPS wardens laboriously covered the islet with 90 tons of earth into which the iguanas could dig nesting burrows. The experiment prospered and the iguanas bred, thus providing another line of defence against the extinction of this community. Dogs never reached the islet but rats did, and they had to be eliminated.

A third population of land iguanas was also preserved in remarkable circumstances. In the 1930's there was an abundant and vigorous community on the arid island of South Seymour (now known as Baltra) but none on nearby North Seymour. This puzzled a visiting scientist, who transferred some 30 iguanas to the smaller island to see what would happen. What happened was that South Seymour became a U.S. military base and airfield during the Second World War and not a single iguana survived there, while those removed to North Seymour lived on to a ripe old age. Howard and Heidi Snell found that there were still some 20 of them remaining. They were breeding but the young were not surviving, presumably owing to local conditions. This meant that the population would eventually die out. So in 1981 a few of them were taken to the CDRS pens where they bred and their young were successfully raised. The genes of the South Seymour - Baltra iguanas had been preserved but this left the problem of the future of the community; North Seymour was apparently an unsuitable habitat and it was doubtful whether the iguanas could be safely released on their ancestral island of Baltra in view of the radical changes that had occurred during the last half-century and the fact that it did not form part of the National Park. *(Noticias de Galápagos No. 34).*

The captive breeding of these three distinct populations of land iguanas was a notable achievement. Nothing comparable had been attempted anywhere else. There were many setbacks and much research and experimenting was needed before satisfactory incubating temperatures and humidities could be established. Great credit goes to Dagmar Werner for her initial intervention, to Howard and Heidi Snell for their years of basic scientific research, to Miguel Cifuentes of the GNPS and Robert Reynolds of the CDRS and their devoted staffs for the management of the programme.

After years of research, the CDRS finally went into action to save the dark-rumped petrel. Under the direction of Malcolm Coulter, the new staff ornithologist, Felipe and Justina Cruz zealously maintained a cordon of poison baits round a nesting colony in the rain-drenched highlands of Floreana. This method almost completely excluded the black rats from the area and 72 of the 100 nests fledged young. This was just one breeding colony on one island and the others were still at the mercy of rats and pigs (though no longer of dogs) but it did demonstrate that, given the manpower and the money, this splendid petrel could be saved from extinction.

Efforts by the staff entomologist, Yael Lubin, and her helpers to eradicate the introduced fire ants were not completely successful. These aggressive insects, which had a very destructive impact on the native terrestrial invertebrates, were carried from one island to another, concealed in people's clothes and food. Drastic methods were employed to prevent their spread and to stamp them out wherever they had established themselves, but it had to be accepted that the most that could be achieved was limited local control.

Luong Tan Tuoc, a CDRS staff botanist, co-operated with the GNPS team engaged on eradicating introduced plants and trees. Experiments were made with herbicides and arboricides and a scheme for the use of controlled fire was considered. This last method would need to be followed by the planting of rapid growing native trees, so nurseries were established. Luong's inventory of the flora of the archipelago and its species composition, besides contributing to botanical knowledge, revealed the alarming extent of the spread of alien plants and trees.

At long last a marine laboratory was installed under the staff marine biologist, Gary Robinson, who also continued the underwater explorations of Gerard Wellington and drafted detailed plans for the establishment of a marine park *(Noticias de Galápagos No. 37)*. Together with Priscilla Martinez of the National Institute of Fisheries, he analysed the extent and reproductive potential of the black coral populations, which were being exploited for the manufacture of souvenirs for tourists. This and all other Galapagos corals had been badly affected by the climatic conditions of 1983.

All scientific and conservation activities, in fact all life in the Galapagos, were dominated by the extraordinary *El Niño* event of 1982-83 and its aftermath. *El Niño* is a frequent if irregular warm and wet weather phenomenon occurring about Christmastime. On this occasion it was not only much more intense but it was also prolonged for months. There was no parallel in recorded history though comparable events had doubtless taken place in earlier centuries. The rythm of nature was disrupted. The rainfall measured at the Darwin Station during the 9 months of *El Niño* was 3264 mm, compared with the average annual figure of 254 mm. Deserts became lakes and muddy torrents rushed through the cactus zones. The tortoises left the even wetter uplands and stayed down on the coastal plains for months. Many plants flourished abnormally with the extraordinary rains and, in consequence, insects and land birds did likewise. Finches produced five, even six broods in the season and early broods bred themselves in their first year.

But the animals that depended on the sea were decimated. Boobies, albatrosses, flamingos, gulls and other ground-nesting sea birds had their nests flooded out and all species that derived their food from the ocean were faced with starvation as the water temperature rose by 4-8 degrees C. and no longer produced the usual nutrients. Those birds that could fly left the islands, but some could not. Half the flightless cormorants and three quarters of the little Galapagos penguins died. Gulls, boobies and cormorants regained their numbers gratifying quickly but the recovery of the penguins was long delayed. The marine iguanas suffered severely as the particular algae on which they largely depended disappeared from the sea: up to 90% of the year's hatchlings died, while overall mortality varied between 45% and 70% on different islands. The sea lions' numbers were greatly reduced and the fur seals lost nearly all the young born in the four years 1980-83 and possibly 30% of the adult population. It seems quite probable that if this climatic catastrophe had occurred in the 1920's or 1930's, when their numbers were dangerously depleted, the endemic Galapagos fur seals would have become extinct. They survived this crisis because years of protection had increased their numbers to the point where they could bear the abnormal stress.

There was little that the conservationists could do to cope with the crisis but for the long-term researchers this cruel event was an exceptional scientific opportunity. (Not for all scientists however: some simply had to abandon their projects). Fritz Trillmich had been studying the fur seals for several years and so had the experience on which to base a comparison of population fluctuations before, during and after the disaster. Andrew Laurie was actually engaged on a three year study of the population dynamics of the marine iguanas and his project was extended to six years so that he could assess the effects of the *El Niño* event and the reaction of the iguanas to the disaster. At the "normal" rate of reproduction, which he had already established, it would have taken decades for their numbers to recover, but this was countered by a remarkable increase in fertility once the surviving iguanas were restored to fitness. Laurie's research provides a firm basis for policies for the future preservation of this

peculiar Galapagos species.

Since 1971 Ole Hamann had been investigating the dynamics of the Galapagos vegetation by monitoring permanent study quadrats on various islands. The *El Niño* phenomenon caused a spectacular change in the structure and composition of the Galapagos vegetation when herbaceous species flourished and woody species and cacti died. The study of these changes complements the research conducted over the years on the recovery patterns of vegetation after the eradication of feral goats on several islands and so contributes to our understanding of the functioning of the Galapagos ecosystems, which is fundamental for managing and conserving the unique biota of the archipelago.

Peter Grant was leading a group of colleagues in a very longterm investigation of the finches and they had already compiled a vast amount of statistical information before *El Niño* struck. The rains led to the unprecedented population explosion which they recorded in detail. *El Niño* was then followed by a prolonged drought and a shortage of food, which savagely reduced the finches' overswollen numbers. This conjunction of exaggerated expansion and contraction provided an opportunity, unlikely to be repeated for generations, to study how extreme conditions affect survival and the evolution of species and it could throw light on some of the factors governing natural selection.

The Charles Darwin Foundation published in Quito a volume of 30 articles on the 1982-83 *El Niño* event, edited by Gary Robinson and Eugénia del Pino, half in Spanish, half in English.

Friedemann Köster ended his period as CDRS Director in December 1983 but he did not leave the islands immediately. He and Sylvia Harcourt, a staff ornithologist, joined with Dieter and Mary Plage, a distinguished camera team, to make a series of five one-hour films for Anglia Television's "Survival" series. They devoted three years to this task, and their films gave to millions a comprehensive picture of Galapagos wildlife and the measures being taken to conserve it.

Miguel Castro, the first Conservation Officer, gives a Natural History Lesson
Photography by Sven Gillsäter

THE MARINE EXTENSION - THE GREAT FIRE

GÜNTHER RECK, 1984-88

When Günther Reck arrived with his wife and children to take up his post as Director, he had long been familiar with the Darwin Station and the problems of Galapagos conservation. He had begun as a tourist guide and then served for years with the National Institute of Fisheries, in which capacity he had collaborated with the CDRS and the University of Guayaquil in schemes to study and protect the resources of the Galapagos waters. It was therefore most appropriate that he should be in charge of the Darwin Station during the discussions leading up to the creation of a marine reserve.

This long-sought development was finally decreed by President Léon Febres-Cordero in 1986, 20 years after the recommendations in the Grimwood-Snow report and long after the more detailed proposals of Wellington, Robinson and the authors of the Master Plan; but when the decree was promulgated it went far beyond their most optimistic demands. The "Galapagos Marine Resources Reserve" is to include the entire interior waters of the archipelago surrounded by a further zone 15 nautical miles wide, measured from the extreme limits the islands, a total of 30,000 square miles (80,000 square kilometres). Progress had been slow because of the difficulty in reconciling the various local and national interests involved, which fell under the jurisdiction of different ministries responsible for the law of the sea, defense, fisheries, tourism and development. The reserve was to be administered by a Commission representing these interests, presided over by the Minister of Agriculture, who was already responsible for the Galapagos National Park. The Commission was authorized "to seek the assistance and collaboration of the Charles Darwin Research Station and such national and international organizations as it considers necessary". Much negotiation was still needed before detailed administrative plans could be finalized. Advice was sought from the Great Barrier Reef National Park in Australia and from the Woods Hole Oceanographic Institution and the National Oceanic and Atmospheric Administration in the U.S.A.

The importance of extending legal protection to the sea as well as to the land area can scarcely be exaggerated. The Galapagos are situated at the confluence of the great Eastern Pacific currents and their waters are of unique scientific interest. Quite apart from the direct dependence on the sea of much of the wildlife - including nesting seabirds, marine iguanas, sea lions and fur seals - the Galapagos marine resources may prove to be at least as significant scientifically as the better researched terrestrial resources. The waters are still in a nearly pristine state but the increasing danger of pollution from the discharge of waste by cruise ships and the growing human settlements is obvious, as is the frequence with which ships are wrecked on the archipelago's notoriously dangerous shores. *(Notice de Galápagos, No. 44).* These are threats for the future. Meanwhile recent research has discovered gratifying numbers of sperm whales in the Galapagos Grounds off the west coast of Isabela, where they were virtually eliminated by whalers in the 19th century.

The *El Niño* period of extraordinarily heavy rainfall was followed by two years of drought. Fire broke out in the Darwin Station's administration building and, while it was possible to prevent it spreading to the other buildings, lack of water and appliances thwarted all efforts to save the office and most of its valuable contents. Thanks to the generosity of Swedish supporters, most of the damage was made good in a relatively short time.

A much bigger fire, started outside the National Park by farmers, swept across the desiccated vegetation of the Sierra Negra volcano on Isabela Island. It lasted from February to July 1985 and attracted world-wide publicity, including much imaginative misinformation. The local residents, armed forces from the mainland, fire-fighting bodies from Canada and the U.S.A. gallantly joined the National Park Service in the appalling heat. They checked the spread of the conflagration by encircling it with a firebreak 40 kilometres long, but it was months before the belated rains finally extinguished the last of the fires. The giant tortoises and other better known Galapagos species were never in real

danger but some 175 square kilometres of wilderness, still barely explored botanically, were devastated. Monitoring of the damage to the vegetation and the life that depends on it began immediatley but it will be years before the effects can be measured and half a century before some species of trees can again grow to their full size. *(Noticias de Galápagos 42, 46).*

With Marcia Wilson in charge of herpetology at the Research Station, two decades of captive breeding of reptiles was showing encouraging results. Much had been achieved by trial and error in this pioneering endeavour, but now experiments were being conducted by the GNPS and the CDRS in a more rigourously scientific manner. The staff of the two organisations, advised by Howard and Heidi Snell, compared hatching results obtained at different temperatures and humidities, and also monitored the relative success rates in rearing small tortoises on a cement floor inside the centre with those obtained on a soil surface in the open air. It had recently been discovered that the sex of tortoises is determined by the temperature at which the eggs are incubated, so it became possible, by controlling the temperatures in the incubators, to produce a higher proportion of females to males and thus to speed up the eventual repopulation of the Galapagos by the giant tortoises (galápagos) that gave the islands their name. In 1988, the 1000th captive-bred tortoise was released on its ancestral island, and there were signs that the oldest of these would soon start reproducing in the wild. It was not to be expected that, in the harsh Galapagos conditions, hatching and rearing success in the wild would be as high as at the Station, but it was evident that the re-establishment of most of the once abundant races of giant tortoises was well under way.

Perhaps the most striking success was the preservation of the Española (Hood) Island race *(Geochelone elephantopus hoodensis),* of which only a few elderly survivors remained when the Darwin Station was inaugurated. By 1988, Espanola had a youthful population of over 200 tortoises, all of them captive-bred. Apart from the Arabian Oryx and Père David's Deer, this is the only known case of a wild population derived entirely from captive-bred animals. *(Noticias de Galápagos 25, 44, 45).*

Controlled experiments with hatching and rearing land iguanas likewise produced highly encouraging results; indeed over-crowding in the rearing pens became a serious problem. In the wild, only 10% of hatchlings survive their first year but, with the introduction of electric incubators and a new substrate, the rearing centre achieved a survival rate 4 - 6 times higher than in nature. Twelve years after the rescue operation began, the future of all three of the endangered populations of land iguanas (whether they are distinct sub-species or species is uncertain) seemed secure. There were still problems in protecting the young animals after they had been released in their traditional colonial areas and this was notably the case with the "Seymour-Baltra" population. As Baltra Island had become an active military and tourist air base and was not included in the National Park, the problems of re-introducing

The Vice-President of Ecuador, Blasco Peñaherrera Padilla, introducing his son to a giant tortoise under the watchful eye of Günther Reck, Director of the CDRS

THE EXECUTIVE COUNCIL OF THE CHARLES DARWIN FOUNDATION 1964-1988

With the inauguration of the Charles Darwin Research Station on Santa Cruz Island and the signature of the basic agreement with the Government of Ecuador early in 1964, the first stage in the history of the Foundation was concluded. This coincided with the death of Victor van Straelen, the first President and the driving force behind the creation of the Foundation. He was succeeded by Jean Dorst, who, because of his professional commitments had been anxious to retire from the onerous post of Secretary General but was persuaded to undertake the equally demanding duties of President.

Jacques Laruelle served all too briefly as Secretary General as he was killed in a tragic accident in 1967. He was succeeded by Sir Thomas Barlow, a great-grandson of Charles Darwin, who carried on until 1972.

The Foundation lost its Honorary President in 1975 when Sir Julian Huxley died at the age of 87. He had not been involved in the daily administration but he had intervened decisively at critical moments and his seminal influence both in the 1930's and in the actual organisation of the CDF was of vital importance for the future of Galapagos conservation.

The Council met twice a year. For the convenience of the majority of its members, who were responsible for their own travelling expenses, meetings were held in Europe, usually at the headquarters of UNESCO, a major supporter of the CDF in these early years, as it provided the salary of the Director of the Darwin Research Station.

Owing to never-ending financial stringency, meetings perforce devoted almost as much time to fund-raising as to science and conservation. Between meetings, the burden of administration was shared between the President, the Secretary General, the Secretariat for the Americas and the Director of the CDRS. The Foundation had no office of its own until 1983 (the Palais des Académies in Brussels was merely a legal address) and the officers worked from their homes. In 1964 the composition of the Council was:

Honorary President	Julian Huxley
President	Jean Dorst
Vice-President	Luis Jaramillo
Secretary General	J. Laruelle
Secretary for the Americas	Yale Dawson

Members: Jean-G. Baer, Thomas E. Barlow, Cristóbal Bonifaz, François Bourliére, Harold J. Coolidge, K. Curry-Lindahl, I. Eibl-Eibesfeldt, Jean-Paul Harroy, S. Dillon Ripley, Peter Scott, Randolph Taylor.

For the next dozen years there were few changes in the structure of the Council, but in 1976 a new category of members was introduced. Under the 1964 agreement, the Government of Ecuador had the right to nominate an official representative on the Council but had never taken advantage of this clause, although distinguished Ecuadoreans had served in their individual capacity. The Council now proposed to the Government that the heads of the six national institutions most concerned with the Galapagos should become members *ex officio*. This invitation was accepted and, with modifications, determined the composition of the Council until 1989.

Meetings began to be held in North America and Ecuador as well as in Europe and a rhythm eventually developed by which each year one was held in Ecuador and one elsewhere. In 1978 the Council met for the first time in the Galapagos.

In the early 1970's there were important changes among the principal officers. In 1972 G.T. Corley Smith, who had been involved in Galapagos conservation since 1964, took over as Secretary General, serving in this capacity for 10 years and even longer as editor of the Foundation's journal, *Noticias de Galápagos*. In 1973 Jean Dorst retired after serving for 15 years, first as Secretary General and then as President. He found that the growing demand on his time was incompatible with his new responsibilities as Director of France's National Museum of Natural History. His contribution to Galapagos conservation and science had been outstanding and during his period of office the Foundation had grown from a hopeful project to

a flourishing organization with an international reputation. In particular, the Darwin Research Station had grown very considerably. This had not been the deliberate intention of the Council; expansion simply became irresistible as it was realized how much needed to be done to preserve and restore the Galapagos environment. One consequence of this growth was that, for efficient management, it had become highly desirable that either the President or the Secretary General - or both - should have had experience working at the Research Station. The choice for Dorst's successor naturally fell on Peter Kramer, who had just completed his period as Director of the CDRS. He accepted only after some hesitation as he foresaw that the demands of the job would conflict with his prospects as a university teacher. His distinguished service as President continued until 1984 when he finally abandoned his academic career to become Director of Conservation of the WWF, in which post he was fortunately able to maintin his long connection with the Galapagos. He was succeeded by Craig MacFarland,, who likewise had served as Director of the CDRS.

A major change in the organization took place when Corley Smith retired as Secretary General. Two factors were responsible: one was that the volume of administrative business had steadily grown so that it had become more and more difficult to run the Foundation as a voluntary activity from a spare bedroom in a private house; the other was the increasing participation of Ecuadoreans in the management. Not only was there increasing *ex officio* representation of national institutions on the Executive Council but there was a separate all-Ecuadorean committee which met regularly. The combination of these two factors led to the opening of the Foundation's first office with a small salaried staff in Quito, where contact could more easily be maintained with government departments, the national media and the CDRS. The new Secretary General was Juan Black Maldonado, who had been one of the first two officers of the Galapagos National Park Service and subsequently the CDF's information officer in Quito. The work load of the General Secretariat was further spread by the creation of a new volunteer Secretariat for Europe in Copenhagen in addition to the long-established Secretariat for the Americas in Washington D.C.

This was the situation at the end of 1988 when the CDF's original 25 year agreement with the Government was renewed for another 5 years while a revised agreement, adapted to the radically changed circumstances, was being negotiated and new statutes for the Charles Darwin Foundation were being drawn up.

In 1988 the composition of the Council was:

PATRON
H.R.H. The Duke of Edinburgh
President
Mr. Craig MacFarland
Vice-President (Ecuador)
Dr. Marcelo Santos Vera
Vice-President (Europe)
Dr. Ole Hamann
Secretary General
Sr. Juan Black Maldonado
Secretary for Europe
Dr. Ole Hamann
Secretaries for the Americas
Dr. David Challinor (Administration).
Dr. Tom Simkin (Science)
Mrs. Marsha Sitnik (Executive Secretary)
Ex Officio Members
Sr. Presidente de la República del Ecuador.
Sr. Vice-Presidente de la República.
Sr. Ministro de Relaciones Exteriores.
Sr. Ministro de Agricultura y Ganadería.
Sr. Ministro de Energía y Minas.
Sr. Ministro de Finanzas.
Sr. Comandante General de la Armada Nacional.
Sr. Director del Instituto Geográphico Militar.
Sr. Presidente de la Casa de Cultura Ecuatoriana.
Sr. Director Nacional de Turismo.
Sr. Gerente del Instituto Nacional Galápagos.
Sr. Director Ejecutivo del CONACYT.
Members
Mr. Robert McC. Adams.
Prof. J. Bouillon
Dra. Eugénia del Pino
Prof. Jean Dorst
Prof. I. Eibl-Eibesfeldt
Prof. Peter Grant
Prof. J.P. Harroy
Prince Henri of Luxembourg
Dr. M.S. Hoogmoed
Prof. R.D. Keynes
Dr. Plutarco Naranjo Vargas
Mr. S. Dillon Ripley
Dr. Ira Rubinoff
Sir Peter Scott
Econ. Roque Sevilla
Mr. G.T. Corley Smith

DARWIN SCIENTIFIC FOUNDATION, INC. AND GALAPAGOS DARWIN TRUST, EUROPE.

Throughout its history the Charles Darwin Foundation has been handicapped by the lack of an adequate or even a steady income. Having no endowment, it struggled on, never knowing from year to year, nor even from month to month, what funds would be forthcoming to carry out the programmes of its Research Station. There was a double disadvantage: not only was the total amount of support uncertain but often contributions failed to arrive when expected. As there were no reserves, this made forward planning precarious and frequently wasteful. Over the years there have been a number of regular contributors including the Government of Ecuador, the WWF, the Frankfurt Zoological

President León Febres-Cordero addressing a meeting at the Smithsonian Institution to promote the Darwin Scientific Foundation's Endowment Fund

Society, the Smithsonian Institution, the Royal Society in London and the Belgian Ministry of Education, but the financing of much of the annual programmes has remained unpredictable. Generous contributions were often tied to specific projects, which left the problem of covering core expenses unsolved.

Kitty and John Lastavica proposed the creation of an endowment fund both to attract additional support and to produce a regular investment income. In the foreseeable future this would not be in any way sufficient to cover the scientific and conservation activities of the research station, but the interest from the endowment would provide a modest monthly income and thus constitute a stabilizing element in the Darwin Foundation's finances. In 1985 a Delaware Corporation was formed and named

Lunch break during a Darwin Foundation Council meeting at the Smithsonian Institution.
Left to right: G.T. CORLEY SMITH (Secretary General); S. DILLON RIPLEY (Founder Member and Secretary of the Smithsonian Institution); GUSTAVO ICAZA (Ambassador of Ecuador in Washington)

"Darwin Scientific Foundation, Inc.". The first Chairman of the Board was S. Dillon Ripley, Secretary Emeritus of the Smithsonian Institution, and the other members were Charles J. Hedlund, Chairman of the Board of The Nature Conservancy, Robert Mc.L. Adams, Secretary of the Smithsonian Institution, Craig MacFarland, President of the CDF, John Eaton and John Lastavica.

The scheme was launched in 1987 with an initial funding of U.S. $1,000,000, raised through a campaign by The Nature Conservancy on behalf of the CDF. Further contributions are sought. The Darwin Scientific Foundation's address is c/o The Smithsonian Institution, Washington D.C. 20560. Its support comes largely from within the United States and contributions are tax deductible to U.S. citizens as permitted by law.

In 1988 a parallel endowment fund for Europe, "The Galapagos Darwin Trust, Europe", was in process of organization under the leadership of Prince Henri of Luxembourg.