

Chagos News

*The Periodical Newsletter of the
Friends of the Chagos*

No.6

January 1996

EDITORIAL

The Expedition

The 1996 Chagos Expedition is planned to start at 1031 local time on Monday 5th February, this being the time at which the flight from Bahrain carrying the main body of our scientists is due to arrive in Diego Garcia. Of course planning started nearly 3 years ago when I suggested the idea in a report to the Commissioner BIOT and really started when Charles Sheppard agreed to be the leader. His article on the Expedition covers the next 4 pages.

Charles has gathered as good a team as the world can provide and we are extremely fortunate to have the talents of such distinguished scientists. We are likewise most grateful for the financial support provided from many sources and most notably the BIOT Administration and ESED of the FCO. Finally and most valuably we are hugely grateful to Mr and Mrs Heath and Mr and Mrs Pilling for providing their yachts *Aztec Lady* and *Inga Viola*.

The AGM

This was great fun and we had lively conversation both during and after the AGM on 3rd October. A report by our much appreciated Secretary is included in this News.

Strategy

Strategy sounds rather grand for our small organisation but we felt the need to decide where we are trying to go. Nigel Wenban-Smith wrote an excellent paper which was presented at the AGM and a summary is included in this News. Comment is welcome.

Subscriptions

Please. The Treasurer, quite rightly, is giving me hell. We have decided that if your subscription for 1996 has not been received by June no further News will be forwarded. This seems fair.

The Future

The future looks exciting. Our next Newsletter will, I hope, report the successful conclusion of the Expedition, what happened, when and where. Articles on the results will be moving towards publication and some will be printed here. The Conservation Plan for Chagos will be in preparation for presentation to the Commissioner, BIOT in late autumn. Then there are lots of other things to do.... Meanwhile a very Happy New Year to all .

John Topp

The 1996 Research Expedition to Chagos

Charles Sheppard

The expedition to the northern atolls of Chagos leaves in February 1996 when, for six weeks, a scientific group will research its islands and reefs. This article briefly describes our intentions, and why we think the work is important.

The point of the science

The reason for the programme is to clarify the biological importance of Chagos, and discover more about how the area functions. The first theme is the region's biogeography, namely placing Chagos in an Indian Ocean context. We will determine the degree to which Chagos is biologically linked with the rest of the Indian Ocean, the degree to which it is a "stepping stone" between the high diversity centres of Indonesia and the African coast, and the degree to which it might be a "source" or a gene pool for degraded reefs which abound in the Indian Ocean, especially around its rim. In addition to usual methods, most participants will apply modern molecular techniques to show the degree to which Chagos' species are "related" to those in other parts of the Indian and Pacific Oceans.

Our second theme focuses on how Chagos functions, in a biological sense. It will show the rate at which the complex biological systems which make up Chagos is "fuelled", and by what. This includes estimating the proportion of primary production which comes from reef-based life compared with the proportion which comes from oceanic water flowing across the area, and will explain the links between land and sea. Studies will be done of both marine and island plants, and of the cycling between both areas.

Given answers to these, we will provide information of environmental importance, so that a management plan can be prepared for BIOT; a plan which will be robust, and will cope with various levels of management input, and various levels of use by visitors. It will cover reefs and islands together, treating them as the integrated system which they so obviously are. This plan is the main purpose of the work for BIOT. The plan's rough outline and much detail already exist.

Why this is important

It is known that in global terms, coral reefs are being degraded at alarming rates, leading to numerous economic and ecological problems. Few if any areas are as unharmed as Chagos, and because it is both the most isolated yet the most biologically diverse group of islands in the tropical Indian Ocean, it offers many unusual conditions and possibilities. The project will provide the information needed for proper management and preservation of Chagos, but will also provide answers to many important environmental questions which are needed world-wide.

Below I list the project's components. All of them carefully interlock. One of the difficult but rewarding tasks of project preparation was to recruit a particularly good group of tropical scientists, to discuss with them what work they could do in Chagos, and to integrate their work into one comprehensive programme. The aim is not just to survey, though that will be done anyway; the intention is to use appropriate modern techniques to design the first 21st Century expedition!

In each section I state the topic simply (generally in one sentence), and then add a little detail for readers of a more scientific persuasion. Principal scientists are named, though all parts benefit from skilled assistants and others not directly participating so that the number in the essential "background" team (including many not visiting the islands) is perhaps five times greater. Also I have specifically involved several younger scientists who will hopefully carry on this programme well beyond the time we can presently foresee; I especially am aware how I became involved in Chagos, when I was an "apprentice".

The main projects

Maps of habitat and biodiversity. Base maps have been prepared from satellite images for use by all other components, so that all island and reef habitats can be accurately located and their areas measured. These are GIS based, prepared from Landsat, Spot and aerial photography. Habitat maps of the islands and waters less than 20m deep have been made, as have biodiversity maps to provide patterns of diversity at within-atoll and between-atoll scales.

Dr Charles Sheppard *University of Warwick.*

Reef fish community structure. Most reef areas in the world have altered fish populations and damaged reef habitats. This is not the case in Chagos (which has over 700 fish species), so its role as a source or sink in the Indian Ocean will be estimated. Using molecular analysis (e.g. DNA fingerprinting) fish migration and genetic intermixing will be examined. Chagos is also an ideal site to study effects of reef structure and size on the genetic variation of selected species. **Prof. Jacquie McGlade** *University of Warwick*, **Dr Rupert Ormond** *University of York*, **Dr Chas Anderson** with **Prof. David Rand**, **Joanna McMillan**, **Mark Spalding** and **Sue Buttress**

Turtles Chagos contains Green and Hawksbill turtles, both of which are endangered and protected globally: the world's largest Hawksbills were recorded here. Estimates of turtle abundance will be made, while biochemical techniques will show the degree of isolation or mixing of the Chagos turtle reservoir with the rest of the Indian Ocean. This will relate to concurrent, similar projects on Pacific and Indian Ocean turtles being conducted world-wide. **Dr Jeanne Mortimer** *University of Florida* and *Fauna & Flora International.*

Corals and reef ecology: stability and change. Using results from previous expeditions, re-surveys will show the amount of change on the reefs over 15-20 years. This will allow detection of trends, but will also show how much natural variability exists on reefs, a point which must be taken into account in assessing changes. Also, a special study of the most abundant corals will permit estimates of genetic flow in the main shallow reef builders across the ocean.

Dr Charles Sheppard *University of Warwick* with **Anne Sheppard** and **Alister Jolliffe.**

Soft Corals. These occupy about a quarter of all reef substrate, yet are almost completely unknown for Chagos, mainly because of a near complete lack of people who can understand and identify them. Only Red Sea and Far Eastern soft corals are well known, so this work will show the role of Chagos in forming oceanic linkages.

Dr Goetz Reinicke *University of Essen.*

Crustaceans A group of widespread shrimp will be used for genetic fingerprinting, because for this group it will also be possible to discover that rate at which isolation in Chagos has led to speciation and genetic change. This will not only illustrate the degree to which Chagos is biologically connected to the Indo-pacific, but will add temporal value to the biogeographical pattern. **Dr Nancy Knowlton** *Smithsonian Institution*.

Entomology. Insects on these remote islands are mostly unknown but clearly are important ecologically; these will be identified, and the population's affinities to those around the edge of the Indian Ocean determined. Major sources of recruitment will be identified using protein and DNA analysis on selected Lepidoptera which will, as with the marine groups, permit estimates to be made of the interchange of species on Chagos with those around the Indian Ocean. Equally important is the identification of the role of insects in the weak soils of Chagos. **Dr Linda Barnett** *University of Warwick* with **Craig Emms**.

Terrestrial botany. Vegetation will be mapped, including native hardwood remnants, using the supplied base maps. The famous Chagos peat bog will be cored so that its pollen record can be determined, and hence the record of vegetation of Chagos before man. Additionally, the important lower flora which previously were neglected will be investigated (fungi, bryophytes, mosses, algae and lichens). Progress of hardwood seedlings planted out in 1979 to aid the natural flora's restoration will be measured. **Prof. David Bellamy** *University of Durham*, **Prof. Mark Seaward** *University of Bradford* with **Ursula Gregory**.

Ornithology. Bird populations were well mapped for some parts of Chagos in the 1970's and changes in these bird populations will be measured and a more complete census taken of the northern atolls. Nutrient and organic matter recycling by birds between islands and reefs is possibly the main reason why Chagos islands have a high plant cover, so estimates will be developed of the rates, roles and importance of nutrient exchange by birds. The perennial argument of the degree to which rats inhibit birds will be addressed too. **Peter Symens** *University of Warwick*.

Marine Botany and Productivity. Marine botany and the primary productivity of the main algal species underpins much of the biology of Chagos. Species lists of marine plants (currently largely unknown), and the rates of primary production of some main elements (other than coral zooxanthellae) will be obtained. Productivity will be measured in six main reef zones already identified from the remote sensing, using C14 techniques.

Prof. Phil Basson currently at *University of Bahrain*, **Dr Susan Clark** *University of Newcastle upon Tyne*.

Oceanography. Nutrients and plankton bathing the archipelago provide the dynamic medium in which reefs flourish. Flow of water masses at several scales will be evaluated for Salomon, Peros Banhos and the Great Chagos Bank, and the main water flows on and off the Chagos plateau will be estimated using both satellites and ground data obtained with continuous plankton and nutrient recorders. Pelagic production within and between atolls, and on the Great Chagos Bank, will be measured, and the contribution of this to gross Chagos productivity estimated. An important part of this is the estimation of "new" production arriving on Chagos versus "old" or recycled production and that swept away and lost from the reefs. **Dr Ralph Rayner** *Wimpey Environmental* with **David Dixon**.

Geology and climate change. Major changes in global weather are caused by "El Nino", a feature which causes widespread mortality on reefs and which affects climate in all tropical areas. Although strongest in the Pacific, it has origins in the Indian Ocean, starting in the west and propagating eastwards. By geochemical analyses of isotopes in the annual growth bands in cored coral heads (like tree bands), this project will develop an accurate record of equatorial climate and its changes for the last 100 years and, using other techniques in fossil corals, over the past 100-160,000 years as well.

Dr Georg Heiss *University of Kiel* and **Dr Toni Eisenhauer** *University of Gottingen*.

Background contamination and marine pollution. Man's wastes are being increasingly detected far from sources of industrial and agricultural activities, and we now know that over half of all low level contamination in the oceans comes from long dispersal, airborne routes. Most examples are from cool regions, and little information on toxic substance contamination in remote tropical regions exists. In Chagos, profiles of background contamination over a period of several years will be obtained, via both sediment and coral cores to obtain global dispersion trends over the last 10-30 years. **Dr Andrew Price** and **Dr Charles Sheppard** *University of Warwick*, **Dr Jan Everaarts**, *Netherlands Institute for Sea Research*.

Development of Conservation Plan. A draft plan based on existing knowledge will be prepared before the research visit, will be validated and improved during the visit, leading to a final plan in 1996 based on all the results obtained during the 1996 programme. **Cdr John Topp** *Chagos Conservation Consultant* with input from all participants.

Three more participants provide essential support: **Dr Frank Stewart** (Doctor), **Ron Crosby** (technical) and **Nigel Wells** (administration and logistical).

Financial support

To make this possible, key finance has come from the Foreign & Commonwealth Office, both from BIOT and ESED. Additionally, each component of the expedition covers its costs which have come from numerous research funding agencies including:

Chelonia Institute
Conservation Foundation
Darwin Initiative
European Union
Fauna and Flora International
GTZ (Germany)

Museum of Tropical Queensland
Royal Society
Smithsonian Institution
Universities of Essen, Kiel and Gottingen
Wimpey Environmental Ltd.
World Wide Fund for Nature

Also, **crucial elements** in the success of the programme are the magnificent yachts *Inga Viola* and *Aztec Lady*, whose owners, **Mike and Gitta Pilling**, and **John and Joan Heath**, will provide the logistical support.

FRIENDS OF THE CHAGOS

*Minutes of the Annual General Meeting of the Friends of the Chagos
held at 18:30 on Tuesday 3 October 1995 at The Barley Mow public house
Horseferry Road London SW1P 2EE*

The Chairman opened the meeting by inviting all those present to introduce themselves, which they did. The Chairman paid tribute to John Canter who had had to resign. A founder member, he was thanked for all his valuable support.

Item 1. Apologies

Apologies for not being able to attend were received from John Canter, Sara Oldfield and Richard Martin.

Item 2. Minutes of the second Annual General Meeting held on 12 October 1994

The Chairman made available copies of the minutes of the second Annual General Meeting (AGM) held in 1994.

It was proposed by Charles Sheppard and seconded by Steve Renvoize that the minutes be accepted as a true representation of the meeting. The motion was passed nem con.

Item 3. The Chairman's report

The Chairman noted that he had held four Executive Committee meetings and there had been two issues of the newsletter since the last AGM.

At Executive Committee meetings much work had been done including the drafting of a strategy paper for discussion later on.

Membership had remained steady at about 100. The Committee had discussed the pros and cons of enlarging the membership and conclusions on this had been written into the strategy.

Finances were satisfactory.

A logo for the association had been produced and was passed round for general approval.

The Chairman had visited Diego Garcia under the auspices of the Foreign and Commonwealth Office and had found the islands in good shape. Sue Lickfold from the floor added that the northern islands were also in good order, but that the incidence of illegal fishing had increased.

Item 4. Treasurer's report

The treasurer, Nigel Wells, gave his report. The Ordinary Account (mainly subscriptions and newsletter expenditure) had a credit balance of £650.37, the US\$ account (mainly for receiving US\$ subscriptions) had a credit balance of US\$1,406.70 and the Expedition Account had a credit balance of £1,942.98.

It was proposed by Nigel Wenban-Smith and seconded by Simon Hughes that the accounts be accepted. The motion was passed nem con.

Item 5. Strategy paper

Nigel Wenban-Smith presented a draft paper outlining to those present the proposed strategy to be adopted by the Association. Appended to it were the Committee's current ideas for implementing the strategy and reporting back to members.

There was discussion concerning the wording of the membership recruitment policy put forward which resulted in an improvement being proposed from the floor.

The desirability of making stronger links with other like minded associations was reinforced with the *Dependent Territories Forum* being mentioned. The discussion revealed that the strategy provided for such links and the Chairman explained that they were already strong and would be maintained.

The Chairman took the opportunity to explain the pros and cons of making the Chagos a World Heritage Site and why this procedure had been initiated as part of the long term strategy, but for the time being was not being actively pursued.

A copy of the strategy paper amended as a result of discussion at the meeting is at page 8.

The Chairman pointed out that the strategy paper represented the agreed strategy at present, but the Executive Committee could well amend detail in it from time to time as necessary to carry forward the work of the Association.

Item 6. Election of Officers and Executive Committee members

The Secretary, Simon Hughes, noted that in accordance with the Articles of Association one third of the Committee needed to stand down; John Canter, Richard Martin and John Topp therefore stood down.

The Secretary had received nominations for election (in alphabetical order) of Richard Martin and John Topp. There being no other nominations and there being sufficient vacancies on the Committee, there was no need for a ballot and these two were duly elected.

The Secretary had received a nomination to elect John Topp as Chairman. There being no other nominations and there being a vacancy for Chairman, there was no need for a ballot and he was duly elected.

The full Executive Committee is now: Mr John M W Topp, Chairman; Mr Richard Martin; Ms Sara Oldfield; Dr Charles Sheppard; Dr John Taylor; Mr Nigel Wells, Treasurer; Mr Nigel Wenban-Smith; Mr Simon Hughes, Secretary.

Item 7. Date of next AGM

It was agreed that the next AGM would be held on Tuesday 8 October 1996, probably again in the Barley Mow. Should the date or venue change all members would be informed.

Item 8. Illegal fishing

Under the Item **Any other business** concern was expressed about the apparent increase of illegal fishing on the Chagos bank. This concern was felt particularly by Tom Thornton who had direct experience of the damage done in the Seychelles by illegal fishing. David Smith (FCO) outlined the present fishery protection activities in place:

a licensing regime, a fishery protection vessel on its way out to provide surveillance for November, December and January during the tuna season, observers on a percentage of licensed vessels.

When David Smith said that there was no indication of any over or illegal fishing available to the FCO, it was noted from the floor that yachts people had observed a very definite increase of illegal fishing close inshore among the northern atolls by Mauritian fishermen in June, July and August. They had also been observed landing on the islands illegally and stealing Coconut crabs (a protected species) by the sack-full.

The Chairman noted that while the Associations' business was to conserve the area, MRAG of Imperial College was directly responsible for the fisheries side of that conservation.

Charles Sheppard pointed out that it would be possible to detect over fishing via the work of the 1996 Expedition more accurately and more in advance than by counting catches. Those present welcomed this information.

There being no other official business, the meeting was closed and those present filled their glasses and were given an excellent slide show and lecture by Dr Charles Sheppard concerning the 1996 Expedition plans.

Simon E Hughes

Secretary

9 October 1995

"Chagos News" is a private newsletter produced in England by Friends of the Chagos, Registered Charity Number 1031561. The views expressed are those of individual contributors and are not necessarily those of the Charity or the Editor. All rights reserved. Permission to reproduce any part of "Chagos News" must be sought from the Editor

FRIENDS OF THE CHAGOS - STRATEGY

ENDORSED BY THOSE PRESENT AT THE ANNUAL GENERAL MEETING 3 OCTOBER 1995

1. The Friends of the Chagos Association was established *to promote conservation, scientific and historic research and advance education concerning the Chagos Archipelago* (Memorandum of Association). The aim of this short paper is to identify the most effective approach towards the achievement of those agreed objectives.
2. The Friends do not exist in a vacuum. At present we have extremely limited resources and a small membership. We cannot afford grandiose plans. Fortunately however, the **short term** obstacles to pursuing our objectives are not unduly severe. Moreover we enjoy two unusual advantages:

the British government (HMG), responsible for administration of the area has its own clear reasons for holding to environmentally responsible policies in the Chagos,

the reservation of the British Indian Ocean Territories (BIOT) for defence purposes cuts down drastically the threats to the environment which follow from normal human activity.

It would nevertheless be foolish to assume an immutable identity of interest with those of HMG. In any case, there is no guarantee that the BIOT administration will of its own accord recognise new threats to the Chagos environment in time, or have the power on its own to avert them or temper their consequence. All that we can say with some confidence is that we do have some time available to make the Friends into an organisation capable of identifying what has to be done to meet our objectives and of adapting to meet different or larger problems as they emerge. The Friends' objectives concern three main topics : conservation, research, education. Outside government, ours is the only organisation interested in these topics as they relate to the area. Moreover, it is the only organisation concerned with the Chagos which is free of political engagement of one kind or another. However it is only through our actions that the Friends can secure the recognition and influence on which achievement of our objectives depends, and only by assembling our own resources or using others' can we undertake action of any kind.

3. So far, we have proceeded by seeking out individuals with previous knowledge of and interest in the Chagos, and by securing the active support of the BIOT Administration and the goodwill of the US military authorities in Diego Garcia. All these elements are necessary, but probably not sufficient for influencing events.
4. To meet these objectives, the Executive Committee believes that we should adopt a strategy, the main elements of which will be:
 - a. monitor regularly, if not continuously, the state of the marine and terrestrial environment and the impact on it of existing and potential human activity,
 - b. mount/co-ordinate/sponsor regular scientific visits to gain greater knowledge of the local ecosystem,
 - c. establish links, under the auspices of the Friends, with other students of reef ecology
 - d. monitor the marine conservation research being undertaken by the scientists (and governments) of Indian Ocean states.
 - e. encourage increased research into the history of the Chagos Archipelago,
 - f. expand the Friends' membership, with an emphasis on attracting individuals concerned with wider environmental issues as well as those interested in specific aspects of the Chagos Archipelago,
 - g. prepare educational/publicity material to help establish the Friends as **the** reservoir of expertise on the area and to enable us to intervene publicly should the need arise.
5. The BIOT Administration's concern for the local environment has already been noted. The obligations enshrined in successive Agreements with the United States and in local legislation are important assets to the Friends. It is a matter for satisfaction that our current Chairman has been appointed BIOT's environmental consultant. It is also highly satisfactory that the BIOT Administration has welcomed and supported the 1996 scientific expedition being mounted under the aegis of the Friends of the Chagos. The Friends thus have the opportunity, which we should seize, to establish ourselves as the natural channel for proffering advice to the Administration and providing expertise when the Administration itself discerns a need for it. At the same time, the Friends, no less than the Administration, will need to maintain an arm's length relationship, in order to avoid compromising either party's manifest independence.