

Chagos News

*The Periodical Newsletter of the
Friends of the Chagos*

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NOTES AND COMMENT

Chagos Coral

The British Indian Ocean Government funded a team of 4 scientists led by Charles Sheppard to visit and dive for fourteen days and report on the state of coral and fish in the Chagos Archipelago. The BIOT government also provided the Fishery Patrol Vessel in support. This valuable research is reported in summary overleaf.

Chagos History

Donald Taylor has again contributed to News a fascinating article of historical research on the gradual discovery of the Chagos Archipelago.

Web Site

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Annual General Meeting

Our AGM will be held at 1730 Thursday 4 October 2001 at The Paxtons Head, 153 Knightsbridge, London SW1X 7PA. Those present will elect a Chairman, a Treasurer, a Secretary and members of the Executive Committee. Nominations for office must be received by the Secretary at 29 Champion Hill, London SE5 8AL by 24 September. After the AGM there will be drinks and small eats at the Association's expense until 1900. From 1900 onwards (pan Asian) food is available at member's expense. Please inform the Secretary if you intend to come and or eat with us afterwards, preferably by email to: fi28@dial.pipex.com
I hope you will attend the meeting which is a good opportunity for us to discuss the past, present and future of Chagos. *John Topp*

THE STATE OF CHAGOS CORAL

by

CHARLES SHEPPARD

A visit was made to the Chagos archipelago for 3 weeks in February and March 2001 to assess reef condition, coral mortality and disintegration, new coral growth, and reef fish community changes. The survey extended to 30 m depth or greater.

A new sea surface temperature data set was analysed, and matched with earlier air temperature data. Sea surface temperature has shown an annual mean value rise of 0.65°C since 1950. This is marked, but is slower than the rise in air temperature, probably because of the much greater thermal inertia of the ocean. The ‘critical’ sea surface temperature associated with the massive coral mortality of 1998 is 29.9°C.

Coral and soft coral mortality in shallow water (to 15 m depth) was high everywhere, but the depth to which mortality occurred correlated with latitude. Reefs on the Great Chagos Bank were particularly badly affected. Extensive or near-total mortality occurred from the surface to about 15 m deep in northern atolls, but to over 35 m in southern atolls and the Great Chagos Bank. Below these depths, northern reefs have a much more normal and vibrant appearance and coral cover. The transition from severely affected to apparently normal condition in northern reefs usually spanned about 5 metres depth. Central and southern atolls remained badly affected below 15 m depth, and if these reefs do have any transition to a better condition, it occurs deeper than the 35 or 40 metres observed in this survey.

Although northern reefs appeared to be still rich and diverse, and had numerous large corals which clearly had survived the 1998 event, this is partly the contrast with most of Chagos: their condition and cover is also very markedly below that of their pre-1998 state. They do, however, have the potential to serve as major areas for recruitment if not impacted at all in future. The best survival appears near lagoon passes which have strongest water exchange.

Reefs previously dominated by tough ‘wave-breaker’ species in shallow water (notably *Acropora palifera*), have lost almost all their corals. The surface of these reefs appear to have ‘dropped’ by about 1.5 metres due to the loss of these dense and tough thickets.

Measurements of total coral cover indicate a marginal mean improvement over the last two years. Although welcome, and partly a result of some new growth, this is not significant, and is partly an artefact due to the inclusion in the 2001 sample of some rich sites off Blenheim not visited in 1999.

Bioerosion is considerable, and has led to substantial quantities of dead coral rubble. A major cause of disintegration of dead corals is bioerosion by sponges, worms and algae. Little of the dead coral rubble has been carried up to the reef flats or beaches, and it is thought that most of the rubble has been carried along-shore and down slope.

Bioerosion also has a latitudinal pattern. Larger coral fragments occur in the north, where the range of rubble size is also greater. Sheltered lagoonal sites have larger rubble and a wider range of rubble sizes. There is also a trend of smaller mean rubble (and smaller st. dev.) in larger atolls.

Generally, the northern atolls have substrate with greater 3-D relief than western and southern sites. Lagoon sites generally had greater relief than outer slope sites.

All sites studied showed extensive breakdown of branching corals since the 1998 mortality, resulting in very low relief coral pavement. Three measurements of coral disintegration are related; sites with the flattest substrate are also those with the smallest coral rubble and the highest bioerosion. The worst affected sites are those in the centre and south: Middle Brother, Eagle Island, Egmont and Diego Garcia.

Most rubble debris is still unconsolidated and remains unsuitable for successful recruitment of new corals. At present, rates of breakdown far exceed growth of new corals.

Substrate is becoming more planar. In the shallowest water, many dead 'finger' corals retain their shape, but below these, most 'boulder' and massive forms have lost all surface structure; it is now impossible to distinguish the identity of coral colonies, or even distinguish them from much older, bare substrate. Below them, in the 'table coral' zone (5-15 m deep where wave energy is much less), many dead tables skeletons remain intact in some sites. In others, there is no trace of dead tables, erosion or storms having carried them away, though sometimes their central stumps remain visible.

'Dead' areas remain essentially bare. They are not covered with green macro-algae as is the case in other parts of the world where corals have been extensively killed. The macro-algal species which generally quickly colonise bare space do occur in Chagos (and indeed covered 10% of one site in Blenheim atoll). The absence of a blanketing effect in Chagos generally may be attributable to a shortage of nutrients; Chagos lies in a particularly nutrient-poor part of the Indian Ocean. The situation here is atypical, so it is likely that any increase in nutrients (from human habitation, disturbance of reefs of any kind by construction or dredging, for example) could immediately change this. Once algae do get a dominant foothold, reef demise appears to be irreversible.

Numbers of juvenile corals are high, however, (mean: 78 corals m⁻²), especially on dead tables of *Acropora*. Young corals are mostly of spawners - species that release gametes into the water where fertilisation and dispersal takes place. In contrast, species which brood their larvae before releasing them are under-represented because generally these are shallow water species whose adult populations were the most severely affected.

Thus 'brooders' will probably make a slower recovery, which will probably change the composition of the shallow water coral community. Amongst the brooders is *Acropora palifera*, a very important high-energy species, and a major contributor to the 'breakwater' functioning of several Chagos reefs.

Fast growing species with high reproductive outputs may dominate the most severely affected reefs for 10-20 years. These species are less robust than those that naturally dominate these environments, and are more prone to damage by storms and high wave energy.

Recovery probably will mostly come from corals which escaped the mortality; i.e. from deeper water in northern atolls and patches in the lagoons. Few shallow water corals survived 1998, but those that did are likely to be reproducing now. Numbers of new corals on the Great Chagos Bank are less than on other atolls, though here also some new recruitment is taking place.

Reef fish abundance and diversity, measured at 15 m depth in most cases, remains high at all sites and impacts of the coral mortality are only reflected in changes within a subset of species. A number of species which depend entirely on corals, either as a source of food or shelter, have diminished. A small number of herbivores and detritivores have increased, probably as a result of increased food availability.

The most heavily impacted sites are lagoon reefs of south-west Peros Banhos and the outer reef slope at Nelson. These sites have also suffered high loss of coral cover, with low levels of recovery.

Of continuing concern are longer-term impacts, particularly those associated with the loss of surface complexity in the face of erosion and collapse of dead coral structures. A number of studies have shown the critical importance of a complex habitat for maintaining coral reef fish abundance and diversity. Coral recovery will need to continue with some rapidity to ensure this does not occur.

Eleven species were observed for the first time in Chagos waters, bringing the total recorded species from the Chagos to 795. Reef sharks were observed on most dives, and there appears to have been a significant revival in shark numbers. Using log-book records from both 1996 and 2001 it is estimated that total numbers of sharks has doubled during this period, although this still represents a considerably reduced stock compared to numbers observed in the 1970s. This recovery can probably be linked to a reduction in illegal shark fishing incursions associated with the permanent presence of a fishery protection vessel.

The gradual discovery of the islands of the Chagos Archipelago

by

Donald Taylor.

Not many English navigators during the sixteenth and seventeenth centuries knew about the Great Chagos Bank and the islands of its archipelago. So none of them were really looking for them. In fact hardly anyone knew they were there, except the Portuguese and some Spanish navigators. But the records of their discoveries in the area are scant.

According to one source Diego Garcia was discovered by the Spanish Admiral, Di Varthema, in 1512. Di Varthema seemed to think that there were islands to the north of Diego Garcia, which would have been Peros Banhos.ⁱ But he never went to find out, probably having been scared off by the shallow waters of the Great Chagos Bank. According to the same source, Alfonso d'Albuquerque, the successor to Vasco Da Gama as Vice-regent of India, discovered Peros Banhos the following year (1513), probably while on his way to Malacca from Goa.

According to Richard Edis,ⁱⁱ there were Portuguese fleets in the Indian Ocean in 1509 and 1512 commanded by Diego Lopez and Garcia Naronha. A Portuguese source says that the Admiral Diego Garcia made a number of important discoveries along the South American coast, and later sailed into the Indian Ocean where he discovered some islands, one group of which he gave his name.ⁱⁱⁱ The problem was to place the precise position of these discoveries on the existing maps, and sometimes the same group of islands were sighted by one navigator who was unaware that it had been sighted and even named by another. In the sixteenth century even latitude was not always accurately recorded, and longitude was a major problem.

Sir James Lancaster was one among a number of Englishmen who ventured to the East. He did not know that the Chagos Archipelago existed, and even if he did, he would not have wanted to go there. His destination was the Spice Islands of the East Indies, where he intended to trade and to bring back to England a cargo which would make his sponsors, and himself, very rich indeed. And for this purpose his sponsors, the wealthy Merchants of London, had assembled in the Port of London a small fleet of four merchant ships. By December 1600 they were ready to leave.^{iv}

They wanted Lancaster to explore the coast of Madagascar about which they had heard so much, and to try to locate the islands of Cirne and Diego Rodriguez, which Lancaster had heard had been discovered by the Portuguese navigator Rodriguez Mascarenhas only two years before (1598). If these islands proved to be of little value, he would then set a course for the Nicobar Islands in order to go through the Straits of Malacca once more to the more prosperous spice islands that lay beyond them.

Thus in June 1601 Sir James Lancaster led his "four tall shippes, (to wit) the *Dragon*, the *Hector*, the *Ascension*, and *Susan*, and a victualler called *Guest*" from the Port of London, and headed south. They rounded the Cape of Good Hope and headed along the coast of southern and eastern Africa, and finally navigated around the northern extremity of Madagascar to reach the island of St. Mary on its eastern coast by 15 December 1601. He decided to set a course eastwards to try to find the islands of

Cirne and Diego Rodriguez. But after a month they found nothing and decided to return to Madagascar reaching Antongill Bay (just north of St. Mary Island) in February 1602. There Lancaster decided that the time had come to abandon the small victualler, the *Guest*. The intention was to dismantle her completely, but to save the spars, rigging, ropes, sails, all the tackle and wooden planks for repairing damage to any of the other ships should the occasion ever arise.

Once that was completed, he set out to the north east, setting a course for the Nicobar Islands, which lie approximately on the equator. On 6 March 1602, only a few days after leaving Antongill Bay, he came across “the island of Rouge Pise^v, ten degrees below the Equinoctial Line.” The island was obviously marked on his charts, as the island had a name. Although there is no island of that name today, it was probably the island of Agaléga, which lies about ten degrees south of the equator.

Although Lancaster sent a small party ashore, who returned with idyllic descriptions of the place, he decided not to stay any length of time, especially as he could not find a suitable anchorage. So he set course to the north east once more towards the Nicobars. A week later however he was amazed to find his small fleet entering shallow water. He immediately thought that they were in grave danger. “The thirteenth of March 1602,” so the account runs, “being in six degrees to the south of that line, we happened upon a ledge of rocks, and looking overboard, and seeing them under the shippe about five fathoms deepe, it much amazed us, falling upon the sudden and unexpected.” James Lancaster had no idea where he was, but he had never expected to come across anything like this in the middle of the ocean.

He decided to proceed eastwards as cautiously as he could, and found that he now had eight fathoms of water under him. He had taken the precaution of having a man “in the top” and it was not long before he “saw an iland S.E of us, some five or six leagues off.” It was quite possible that they had seen what later came to be known as the Three Brothers. But Lancaster did not know this. According to his reckoning it could have been “the iland of *Candu* although in our course we could not (by computation) find our selves so far shot of the Eastward.” He was miles out in his “computation” if he thought this was the island of Candu, which was about one hundred miles off the coast of Sumatra. The fact that he thought he was so far east proves that he had never heard of the Chagos. For if he had known about the Chagos he would have known that a course along the latitude six degrees south from Agaléga would have taken him right across the Great Chagos Bank.

But Sir James had no idea of the Great Chagos Bank, and sailed further and further into the shallows of the Bank. “Bearing on our Course some thirteen or fourteen leagues,” so his account runs, “we fell upon another flat of rocks. Then we cast about to southwards and sailing some twelve leagues, found other rocks so that, proving divers ways, we found flats of rocks round about us: and twenty or thirty, and in some places forty or fifty fathoms of water in the midst of the flats.”

By now the fleet was in the middle of the Bank, and Lancaster floundered around in circles “for two days and a half in exceeding danger, and could find no way to get out.” Then Lancaster decided to head northwards which seemed to get him away from “the flats of rocks,” and by the time they had reached “six degrees, 43' (God be thanked) we found six fathoms water.” He then lowered the ship’s pinnace over the side, and sent it before him, with instructions to steersman to take soundings, who was then to “make sign what depth she had, that thereby we might follow her.”

And so Sir James Lancaster’s small fleet escaped from the Great Chagos Bank. “Thus (thanks be to God),” so his account runs, “being delivered out of this pound, we followed our course with variable winds, till 9 May about four p.m. at which time we had sight of the Ilands of *Nicubar*....”

This was the most vivid account by an English navigator of his encounter with the Great Chagos Bank. And matters did not improve much during the seventeenth century. Because of the hostility of the Spanish, Portuguese, and later, Dutch fleets, English trade with the East Indies was very restricted, if not

outright dangerous. Consequently English merchants formed the India Company at the beginning of the seventeenth century to trade with India as an alternative to trading with the East Indies. The French were also doing the same thing, but they had bases in Madagascar as well. Therefore by the beginning of the eighteenth century, knowledge of the Indian Ocean, which was proving itself to be a dangerous place for mariners, and possession of islands such as those of the Chagos Archipelago, took on a new importance.

English, French and Dutch ships sailed the seas around the Great Chagos Bank during the eighteenth century and their captains reported sighting different islands in the area.^{vi} These included sightings of Peros Banhos, Egmont and Eagle.

Dalrymple^{vii}, the cartographer for the East India Company, used all the available observations in order to compile accurate charts of the seas around the Great Chagos Bank. The Dutch Captain van Keulen in *Kerkwyck* reported the position of the Chagos Island in 1744, and Captain Jackson reported the position of one called Diego Garcia in *Pitt* in 1763.^{viii} Dalrymple thought that the island of Chagos was the main one, and so he called all the islands the Chagos Archipelago, after this main island. It was only years later that he found that the island of Diego Garcia and the island of Chagos were one and the same. Until we can find any other evidence to the contrary, it would seem that the name of the Archipelago was derived from the name of a “phantom” island. that was in fact Diego Garcia.

There is no mention of the Salomon cluster until Captain Thomas Neale visited the islands in 1772. This is surprising since the French vessel. *Elizabeth* sighted Peros Banhos in 1744, but seems to have missed them. But even when Thomas Neale accidentally found the cluster, he did not name it, but eventually reported his find to the India Company in Bombay. In January 1776, the French Captain Jacques-Pierre Bourdé de la Villehuet sighted Peros Banhos, which he called “les isles Odies”, and the same day he went on to “discover” the Salomon cluster, which he named after his ship, the *Salomon*, and which he claimed for France.^{ix}

Captain Bourdé already knew about the Speaker Bank, which lies north of the Salomon cluster. But he called it Speaks Bank, and in his claim of the Salomon islands for France, he said that the Bank was south of the “isles Adus”, or Addu Atoll. Speaker Bank had been discovered by Captain Cooper and the Hon. Thomas Howe in 1763 while making a voyage to the Far East.

Eagle Island was called Les Six Isles, or even Five Islands, to begin with. Its position was determined by the *Egmont*, on 22 November 1766, the accuracy of which was not doubted because its longitude was timed by the eclipse of the moon on that date. The *Egmont* then went on to determine the position of Egmont Island, to which she gave her name. But Les Six Isles were renamed Eagle Island after its position was finally determined by the *Eagle* in 1773. Later the *Calcutta* confirmed the position of Eagle Island in 1775.

By the 1770s French vessels were constantly in the waters around the Bank. Among them were the packets *L'Heure du Berger*, *l'Etoile du Matin*, and *La Bouffonne*, which touched in at Eagle Island, the Brothers, and Diego Garcia.

But it was not until Lieut. Archibald Blair of the East India Company Marine was ordered in May 1786 to survey Diego Garcia and the other islands of the Archipelago that fairly accurate maps of the area were produced. Even then Blair called the Salomon group Les Solimin. He noted that these were the same islands that “Captain Neale made in the *Success* [sic].” Blair got even the name of Neale’s ship wrong, or had Neale changed her name from *Swift Crab* to *Success*? . In spite of these few mistakes, Blair and his party seem to have had a good time at Salomon. They were there from 21 to 25 November 1786, during which time they were employed in “wooding and watering, and caught 20 turtles, 2 large seals and much fish.”

Dalrymple was able to incorporate Blair's work in subsequent charts that he made of the area.^x And from 1788 onwards, mariners were able to go to the Chagos Archipelago, knowing where they were going, unlike Sir James Lancaster, who all of a sudden found "rocks and flats" under his bottom.

ⁱ Von Wolfgang Schippe, Article "Peros Banhos, B.I.O.T."

ⁱⁱ Edis, Richard, "Peak of Limuria":, 1993, p. 22

ⁱⁱⁱ Portuguesa e Brasileira, Volume XII, Editorial Enciclopedia, Limitada, Lisboa. This source was provided by Nigel Wenban-Smith, for which I here record my gratitude.

^{iv} Voyages to the East Indies, ed Clement R. Markham, Hakluyt Society, Vol 56 [?5-6] London 1877, for his voyage of 1591. And for his second voyage of 1601, see "Navigations and Voyages of Englishmen alongst the coasts of Africa, to the Cape of Good Hope, and from thence to the Red Sea, Abassine, Arabian, Persian, Indian Shoares, Continents and Ilands", London, Printed by William Starsby for Henry Fetherstone, and are to be sold at his shop in Paul's church yard at the Sign of the Rose, 1625." The quotations are from the second book, Book III, Chapter III, pp. 147-152.

^v The island was marked Roquepiz on Portuguese maps, and was confirmed to be Agaléga by the French Captain Jehenne in 1841. Annales Maritimes, Tome I, Rapport No 92, adressé au M. ministre de marine et des colonies par M. Jehenne, capitaine de corvette, commandant *la Prevoyante*, au sujet des iles de Sechelles, December 1841. It was however the custom of the Portuguese to scatter their maps with imaginary islands and reefs in order to mislead and scare away from the Indian Ocean mariners from other European countries.

^{vi} Three Brothers by *Grantham* in 1728; Chagos by *Kerkwyck* (Captain van Keulen) in 1744; Peros Banhos, Egmont and Eagle also by van Keulen in 1747; Peros Banhos and Elizabeth Island by *Elizabeth* also in 1747.

^{vii} "Memoir of a chart of the Indian Ocean exhibiting the coast, Islands, Rocks and Shoals from Madagascar, to India, Sumatra and Java, composed from various materials and published at the charge of the East India Co." by A. Dalrymple, 1787. This includes a "Memoir of the Chagos and Adjacent Islands" from which the information regarding the positions of the various islands are taken.

^{viii} Dalrymple notes that Diego Garcia was called Diego Gratiiosa by English mariners until the eighteenth century.

^{ix} Captain Bourdé's claim of the Salomon group for France can be found in the Mauritius Archives at OB 29/147. My gratitude to Mme Marcelle Lagesse, Mauritius, for this information.

^x "Remarks and observations in a survey of the Chagos Archipelago by Lieut Archibald Blair 1786 and 1787." Published from the MSS at the charge of the East India Co. by A. Dalrymple, London Printed by George Bigg 1788.

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