

Chagos News

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Contents

Editorial	3
Research update: Shark tagging	4
News in brief	6
The Chagos brain coral <i>Ctenella chagius</i> : falling into the red	8
BIOTA briefing	12
Recent reviews of <i>Chagos: A History</i>	14



Editorial

Alistair Gammell, CCT acting chair

As readers will know, the Chagos Archipelago and its surrounding reefs and deeper marine areas are a very special place for wildlife, but one that is almost impossible for the ordinary person to visit.

Despite the difficulties of visiting, over the years many expeditions have taken place and as each year goes by, more expeditions set sail.

But at the same time, the memories of work undertaken in former years progressively fades. It is important that all the gathered information—both from the latest expeditions as well as those over the last decades—lives and remains part of the record of these islands.

When research is carried out, photos taken or films made, it is important that these resources remain readily available and not lost or forgotten.

This is the objective of CCT's new website the [Chagos Information Portal](https://chagosinformationportal.org)—ChIP for short, which CCT launched on World Oceans Day.

Thanks to a grant from the John Ellerman Foundation, CCT has been working to make this information easily available to the public, scientists and decision-makers—in fact to anyone with an interest in the archipelago.

In bringing this information together, we do not own or hold the data ourselves, but simply point to where it can be accessed.

ChIP is not complete and probably never can be complete, since new information is continually becoming available, but it has already brought together in one place a wealth of videos, photographs, publications, datasets, education materials and expedition reports concerning the biodiversity of these islands and the reefs.

Go take a look—discover the Chagos Archipelago at <https://chagosinformationportal.org> where you can find out more about the coral, birds and fish of this important ecosystem.

Thank you again to the John Ellerman Foundation for having supported us to make this information accessible to all.

ChIP

CHAGOS
INFORMATION PORTAL



Research update: Shark tagging

Dr David Curnick, Institute of Zoology,
Zoological Society of London

In March 2018, I joined a team of researchers from Stanford University, the University of Western Australia and the Zoological Society of London in the Maldives to board a vessel that was heading for the British Indian Ocean Territory Marine Protected Area.

After months of planning, and our fair share of technical issues, we headed to the territory to undertake the annual service of the acoustic receivers that have been installed there since 2013.

The journey from Gan was challenging to say the least. A strong weather system was passing through and our boat seemed devoid of any ability to stabilise itself. For the entire two-day journey south we rolled from side to side—a motion that put even the sternest of sea legs to the test.

Needless to say we were all relieved when we arrived at Salomon Atoll, the first stop on our two-week stay.

The network of acoustic receivers we have put in place form an array that spreads across all the main geographical features of the Chagos Archipelago, from Speakers Bank in the north to Sandes and Schwartz seamounts in the south.

Strategically located, each receiver logs when one of our acoustically tagged fish swims within ~500 metres. However, over the course of our expedition we found that the receivers at several of our sites had gone and, unfortunately, so too had all the data they had collected.

Some of these receivers had been in the water for over a year and therefore their moorings would have been slightly worn. Once compromised, we suspect that they were ripped out by a strong storm in late 2017.

In fact, we found out that one of our receivers actually drifted across the Indian Ocean and was found beached in Tanzania, where it was later retrieved by colleagues at Stanford University.

Thankfully, we did successfully recover the majority of the receivers and replaced a number of the lost ones.

In addition to servicing the array, we were also aiming to tag a new cohort of sharks. Since 2013 we have deployed 289 acoustic tags across ten species of sharks and fishes within the marine protected area.

As these tags have a battery life of 5–10 years, over time and across the full network of receivers, we are able to understand how these animals move between the archipelago's atolls, seamounts and banks.

On this expedition, we deployed an additional 71 acoustic tags on grey reef (*Carcharhinus amblyrhynchos*), silvertip (*Carcharhinus albimarginatus*) and silky (*Carcharhinus falciformis*) sharks. However, we will not know what they have been up to until we return next year and download the data.

Acoustic tags are only able to tell you whether your shark is near one of your receivers. If you really want to understand the movements of sharks away from the receivers, and possibly across oceans, you need to apply a different kind of tagging technology; satellite tags.

These tags are designed to record the location, depth and ambient temperature and send this information back to the researcher via satellite when the tag is at the water's surface.

We had previously deployed 40 of these tags across seven species and I was very grateful to have eight CCT-funded satellite tags with me to deploy on the March expedition.

The specific satellite tags I had taken are designed to “pop-off” at a pre-programmed date, float to the surface, and transmit the data. Over the two weeks of the expedition, we successfully deployed all eight CCT tags.

Four of the tags were deployed on silvertips and three on grey reef sharks. We also tagged one elusive silky shark, with an additional two silky sharks tagged with tags funded by the Bertarelli Foundation.

At the time of writing this article, six of the eight CCT tags have successfully sent back data. The final two are due to resurface at the end of June. Like a child at Christmas, I will be excitedly waking up each morning,

checking my inbox and hoping for a nice data present from the remaining two sharks.

The data received from these satellite tags will contribute to the wider programme aiming to better understand how these predators are using the Chagos Archipelago's habitats, and how long they stay within the safety of the marine protected area.

To date, only one of our tagged animals has been recorded as leaving the marine protected area. This suggests that these protected waters could be providing a vital refuge for these highly-mobile predators.

However, it is important to note that we have tagged relatively low numbers of individuals thus far. In addition, those that have been tagged have been tagged for relatively short periods (less than a year) and therefore we are not yet able to characterise seasonal or interannual movement patterns.

So, while the early signs are promising for the potential value of the BIOT marine protected area, a lot more work is needed before we can assess its true value for these species.

This expedition was funded by the Bertarelli Foundation through the Bertarelli Programme in Marine Science. For more information about the March expedition, blogs from David Curnick and his colleague David Jacoby can be found [here](#). In addition, expedition and project updates can be found on twitter via #BIOTScience.



News in brief



Tracking seabirds

Researchers Pete Carr and Hannah Wood, from ZSL's Institute of Zoology, spent January on Diego Garcia attaching tracking devices to breeding adult Red-footed Boobies to collect information on the foraging and breeding behaviours of this iconic species.

The researchers hope to discover where the birds go—but also why—which will reveal important information about activity 'hotspots' and the health of the ocean upon which they rely.

CCT has launched the first visualisation of the tracking data collected in 2016 on the Chagos Information Portal. [Check it out!](#)

Read the full blog [here](#).



Seagrass meadows discovered

It is amazing what you find when you start investigating!

Researchers from Swansea University who are tracking the movements of green turtles using satellites have discovered extensive deep-water seagrass meadows for the first time in the Chagos Marine Reserve.

The *Thalassondendron ciliatum* species is critically important for storing huge amounts of carbon in their sediments and for supporting fish populations, in addition to being an important food source for sea turtles.

Dr Nicole Esteban, Swansea University, said: "Our study demonstrates how tracking marine megafauna can play a useful role to help identify previously unknown seagrass habitat."

Read the full paper [here](#).



These important research projects are all supported by the Bertarelli Foundation as part of the Bertarelli Programme in Marine Science.



An important stepping stone

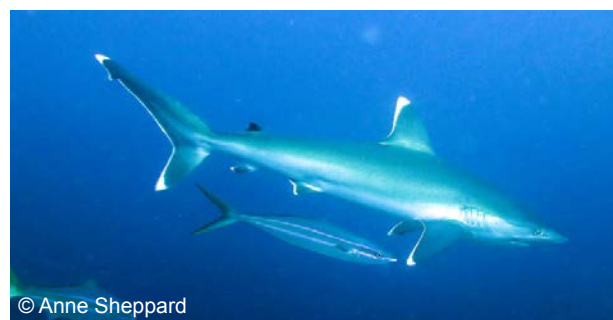
Dr Catherine Head from the University of Oxford recently returned from a Bertarelli Programme in Marine Science expedition to the British Indian Ocean Territory to investigate the connectivity of the coral reefs.

The aim of the study is to see how connected the reefs are in the archipelago by looking at their genetic structure.

This should help researchers understand why some reefs are able to recover more quickly than others.

The study is also looking at the wider Indian Ocean to determine if the Chagos Archipelago acts as stepping stone across the ocean for coral larvae, as has been suggested and found for other species.

Read the full blog [here](#).



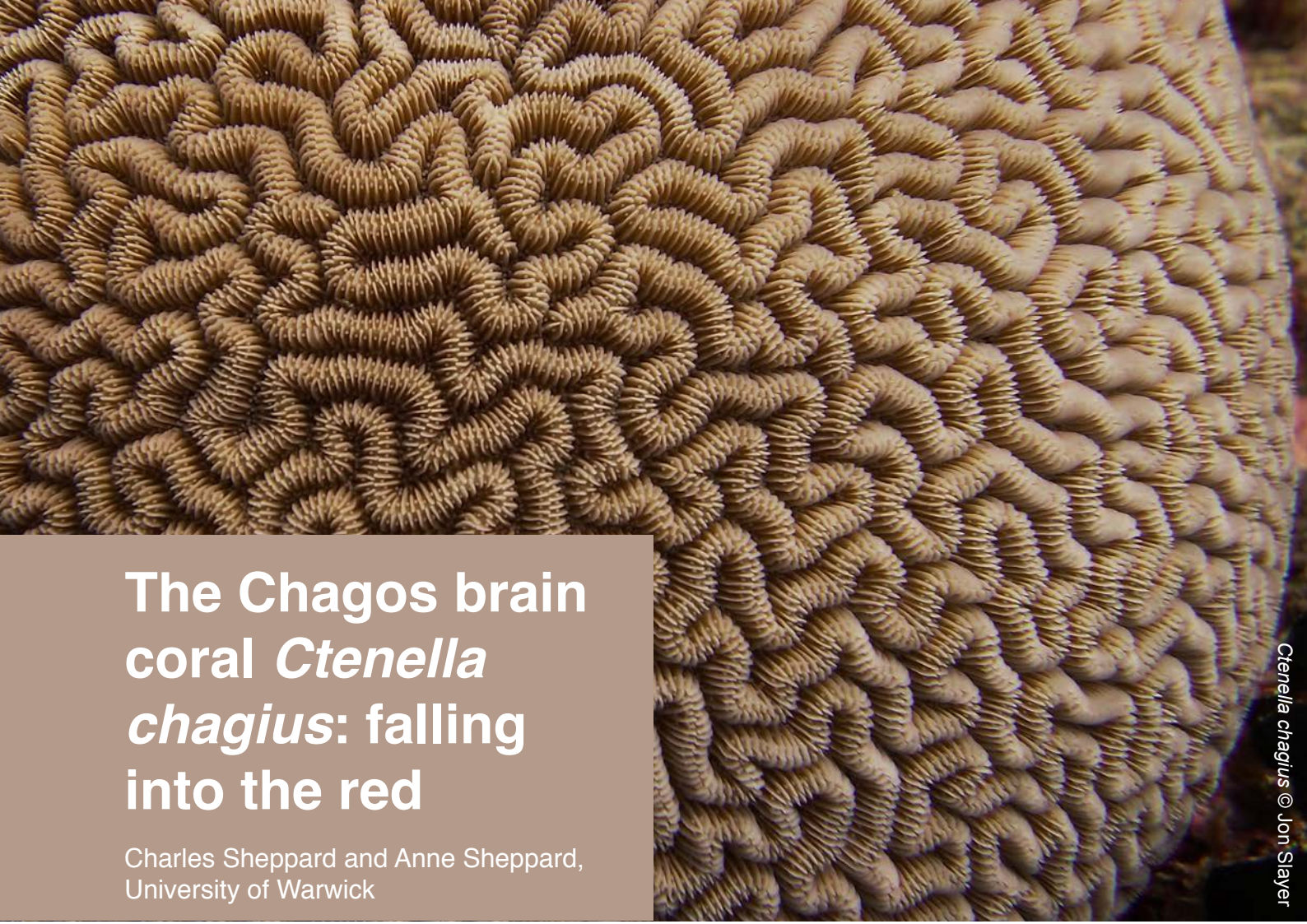
Seamounts lure predators

Researchers, funded by the Bertarelli Foundation, are now starting to understand why silvertip sharks are found in huge numbers in the Chagos Archipelago; it comes down to food.

Tides set in motion waves of cold, dense water that slosh over two of the archipelago's seamounts, or underwater mountains, moving important nutrients up the water column and providing food for a number of species.

Further research is needed "... to understand the role that these seamounts may have in sustaining shark populations," said Phil Hosegood, a physical oceanographer at the University of Plymouth.

Read the full article [here](#).



The Chagos brain coral *Ctenella chagius*: falling into the red

Charles Sheppard and Anne Sheppard,
University of Warwick

***Ctenella* was one of the 25 most common corals found in the Chagos Archipelago in the 1970s.¹**

Possessing a smooth and elegantly patterned hemisphere (Figure 1), its grown colonies had surface areas ranging from 400 to 3600 cm²; in other words beach-ball sized, or bigger.

Density data and colony size revealed the skeletons of the largest ones approached a quarter of a tonne each so, with its abundance, it was one of the main limestone depositors that built the archipelago's reefs.

It was equally abundant on ocean-facing and lagoon reefs, but it never grew on reef flats or areas that would heat up much, and its distribution suggested it was intolerant of slightly turbid water. It was most common between 6 and 18 m, which are the depths preferred by most species.

Scarce below 30 m, it was, however, seen as deep as 40 m on the exceptionally clear Great

Chagos Bank. We measured its calcification rates and photosynthetic rates and calculated that colonies could live for more than 100 years.

Despite its potential longevity, it is a fragile coral in many ways. We built several aquaria in the archipelago in 1978 which supported all corals, except for *Ctenella*.

No matter how careful we were, it would never survive relocation to aquaria, although it did survive relocation along the same reefs. This might help explain its curiously limited distribution

Its distribution, or the reason for its distribution, is enigmatic. It's concentrated around the Chagos Archipelago, although Dr David Obura has photographed it on the St. Brandon banks to the south-west, a territory of Mauritius.

It has not been found on relatively nearby Addu Atoll in the Maldives,² and we have

never seen it in the Seychelles, Mauritius or Reunion, despite prolonged surveys of these areas.³

If St. Brandon was as much its centre of distribution as are the reefs of the archipelago, then it would very likely have spread the shorter distance to the Seychelles and Mauritius too. It is not in the latter two places, so it seems likely that the St. Brandon populations are outliers.

But today, *Ctenella*'s story is grim.

When total coral cover on the archipelago's reefs fell to 10% after the 1998 warming, it became rather uncommon – not rare but no longer abundant.

Since the 2015 warming event, it has virtually disappeared. In many hours of diver surveys in 2017 it was not seen once, at any site, although its dead skeletons were hard to miss.

Again in 2018 there were no living corals found at 23 of our 25 sites, but it was seen at one site in each of Salomon Atoll and Peros

Banhos Atoll. At the latter about five living fragments were identified.

Whereas its pre-warming numbers were such that about 50 colonies might be seen on any one dive, today we might see it in one in 50 dives, or less, or at about a thousandth of its former density.

It is now ecologically extinct – but the good news is that our sightings mean that we now know that it is not taxonomically extinct. In every case the live *Ctenella* we saw was a patch of tissue on a largely dead colony that had survived, in some cases by being on the shaded undersides of colonies.

Presently, the corals on reefs above 15 m are in a state of collapse when it comes to both ecological function and their ability to accumulate reef material. They may recover. And indeed, given time, *Ctenella* may achieve its former levels of abundance, although the predictions for increasingly frequent warming events make it difficult to be very optimistic.⁴

But we must still try!



The situation is similar for several other important coral species, like the main wave-breaking coral *Isopora palifera*, which is now also over 90% reduced and with small colonies remaining, and for a once key massive form coral called star coral, *Diploastrea heliopora*, that has not been seen at all in the archipelago since the 1998 warming.⁵

But those corals, as with many others, are at least globally widespread.

With *Ctenella*, a local extinction could likely be a global one too.

In the conservation arena where Red Lists are used to measure the status of species, there are several categories, including 'endangered' and 'vulnerable', determined by various measures. At present, *Ctenella* falls far below any of them.

The question is; what can be done about it?



Figures 2 and 3. Surviving fragments of apparently healthy *Ctenella* polyps on mostly dead, much larger skeletons, both 2018.

1 Sheppard CRC, Dinesen ZD, Drew E. 1983. Taxonomy, ecology and physiology of the geographically restricted scleractinian coral *Ctenella chagius* Matthai. Bulletin of Marine Science, 33:905-918.

2 Wells JW, and Davies PS. 1966. Preliminary list of stony corals from Addu Atoll. Atoll Research Bulletin 116:43-55.

3 It is claimed to be recorded in Mauritius and even Madagascar. But our own sometimes prolonged surveys searching for it in both places have not seen it, nor have we in the Seychelles. Certainly, it is easily confused with a *Gyrosmlia* and the illustrated example that is called called *Ctenella* in one case is definitely not *Ctenella*.

4 Sheppard CRC. 2003. Predicted recurrences of mass coral mortality in the Indian Ocean. Nature 425:294-297. Also: Van Hooidonk and 8 others. Local-scale projections of coral reef futures and implications of the Paris Agreement. Scientific Reports. 6:39666 | DOI: 10.1038/srep39666.

5 *Diploastrea* was once abundant, even dominant in sheltered lagoons in Chagos. It is fortunate that we collected a fragment which is now in London's Natural History Museum, or maybe there would be no evidence of it ever even existing there! It remains fairly common in other parts of the Indo-Pacific.

Volunteer Opportunities!

CCT is on the hunt for a Chair and a Treasurer. These are important officer roles that ensure CCT is running efficiently and effectively. Do you have a love of the ocean and the right skills to join our team? If so we'd love to hear from you.

Chair

- Lead the board of trustees and CCT to enable it to fulfil its purpose
- Ensure an effective relationship between the board of trustees and CCT's staff and external stakeholders
- Act as a spokesperson and figurehead as appropriate
- Supervise and support the head of staff

Treasurer

- Manage the financial affairs of CCT and ensure they are legal, constitutional and within accepted accounting practice
- Keep proper records and ensure effective financial procedures are in place
- Monitor and report on the financial health of the organisation
- Produce the necessary financial reports/returns, accounts and manage audits and external examination of accounts

For more information on both roles please contact Helen Pitman at helen.pitman@chagos-trust.org

BIOTA briefing

Conservation Management Plan 2018–2023

On 5th and 6th March 2018, BIOTA hosted a workshop at ZSL London Zoo to begin the process of developing a new Conservation Management Plan for the territory.

The workshop brought together scientists, academics and representatives from non-governmental organisations with experts in conservation management to identify the major existing and potential threats to the territory, and establish a strategic approach to combat these pressures.

Discussions were also held around future opportunities for conservation management, including utilising new technologies and research opportunities.

The Management Plan, which will replace the existing Interim Conservation Management Framework, will be published in autumn 2018.

The Blue Belt Programme has produced a report on the outputs of the workshop. You can view it [here](#).

Particular thanks goes to CCT for their ongoing support and advice on the Management Plan.

Stamp competition winners announced

The winners of a competition to design an official postage stamp for the British Indian Ocean Territory to celebrate the International Year of the Reef 2018 have been announced

Open to 4–17 years olds, the theme of the competition was ‘Why are coral reefs and oceans important?’. The four winners will have their designs featured in the Year of the Reef issue of stamps for the territory.

The response to the competition showed how so many young people are passionate about protecting the world’s reefs and oceans, with entrants coming from all over the world.

See the winning designs on [BIOTA's website](#).



The British Indian Ocean Territory is one of 14 British Overseas Territories. It is administered from London by the British Indian Ocean Territory Administration (BIOTA).



Laura Gilbert, age 12, from Norfolk, winner 10-13 age group

Reducing plastic waste

BIOTA has been working closely with the US on reducing single-use plastics on Diego Garcia.

Last month a plastics reduction initiative was launched to reduce the sale of plastic consumer products, coinciding with the declaration that the island's tap water is now safe to drink.

People are being encouraged to buy reusable water bottles, and restaurants, bars and shops have also committed to no longer automatically handing out plastic straws or bags.

Restoration of the Plantation Manager's House

For those of you who have visited Diego Garcia, you will be aware that a key feature of the Plantation is the Manager's House.

We are delighted to announce that over the coming months, a restoration project will be launched to undertake some of the much-needed repair work to this beautiful and important building.

The work carried out will be done on a voluntary basis by those based on Diego Garcia and all materials will be sourced locally.

Recent reviews of *Chagos: A History*

Published just over a year ago, *Chagos: A History* continues to receive positive reviews from readers across the globe.

Professor David Brewster (Australian National University), Contemporary South Asia

Describing Diego Garcia as ‘a sort of a Shangri-la of the Indian Ocean’ and the Chagos Archipelago as ‘islands of mystery’ about which ‘few have sought to dig beneath their preconceptions to document the social history’ Brewster states that ‘Wenban-Smith and Carter’s book does just this, and this tome may well become the definitive social history of the islands, at least up until the 1970s.’

He notes that the ‘lure of the Chagos lies in the combination of isolation and strategic significance ... by the eighteenth century, the islands had already become pawns in strategic competition between France and Britain, as they jostled for control over the trade routes across the Indian Ocean – a competition that ended after the Napoleonic

wars when Britain grabbed the Chagos and other French-controlled territories.

‘Their isolation and strategic importance have been fundamental factors in their history since that time.’ He adds, ‘Wenban-Smith and Carter document well how the remoteness of Chagos also led to a particular social system among its workers who lived far beyond the luxuries (or constraints) of outside civilization.’

‘The last part of the book covers the remarkable story of how the Chagos archipelago came to be turned into one of the world’s most powerful military bases.’ Brewster concludes, ‘This book is a comprehensive piece of scholarship on the social history of these remarkable islands, up until the last island workers were expelled in 1973.’

He suggests that a follow-up volume covering the archipelago post-1973 should ‘include the perspectives of the new set of island workers, the many American servants of the Empire ... the perspectives of those surviving Ilois and their modern-day descendants who are

unlikely to ever return to the Indian Ocean's Shangri-la ... It would also include Mauritians, for whom the Chagos islands have come to represent a sort of national foundational myth, in which Mauritius was duped of its national birthright of these remote islands: in part, a morality story of the evils of colonialism, but also partly a hope to gain the believed treasures of the Chagos' exclusive maritime zone.'

Dr. Richard Munisamy, *We Love Mauritius* blog

One Mauritian observer who has been sharing his views on the archipelago in the press and online is Dr. Richard Munisamy, whose review of *Chagos: a History* describes it as 'an essential read for everyone who calls themselves Chagossian (or Ilois) and their collaborators in the fight for them to return home.'

His reading of the book leads him to pose the following questions: 'Would coconut

oil production have remained viable once vegetable oils replaced it in Mauritian cuisine? Would economics have forced the plantations to close and the Chagossians to leave anyway?'

He concludes by asking, 'Does righting a wrong against a people justify a crime against nature? Where do corals have a better chance to adapt to climate change, free from other anthropogenic threats? And if they do, could we learn how to save some of the most productive ecosystems on our planet that countless coastal communities around the world depend upon for their own existence?'

Chagos: A History is available from [York Publishing Services](#).

Sources:

David Brewster (2017) Chagos: a history, *Contemporary South Asia*, 25:2, 224-225.

Dr Richard Munisamy (2017) weluvmu.com/blog/2017/07/27/chagos-a-history.

Cannons forever out of range

Nigel Wenban-Smith

Anyone who knows Diego Garcia knows the old cannons on the western side of the lagoon entrance. Installed with some difficulty in early 1942 (as recounted in *Peak of Limuria*) by a team of Royal Marines under the command of Captain Alan Thompson, the guns were never fired in anger. Thanks to Paul Caboche, the island's radio operator at the time, *Chagos News* can now report how futile their use might have been.

These 6-inch naval guns had been recovered from the Cruiser HMS *Antenor* during a refit. Once they had been set up, plans were made for test firings and the General Officer Commanding, Lt. Gen Wetherill, made a special trip to the island to observe the event. He gave a pep talk to the crews, explaining that they would have to hit their target at the first shot, because they would have revealed their position and the return fire would knock them out.

The island's population was duly warned of the impending explosions and the firings took place. It was during these tests that they realised that the guns had been supplied without range-finders....

Following a flurry of signals, this essential instrument was put aboard the next supply vessel and soon arrived.

However, as the crate was being unloaded, the tackle broke and the whole load went to the bottom of the lagoon. More signals, and another range-finder was put on another ship due to visit the area, HMS *Laomedon* – which the Japanese subsequently sank. And the same fate befell the third ship to be given the task. As far as it's known, no range-finder did ever reach Diego Garcia.



© NSF Fotolab, Diego Garcia

The Chagos Archipelago is a rare haven of beautiful reefs, diverse wildlife and clean waters, located in the midst of the Indian Ocean. The Chagos Conservation Trust is the only UK charity dedicated to protecting it.

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