Chagos News

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Editorial

In this issue of Chagos News we have some articles looking at the problems facing coral reefs from two different perspectives. Two are very much realist viewpoints, one from a leading reef scientist and the other from the President of a small island nation facing these threats and trying to help his people. The other perspective is an optimistic one, showing how individuals can make a difference using their own skills and talents and how a positive attitude to conservation can encourage individuals to get involved to try to do something about the problem.

I have to say that it isn't easy to feel positive about the prospects for coral reefs, especially after returning from the recent Chagos expedition, where, even there, signs of disease affecting corals are being seen. But, if optimism is the way to save reefs then it is something that we should all try. Just so long as we don't think that there will be an easy or 'miraculous' solution.

That Chagos is so important as a natural laboratory was reinforced once again during the most recent expedition. Then as so often before, the scientists were impressed, this time by the number of reef sharks that were much more common on Chagos reefs compared to the rest of the Indian Ocean - but they are still a very long way from what they were like in the 1970s.

So whether we can be optimistic or not, we are all working very hard to do what we can to protect the world's reefs, for ourselves, for the future and for the reefs themselves.

Anne Sheppard
Editor

Chagos Conservation Trust Chairman's Report

Prof Charles Sheppard
University of Warwick

As you know, I became Chair of CCT earlier this year. Since then there has been considerable scientific work in Chagos including another science expedition, the second in a series of three that are funded by a Darwin fund from DEFRA, and a series of oceanographic and reef surveys in Diego Garcia lagoon. There was also a project done on the pelagic fish including work on servicing the sensors that are deployed in connection with that work. Added to that (but nothing to do with CCT) the feasibility study of Chagossian communities resettling in one or more islands started, and this will report in early 2015. So much is happening.

Earlier this year I resigned from being the Commissioner's science adviser (sometimes called conservation advisor) after a little more than 10 fascinating years. My successor is Dr. Mark Spalding, to whom I wish the greatest success.

I have prepared a substantial document, which the EC has seen, and which is now on the CCT website part of which is reproduced at the end of this Newsletter. In this I had substantial input from our new Secretary, Alistair Gammell, our past Secretary and now Membership Secretary, Simon Hughes, and from Anne Sheppard who is editor and compiler of *Chagos News* and CCT webmaster. This document is included in this issue later, and has three main intents. First, it graphically summarises all conservation work to date, both that in which CCT has heavily or peripherally participated (or not been part of at all). This is shown in the figure on page 26 where much of this document is reproduced. It shows also an estimate of the success in terms of proportion completed in each case. Second, the document repeats CCT's written Objectives, Aims and Targets as agreed some time ago. Thirdly the document notes tasks that we still need to do. This list is also on the website, where it will be updated). It mentions ongoing projects and names the committee member leading it, or who is the contact point for CCT. The purpose of the document is to summarise what we do, refresh our memories, and inform new members. I would like it to be an open document, so should not be viewed as being cast in coral limestone.

We don't get into politics. But we can draw your attention to legal judgments where these matters relate to what we do or to the conservation of BIOT's ecosystems. The latest court verdict was connected with, amongst other things, the long running challenge or allegation that the MPA was created to keep Chagossians out. We have always known, and said, that this was nonsense and that it was created for reasons of improving conservation. The judgement delivered on this has now definitively confirmed that. The judgement is long and can be found here: http://www.bailii.org/ew/cases/EWCA/Civ/2014/708.html

We, like several other bodies, are helping with the resettlement study mentioned above by KPMG, by supplying scientific and some historical documents to their Secretariat. We posted an open letter on our website written to the Chagos APPG and others about the need for good science information, not least because of several instances of rather propagandised 'science', believing as we do that incorrect information, if used in decision-making, will lead only to more grief, including for Chagossians who can well do without it. In connection with offering our expertise I, with Alistair Gammell and Simon Hughes, met with Member of Parliament Mr Andrew

Rosindell, who is on the Foreign Affairs Select Committee and who has a keen interest in the Overseas Territories. I have written to him in the context of arranging a presentation by CCT to his group, and he will connect in this case with Mr Jeremy Corbyn, chair of the Chagossian APPG.

So many things are happening to the benefit of the conservation of this remarkable archipelago.

Yet another court hearing goes on concerning BIOT and the MPA, this time held in Istanbul. Challenges to conservation, even when regionally important and clearly for the benefit of a huge area, seemingly never end! Anyone engaged in conservation, not only in large MPAs of course, knows this. I was somehow reassured to learn that even the Yellowstone National Park faced decades of struggle before becoming an inviolate icon for conservation.

Conservation of the global, regional and local environment is always an uphill battle with vested interests ranged against it. But, the chart shows how much we have collectively achieved over the last 20 years, and we go from strength to strength with our collaborators, which include many of the country's leading science societies and NGOs. CCT remains central in much of it and has been a useful node for much of the rest as well. One project we are now well embarked on is the Scientific Portal, which might be viewed as a scientific version of our existing website (and of course they will be linked). Via both of these we will become, definitively, the 'go-to' site for anything to do with matters within our remit, namely science, conservation and history of this remarkable archipelago.

For more of the information on several of the aspects under way now, read on!

June 2014 at the Aquarium

Charley Cranmer
CCT Director of Development

On Wednesday 4th June CCT held an evening reception at the new Chagos tank at the aquarium at ZSL London Zoo. It was a fun evening seeing the beautiful underwater wildlife and the interesting presentations.

All CCT members were invited to the event, as well as other interested parties and it was designed to say thank you to all of our supporters. CCT would not be able to undertake the vital scientific research and conservation work without this help.

Typical corals that may be found on a Chagos reef, displayed in the ZSL Chagos aquarium.

Photo Anne Sheppard

Professor Charles Sheppard, CCT's new Chair, explained why Chagos is such an incredible place and why he is still awed by it after more than 40 years of research expeditions there. Charles told us how *"Chagos remains the most unspoiled large expanse of coral reefs in the world. It has escaped the 'decades of destruction' that most of the tropical world has suffered, and remains a kind of time capsule in a condition that most of the world needs to regain."*

Next the guests watched the introductory film about CCT, which can be found on our YouTube channel here: www.youtube.com/watch?v=yrSHMEPJve8.

As well as being a CCT Trustee, Rachel Jones is in charge of the Aquarium at the Zoo and so was perfectly placed to tell our guests all about the wonders to be seen in the Chagos tank. She also led a behind the scenes tour, giving a fascinating insight into how staff have recreated a little piece of the Indian Ocean in the heart of London.

At 8,500 litres it is the biggest of ZSL's 15 reef aquaria and the newest of them. Focusing on species found in the Western Indian Ocean where the Chagos Marine Protected Area (MPA) is found, the tank showcases beautiful reef fish and a diverse community of corals and other invertebrates. Highlights include the wonderful wrasse *Cirrhilabrus rubrisquamis* which can be seen displaying its bright red and purple fins as it darts about the tank. A wide variety of coral species in all shapes and sizes represent some of the types commonly seen in the Chagos with a focus on the branching staghorn species (*Acropora* spp.). These fast growing corals are dominant on the reefs of the Chagos where they help protect the low lying islands from waves.

One of the exquisitely coloured corals in the aquaria seen in the fascinating tour behind the scenes of the aquaria. It is not even 'Photoshopped' to bring out the colours!

Photo Anne Sheppard

The Chagos reef aquarium has been running for less than a year and still has a lot of growing to do, as the months go past the community of fish and corals will slowly mature and develop into a fully grown reef. The tank is lit by six 400watt lights which simulate the powerful tropical sun so the corals can photosynthesize and grow successfully, and a battery of other equipment behind the scenes helps to keep the water as clean and clear as it would be on the real reef. Corals will only grow in nutrient poor, extremely clean water and the Chagos MPA has some of the cleanest water on record. The reefs of the Chagos now represent the best quality reefs left in the region and act as an important benchmark to more degraded reefs elsewhere.

The tank also uses interpretation to show how CCT and ZSL are working with the Chagossian community in the UK to raise awareness of the value of the marine environment and encourage community members to get involved in environmental training and even going on scientific expeditions to the Chagos. We hope, by combining some footage taken in the Chagos with live animals that can be seen there, our visitors will get a taste of the biggest no-take marine protected area in the world

and understand why its conservation is so important.

The final presentation of the evening was from Dr Heather Koldewey, another CCT Trustee, who gave a mesmerizing description of the expedition to Chagos this spring during which of discovery and adventure when working in one of the last ocean wilderness she described the ground-breaking science achieved and the areas. *"There's nowhere in the world like Chagos, we hope you feel inspired to help us protect it."*

A coral eye view from inside the aquarium of some of the members at the CCT event.
Photo Anne Sheppard

CCT Trustee Anne Sheppard elected a Fellow of the Linnean Society of London

Professor Andrew Price
University of Warwick

Since the last edition of Chagos News, Anne was elected a Fellow of the Linnean Society of London, one of the UK's leading biological societies, which is concerned with all things taxonomic and with evolutionary biology

She was nominated by existing Fellows Prof Andrew Price and Dr Colin Clubbe, both scientists who have visited Chagos for research purposes.

Taking Stock of our Overseas Territories Wildlife

Clare Stringer
Royal Society for the Protection of Birds

In May, the RSPB published a report titled "The UK's Wildlife Overseas: A stocktake of nature in our Overseas Territories". This was an attempt to bring together all known species records and conservation assessments from the island Territories to enable an overview of their biodiversity value, and to highlight the gaps in our knowledge to enable the targeting of future research efforts.

The results were impressive. More than 28,000 native species have been recorded from the Overseas Territories (OTs), and more than 1,500 of these are endemic, compared to 90 endemic species present in the UK "mainland". Only 9% of the species endemic to the OTs have ever had their conservation status assessed for the IUCN Red List, and of those that have, 77% are considered to be Globally Threatened. In Chagos, only one of the nine recorded endemic species has had its global status assessed: this is the brain coral *Ctenella chagius* which is considered to be Globally Endangered.

The Chagos stood out amongst the island OTs for having a high level of knowledge of its marine environment. However, we could find no species-level records of sponges, and there were very few worms recorded (either in the marine or terrestrial environments). We were also unable to find any species-level records of spiders or other arachnids.

It is apparent that the OTs hold the majority of the biodiversity for which Britain is responsible. Places like the Chagos are of international significance, and a huge amount of fantastic research has already been done to describe and document the richness of species present. However, we have really just scratched the surface with huge areas still to be explored. We estimate that there may be a further 65,000-90,000 species still undocumented in the OTs – so there are plenty of opportunities for new discoveries on future expeditions.

The UK's Wildlife Overseas: A stocktake of nature in our Overseas Territories is available for download at http://www.rspb.org.uk/ourwork/projects/details/369443-the-uks-wildlife-overseas-a-stocktake-of-nature-in-our-overseas-territories.

Ctenella chagius, the endemic Chagos brain coral.
Photo Anne Sheppard

Reefs of Research

Anne Sheppard
University of Warwick

We often hear that Chagos' unspoilt reefs, lacking the normal destructive footprint of humans, are a natural laboratory and that research there shows how undamaged reef systems should work. Using this natural laboratory over the years have been several young researchers, all well aware that they have been given an exceptional opportunity. The need to carry out fieldwork for post graduate qualifications has been to the benefit of the extensive body of research that now exists for these atolls.

The earliest was on a joint services expedition to Eagle Island, one of the islands on the Great Chagos Bank, in 1975. A young Mr Charles Sheppard was a new PhD student from the University of Durham, assisting his supervisor Dr David Bellamy with coral taxonomy and physiology research. This was Charles' first experience of research on coral reefs, as his research at that time was on temperate ecosystems, but the expedition changed the direction of all his future work.

Charles Sheppard and David Bellamy in the makeshift lab on Eagle Island in 1975. This was very early days of using SCUBA equipment for reef research in Chagos and so a lot of baseline data was needed - like what is down there! Reef research in Chagos to the 1970s had all been on the reef flat and this expedition made one of the first lists of corals to be found below the reef flat.

In 1978 Charles, now Dr Charles Sheppard, he led an 8 month long Joint Services Expedition to Chagos, based on Ile du Coin, Peros Banhos atoll. Three members of that expedition were students and Charles was field supervisor for two of them and exam supervisor for the third. Ralph Rayner, who is now Professor Ralph Rayner, was working towards his PhD in oceanography and was carrying out much of his field work in Chagos, studying the flow of nutrients around the reefs, and Rod Salm, now Dr Rod Salm at The Nature Conservancy, was carrying out reef ecology fieldwork for his PhD and testing some of the very earliest remote sensing data from the Landsat satellite to determine its use in reef research. The third expedition student was John Hancock, a member sponsored by the British Sub-Aqua Club (BSAC) and a bus driver from London, who took his Open University second year exam on the beach of Ile du Coin, Peros Banhos. The sealed exam papers were flown out to Diego Garcia and air dropped from a surveillance aircraft in a sealed container into Peros Banhos lagoon.

On the beach. Student John Hancock and exam supervisor Charles Sheppard in 1979 at Open University examination centre no 976. Charles was supposed to ensure John didn't copy from other students! John made a detailed collection of Holothuria (sea cucumbers) for the Natural History Museum.

(He also passed his exam).

There was then a gap in civilian scientists' access to Chagos and there were no further expeditions for over a decade. The next expedition was 17 years later, in 1996, and had three more students, all from the University of Warwick, from where the expedition was organised. Dr Rebecca Klaus, who was at that time undertaking a PhD on remote sensing, worked on digitising maps of Chagos' reefs and Dr Alistair Jolliffe, having by then almost completed his PhD, worked on the macroalgae that are found on the reefs, between the corals. Peter Symons, an ornithologist, did the fieldwork for the research part of his MSc and completed the earliest comprehensive study of the numbers of breeding birds on the islands.

In 2002, Simon Wilson measured juvenile coral recovery, and this formed part of his PhD research which was then published successfully. This was the first visit following the massive mortality on the reefs in 1998.

Measuring coral recruitment gives a good indication of the health or 'resilience' of the reef, in other words its ability to overcome or recover from impacts. After the massive coral bleaching event in 1998, Dr Simon Wilson measured the recruits along long transects up the reefs to help determine how well the Chagos reefs would recover.

In 2006, the next big expedition, there were again 3 students, all doing PhD fieldwork. Nick, now Dr Nick Graham, should be well known to readers of *Chagos News* as he has written several articles on the reef fish, both of Chagos and the Indian Ocean, and has shown how the uninhabited northern atolls of Chagos have the highest biomass of reef fish anywhere in the world. Alistair, now Dr Alistair Harris, the founder of Blue Ventures and recipient of many international prizes for the work they do, studied the recruitment of juvenile corals on reefs in the Indian Ocean, and the Chagos' reefs which have no other human influences were an important site for comparison with other impacted sites. Rob Gibbs used a technique he developed to create very high resolution images of the reef, which allow researchers to analyse the composition of the reef back in the laboratory where time is available. Rob completed an MSc in both marine science and in astrophysics.

Research in Chagos isn't always easy, land based in particular. Getting ashore through the surf is only the start and then there's the impenetrable growth, the heat and the mosquitoes. Pete Carr's research is physically very hard work and is fondly known as extreme birdwatching by members of the team.

On the 2010 expedition there were no students, although it was during that expedition that Royal Marine Major Pete Carr decided to do an MSc by research at the University of Warwick with Professor Charles Sheppard. Two years later, on the 2012 expedition and now retired from the Royal Marines, MSc student Pete was collecting further data on the breeding habits of the Red footed Booby for his research. Another student on that expedition was Catherine Head, who was again using the Chagos reefs as a reference site to look at the communities of cryptic organisms (little burrowing beasties to the uninitiated) on reefs and comparing the results with heavily impacted sites around the Indo Pacific. This is possibly the greatest value of Chagos' reefs to researchers, this ability to compare an unspoilt reef with an impacted one. There is a phenomenon called the 'shifting baseline syndrome', where people look at what they might believe to be an unspoilt location and assume that that it is the best it gets, not realising that the site has been degraded over many years. The problem with this is that we then do not realise just how much damage has been done and also, in restoration projects, do not know what state it should be returned to.

PhD student Catherine Head at work late into the night in a temporary lab area on the *Pacific Marlin.* Note how facilities have become more sophisticated! Getting to Chagos is usually a one of event and so it is important to collect all the data that might possibly be needed, as return trips might not be possible.

The diving officer on the 2012 expedition, David Tickler, was another who was inspired by Chagos to go back to study, this time for an MSc at the University of Western Australia. David is working on the large pelagic fish around Chagos waters.

The technical array of equipment used to obtain the data on pelagic fishes which David Tickler is working on for his MSc. Research has become more technical, therefore more expensive and it is more difficult to get the equipment to Chagos.

Many other students have worked on data brought back from expeditions. As it is so complicated to get to Chagos, and because time out there is so limited, we have found that an effective way to get best value for money is for expedition members to collect extra material, either specimens, DNA samples, bits of rock or counts of various things to bring back for other researchers. This means a very busy time on the expedition but allows a lot more data to be analysed at a more reasonable pace back in the lab or office. Several University of Warwick students have contributed to what we know about Chagos by analysing some of this data as part of various undergraduate and post graduate research projects. One of those Dorin Dumbraveanu, made a detailed analysis of the area of reef in the Chagos atolls for his MSc research project. This information, like all the research done

in Chagos, is still used to this day. The youngest (so far) are still undergraduates, Beth Frances and Annabel Plumeridge, who are working on data for their undergraduate dissertations. Remarkably, Beth also worked some data up into a poster paper which has been shown at two conferences in London, already - a rare achievement indeed.

On several expeditions collections have been made of samples for genetic analyses, fishes, coconut crabs, crown of thorns starfish, corals and the algae that are symbiotic in corals. There are several such students as far and wide as Germany, Taiwan and Hawaii, who have worked up several blocks of results which are now published in high level international journals.

According to Prof Charles Sheppard, who has carried out more research in Chagos than anyone else and who has had several students working on Chagos results, "Students have always been tremendously hard working. It is great that they can hugely increase the use of the data that is collected in Chagos, and this has enormously increased the amount that is known about the place. It is also relatively cheap - students are not slave labour, exactly, but they have always been extremely good value for the funding agencies. And then also, some of us perhaps have to admit that we are not as young as we think we are, and these students will surely be at the forefront of following generations of scientists who will be of great value to conservation and society. Some are spectacularly so already!"

Postscript - We have just heard that Pete Carr has been awarded an excellent MSc and will be starting a PhD working on the birds of Chagos at the Zoological Society of London and with Professor Charles Sheppard at the University of Warwick

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Interview with CCT Patron Sir Bruce MacPhail - A man and his love of the sea

Charley Cranmer
CCT Director of Development

As part of a long and successful business career, CCT's first Patron Sir Bruce MacPhail was the Managing Director of P&O Steam Navigation Company for almost 20 years, until his retirement in 2003. It was for services to the shipping industry that he was knighted in 1992. Sir Bruce kindly hosted CCT's 20th birthday party at his London office in June 2013.

You are a keen diver, when and why did you first become interested in the sea and diving?

After I had finished my accounting qualifications in 1965, I was going round the world prior to going to Harvard Business School, because you could get around the world tickets very cheaply in those days. I left in March with a view to arriving at Harvard in September, after stopping in many places on the way. I did a lot of snorkelling in the Pacific, in Fiji and Tahiti and places like that. Then I found myself in Acapulco and there was someone pushing dive excursions, so I thought I might as well have a go.

Learning to dive in Mexico in 1965 could be regarded as not such a sensible thing to do. The training simply involved asking if you could snorkel and then telling you to breathe through your mouth! The equipment we had then was very different. There was a twin hose with a J valve at back which you could turn when you started running out of air so that you got another five minutes worth. There were no dive or depth computers, you didn't know how deep you were at all. You either wore one of those yellow blow up life jackets, or nothing at all. After surviving three or four dives in Acapulco, I dived in the Bahamas and Bermuda before arriving at Harvard.

What was your most hair-raising diving experience?

Fortunately I haven't had too many; I'm too cautious I think. I've never had any frightening encounters with any large fish. Although swimming against the current at about 100ft trying to reach a reef to hook myself onto, after a cancer operation and at my age is rather stupid!

I had some quite hairy diving in Palau where to get to the right place you have to swim against the very strong current. When you get to the place and hook yourself on, if you turn your head, your face mask comes off! It's marvellous diving though.

What is the most incredible sea or ocean location you have visited?

It depends what you're looking for. In some places there is the most superb fish life, in others it's coral, or in others it's rock formations. I particularly like large fish and beautiful coral. I think the whole ambience of being under there and being weightless is incredible. When you're on a very steep drop off and it's very clear water, you look down

for hundreds of feet and see sharks swimming around down there, and you just fly along the cliff - it's absolutely extraordinary.

I think outside of the Barrier Reef, north of Lizard Island, is consistently one of the most stunning places, when you can get out there. New Britain island on the east side of Papua New Guinea also has some marvellous diving. You can see spectacular fish life on the dawn dives on the reef in between the two islands as the tide comes in.

Was it your love of the sea that led to you running P&O for such a long time?

Whilst running P&O, especially during the 1990s, I dived a lot all over. There is superb diving at Heron Island in Australia. It was during those years that I got my PADI diving qualifications, initially in Mustique and then the advanced course on a dive boat in the Red Sea with two of my sons. My wife Caroline and three of my sons dive.

What decline in the health of reefs have you witnessed?

I dived for about ten years from the mid 1960s when the reefs were absolutely beautiful. I then had a break from diving until the mid 1980s, by which time the difference was striking. When I first went back to the same dive spot in Fiji, I thought my memory must have been optimistic. On one island that I have visited a number of times, the inland lagoon was absolutely spectacular and now there's hardly any life there. It's very sad that it has changed so much.

One of the most dramatic things I saw was at Moyo Island in Indonesia. There was a house reef I used to take the kids to, a beautiful place where the coral was absolutely spectacular. The water was shallow, less than 10 feet deep, and just off the jetty you could see small sharks and turtles. When I went back seven or eight years later, it had completely gone because of a bleaching event. It was really sad as it was so incredibly beautiful before, and it had just become white with dead coral.

Why did you decide to become a Patron for CCT?

I met Pete Raines in the mid-1990s when he was CEO of Coral Cay Conservation. Pete did a good job of persuading me to support his reef conservation work and we've been friends ever since. Pete has always been hugely enthusiastic in his support for CCT and Chagos, and his enthusiasm led to my involvement with CCT, of which I am delighted to be Patron.

The scientists report that the corals in Chagos are like nowhere else left in the oceans. These should be protected and I think Marine Protected Areas are a very powerful way to do this. A place where coral reefs may last a lot longer than anywhere else.

Why we all need some #OceanOptimism

Elisabeth Whitebread

How do you feel when you think about the environment?

Scared? Anxious? Hopeless?

If you feel any of these, then you are not alone. When author and environmental educator Dr Elin Kelsey asked the above question to children, the overwhelming answer was "dread". First used in the early 90s, today the term "ecophobia" seems increasingly relevant to how many of us feel about our home planet.

For those of us who care about the natural world and want to protect it, this presents a problem. Empirical evidence from the field of Positive Psychology suggests that fostering feelings of hope and positivity about the environment is crucial for encouraging action to help protect it. This makes common sense too – we all know how much easier it is to stay motivated when we're feeling good.

Unfortunately, media narratives - both mainstream and scientific - are focused on "doom and gloom" stories, which frighten, disempower and disengage people. Mistakenly, the conservation community often buys into this approach, in the belief that more information about how bad things are will motivate people. In this context, it is unsurprising that many people feel anxious when they think of the environment, and are disinclined towards positive action.

Since 2011, Dr Kelsey, Prof Nancy Knowlton of the Smithsonian Institute, and CCT Trustee Dr Heather Koldewey have been working together to try to address these issues. Their project – Circumnavigating Hope – exists to find a way to connect positive ocean stories to the scientists, conservationists, communicators, and public who need to hear them, and to encourage a new paradigm of solutions-focused conservation communications that enhances the likelihood of their replicability.

Initially the project is focused on the marine environment, as this is where the group have the most collective expertise, but also because the ocean receives relatively little attention given that it makes up such a large percentage of the habitable volume of the earth.

In May this year we gathered together a small international group of conservationists, journalists, campaigners and innovators to think around the complexities of this issue.

How do we communicate positively whilst also acknowledging the depth of the current environmental crisis? How do we inspire positive action when for most people the oceans seem so remote?

One of the results of this workshop was the birth of the #oceanoptimism hashtag, which we launched on Twitter on 8th June, World Oceans Day. By 11th June the hashtag and accompanying positive ocean-related stories had been seen by over 1.7 million Twitter users around the world, with almost 1,000 unique tweets from over 500 accounts. #oceanoptimism had gone viral!

Of course, Chagos is the ultimate good news story for our oceans. It shows us that there are still places where fish can live long and happy lives, where corals can thrive, and where concerns about plastic pollution seem to belong to a different world. Chagos serves as a beacon of hope for our seas, and through the positive example that it provides, is encouraging greater protection of our oceans in other special places.

For more positive ocean stories, follow the #oceanoptimism hashtag on Twitter, and add your own tweet to share the good news!

Elisabeth Whitebread is a freelance campaigner and Trustee of CCT. You can find her on Twitter @ElisabethJane.

A Message to the World from HE The President of Kiribati

A new book about PIPA, the Phoenix Islands Protected Area, a sister Big Ocean MPA site, has recently been published. The nation's President wrote the very salutary Foreword. He expects the nation to be abandoned to sea level rise by 2050, discusses opposition to the MPAs creation, and exhorts people to face the reality of the problems and to move ahead in ocean conservation.

We could almost write 'Chagos' in place of Phoenix Islands throughout! Below, the Forward is reproduced by the kind permission of His Excellency and the publishers the New England Aquarium.

Kiribati is a republic of water, and nowhere in our thirty-three islands and atolls are you ever more than a few meters from the sea. We are not a wealthy nation in financial terms, but the riches we do have – material, cultural, and spiritual – come from the Pacific Ocean. The waters around us are some of the most productive fishing grounds for tuna and reef fish in the world. Kiribati has its own small-scale tuna fishery, but over the decades, with the rise of multinational fishing fleets, we came to rely on the sale of lucrative fishing rights to provide the most basic services to our people.

In 2000 Kiribati made news around the world by announcing that we were closing off some of our best coral reefs and tuna fishing grounds to create a marine protected area (MPA), the ocean equivalent of a Yellowstone National Park. Once the MPA was established we began to phase out commercial fishing from 11% of our exclusive economic zone, or EEZ – some 400,000 square kilometres.

At the centre of the MPA where the eight islands of the Phoenix group, home to a few dozen people and millions of nesting seabirds. Offshore, the unspoiled reefs teemed with fish and other sea life at a level of abundance known nowhere else in the world. Kiribati proposed to create a trust to offset the loss of fishing income and to permanently preserve the Phoenix islands, with their birds and corals and fishes.

We took this extraordinary step based on the word of a handful of scientists who had come to us five years earlier with news of a discovery in our waters – the unspoiled reefs of the Phoenix islands. "You have an extraordinary treasure," they told us, "and an extraordinary opportunity to preserve it." Gregory Stone, David Obura, and their colleagues came to the government of Kiribati to show us what no previous scientists ever had: a wonderful, vibrant biodiversity unique to our waters, and the urgent need to save it.

The opportunity to save the Phoenix Islands became a firm commitment and shared cause, one championed from modest offices in Tarawa to legal boardrooms in Boston, Massachusetts, and Washington, DC, from government offices in Australia and New Zealand to international conferences in Brazil.

The establishment of the Phoenix islands protected area was by no means straightforward. There were deep reservations within Kiribati and in the wider financial and conservation communities. Our fisheries partners vigorously contested the loss of some of their most fertile fishing grounds. Our own citizens protested over the potential loss of much-needed revenue. Naysayers maintained that the plan simply couldn't succeed, that such a tiny nation with so few resources couldn't police and enforce a huge marine protected area. But the Phoenix Islands

Protected Area was established, then enlarged. In 2010 the Phoenix Islands were inscribed on the World Heritage list by the United Nations Environmental and Scientific committee (UNESCO), becoming Earth's largest and deepest World Heritage site.

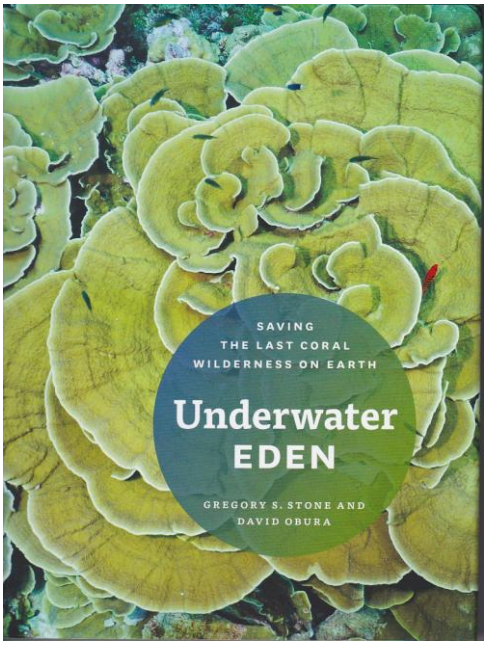
The Phoenix Islands teach us that much can be accomplished with sufficient political will and commitment. The people of Kiribati face the real possibility of being displaced by climate change as our planet warms, sea levels rise, and our low-lying atolls leave us nowhere to go. Beginning in 2003 the government launched the Kiribati Adaptation Program to respond to climate change by capturing rainwater, planting mangroves, and taking other steps to reduce Kiribati's vulnerability to rising sea levels and other effects of climate change. Since 2007, in partnership with AusAID, the Kiribati Ministry of Education has funded the training of I-Kiribati nurses at Griffith University in Australia. By providing economic incentives for emigration and allowing young people time to establish I-Kiribati communities in other countries, the Kiribati Australia Nursing Initiative and programs like it seek to facilitate the eventual migration of the people of Kiribati by 2050 with dignity and hope.

Yet the people of Kiribati recognize that they are still stewards of the ocean that now threatens their way of life. They see the value of saving the Phoenix Islands, a national treasure that belongs not just to Kiribati, but to the world.

This book tells the story of the underwater Eden that is the Phoenix Islands and of the race to save this wilderness against great odds. It tells of the islands' past and present, but their future is yet to be written. We all write that future every day, as stewards of our shared ocean. It has been observed that human blood has the same salinity as the ancient seas from which life on land first emerged millions of years ago. The Phoenix Islands awaken us to the ancient truth that the ocean is within every one of us, and we must manage it as one people.

Underwater Eden: Saving the Last Coral Wilderness on Earth. G.S. Stone and D.O. Obura, eds. The University of Chicago Press, Chicago. 170 pp.

To learn more visit http://www.phoenixislands.org/book.php



Expert Opinion Piece

Peter Sale
University Professor Emeritus
University of Windsor

Like many of you, I believe that humanity is currently facing an existential challenge with climate change just one of the many serious impacts we are having on the biosphere that sustains us all. I also believe we are proving remarkably inept at coming together to solve this problem. Coral reefs are central in that they remain the ecosystem most likely to be totally eliminated first. Think about that for a minute -- we used to be content to cause extinction of species one at a time, now we are tackling whole ecosystems.

The politics are equally immense because there is big money tied up in a status quo economic system that is supposed to grow continually, and to be based on use of fossil fuels for energy. Naturally, there will be resistance to change.

Despite some scientific differences of opinion, there is general consensus that something needs to be done and that scientists should somehow get involved more than we traditionally did (I stress 'traditionally' because scientists are a lot more active in such 'small-p' political debates than we ever used to be 20+ years ago).

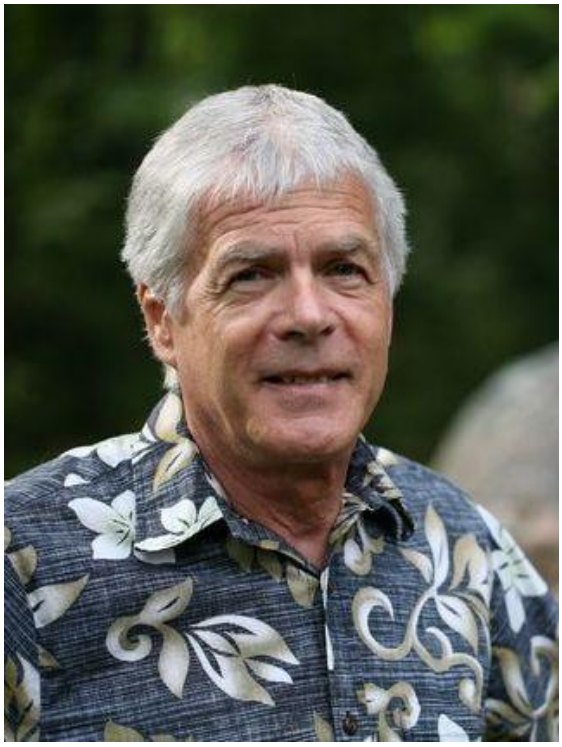
I do not know the details, but I do know there is a major political battle currently being waged in Australia regarding coal mining, coal port expansion, and possible damage from that to the GBR. Australia has also rolled back (or is planning to roll back) its quite progressive carbon tax. All these seem to stem directly from a rightward tilting governance following their last national election. In fact, Australia, a fossil-fuel exporter that was at least trying to do its small part re climate change, now seems to be learning many lessons from its new political friend Canada, a country I am increasingly embarrassed to call home. In any event, I suspect many Aussie colleagues are too busy waging small- and large-p political battles back home to take time to participate in discussions of same. On the other hand, what they learn can be useful in other countries too.

Coral reef scientists have the capacity, because of what is happening to reefs, to speak powerfully, and with authority about the environmental consequences of our CO_2 pollution. We can be effective in the public square. And we perhaps ought to be prepared, when in the public square, to move outside our scientist frames to speak as humans who understand and can question the morality of our failure to act more effectively to stop messing up our planet.

Two quick heads-up that relate to this issue:
1. I am leading a multi-author paper that will appear in Marine Pollution Bulletin late July, titled "Transforming Management of Tropical Coastal Seas to Cope with Challenges of the 21st Century". It deals with tropical coasts rather than only with coral reefs, but makes the point that a) current efforts to manage fisheries, pollution, etc, are insufficient, b) climate change and population growth are going to make the problems of coastal ocean degradation much worse by 2050, and c) without a major paradigm shift we are going to fail absolutely to stop the continuing degradation. More of the same, or simply trying harder, is just not good enough. Watch for it.
2. At a recent two-day symposium dealing with the relationship between environment and the economy, with six speakers from across North America including three ecologists (but no coral-reef scientists other

than the chair who never mentioned reefs) and an economist, it became abundantly clear that we need a dramatically revised world economy, and enhanced attention to population growth, if we are going to get through this existential challenge without massive degradation of natural systems and greatly enhanced human suffering. There ARE pathways to a good future, and environmental scientists, especially coral reef scientists have a role to play in every community to help us stumble collectively onto such paths. The communiqué that emerged from the conference can be downloaded here: http://muskokasummit.org/2014-summit/communique/ It is intended to encourage, and to be used.

Peter Sale has enjoyed a career as a marine biologist doing research into ecology of coral reefs in Hawaii, Australia, the Caribbean, and places in between. He now lives with his wife Donna in the Muskoka region north of Toronto, where his current goal is to make Muskoka the most environmentally responsible community in Ontario. His recent book, Our Dying Planet, tells the story of our impacts on the environment from the perspective of one who has contributed to the science over many years, and one who has seen the decline of coral reefs with his own eyes. It provides a compelling explanation of why we have to make some serious changes if we want a quality life for our children.



UK Parliament report on biodiversity in the UK Overseas Territories focuses on MPAs

Elisabeth Whitebread

In September 2012 the UK parliament's Environmental Audit Committee (EAC) launched an enquiry entitled Sustainability in the UK Overseas Territories. The aim of the report was to investigate how the government is fulfilling it's responsibilities towards biodiversity conservation within the UKOTs.

The EAC committed a lot of time and energy to their research, receiving written evidence from each of the territories, the UK government and also several environmental NGOs, including CCT. The Chair and Deputy Chair even visited the Cayman Islands in order to get a better understanding of some of the issues faced by Territory governments.

The report was published in January this year, and the government response followed in March.

Broadly speaking, the EAC were unimpressed with the government's stance on biodiversity conservation in the UKOTs, saying that the government "must do more". EAC Chair Joan Walley MP said:

"The natural environment in the Overseas Territories is incredibly diverse, but it is

currently under-protected. That is ultimately a UK Government responsibility. The UK Government doesn't even know precisely what it is responsible for, because it has failed accurately to assess and catalogue those species and habitats."

A large section of the EAC report was dedicated to the creation of Marine Protected Areas and how their establishment could contribute towards the safeguarding of marine life within the UKOTs. On Chagos specifically, the report said:

"In 2010, the previous Government designated BIOT as the world's largest fully protected no-take MPA. BIOT is home to the world's largest coral atoll and one of the world's healthiest reef systems, and its marine biodiversity is internationally significant. Although commercial fishing licences are no longer issued in BIOT, legislation to prohibit extractive activities such as commercial fishing or marine mining has still not been enacted. ***Defra and the FCO must complete the legal protections for the marine environment in BIOT by prohibiting all extractive activities."***

Although CCT would contend that all extractive activities within Chagos are prohibited (if you think they're not, just try and go and fish there!) it is welcome to see the EAC acknowledging the importance of BIOT's marine biodiversity. The government's response summed up the current situation as regards legislation:

"The BIOT conservation legislation will be enacted later this year. This has been delayed due to the ongoing litigation. However current legislation does provide sufficient legal protection for extraction activities. Permits are required to visit or undertake scientific work in the waters of BIOT. Marine mining and other exploratory activity is regulated by legislation and not permitted.

The current BIOT legislation prohibits all fishing in BIOT waters save for personal consumption within 3 days by the person fishing (subsistence), and not for sale, barter or other profit. The legislation requires that any sharks caught be released live into the waters. The current legislation also prohibits the taking of any sea cucumber, mollusc or marine mammal and prohibits the taking of coral."

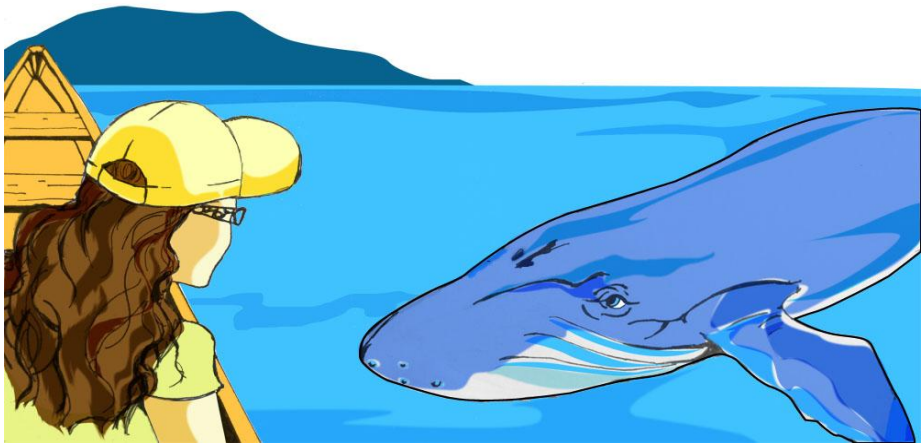
Since the marine reserve was established in Chagos, there has been a surge in interest in declaring large scale highly protected marine reserves around other UKOTs, notably the South Sandwich Islands, Bermuda, Tristan da Cunha, Ascension Island and Pitcairn.

The unanimous call by the Pitcairn Island community to declare a fully protected marine reserve in their waters was especially highlighted by the EAC report as a recommendation for government. In a Westminster Hall debate on the publication in May, Zac Goldsmith MP declared that:

"A marine sanctuary there [Pitcairn] would be celebrated globally as one of the most significant conservation measures ever taken by any Government."

It is clear that the creation of the marine reserve in Chagos – still the largest fully protected such in the world – has encouraged these further proposals for protection. The government response to proposals for further marine reserves in the UKOTs has so far been cautious, but we hope that these reserves will be declared soon. We would be very happy for Chagos to lose its crown and be joined by even larger marine reserves across the UKOTs!

Elisabeth Whitebread is a freelance campaigner and Trustee of CCT. You can find her on Twitter @ElisabethJane.



Conservation Sew Mates

Zerlina Leung

Conservation Sew Mates was conceived back in April 2011 when I joined a trip to the northern part of the Philippine islands to survey humpback whales. I give credit and thanks to the NGO, Balyena.org for this enlightening opportunity.

Being right there on a boat over rough waters and seeing these magnificent creatures breach through the surface was utterly breathtaking! What simply changed my life forever was when I was eye to eye with a humpback whale calf as she was swimming towards us and then underneath our boat. This connection sent shivers across my body touching my very soul. Ironically, I am not a water/marine person; I can barely swim, the very thought of having my head underwater simply terrifies me. I put blame into a nearly drowning incident that happened when I was 8 years old. This disadvantage rules out volunteering for any underwater research surveys or extensive marine project studies, so I thought maybe I can help by doing something on dry land or at least above water. So, I grabbed some fabric, drew up and cut some patterns, picked up a threaded needle and started to sew. After a whole bunch of stitches and stuffing later, the first of the Sew Mates was born.

Conservation Sew Mates bring forth creations; dolphins, whales, sharks, seahorses and horseshoe crabs. These adorable 'sew babies' are for sale to help raise funds to support marine conservation through research and education. Apart from this, CSM extends its help by doing livelihood projects in the form of workshops for the local community in areas where conservation awareness is being introduced and developed. This creative process, which covers pattern making, cutting, sewing, stuffing and then selling is our way of encouraging participants to work together in generating revenue through ecotourism. Thus far, CSM has successfully conducted workshops in the coastal villages of Son-Ok, Pintuyan Island, Southern Leyte, Pamilacan Island, Bohol and Malapascua, Cebu in the Philippines. These activities provide alternative sources of living usually involving housewives of local fishermen, which helps them and their families have a broader mind toward the concept, ideals and practice of conservation. Bringing home Sew Mates in Hong Kong was so exciting because there are so many youths who are hungry for awareness and are thrilled to help in conservation. A growing support from friends came about, such as being given a venue for workshops and sales in a local artistes café and getting discount cushion covers made from upcycled fabric for sew mates throw pillows! More and more sew mates toys have been made by volunteers and sold with proceeds going to whale shark research in the Philippines. As the number of participants grow, the variety of sew mates species have increased, as well.

This year, I break away from the confines of my corporate office. I am tearing down my walls, moving out to a more global workplace to literally “put my life under the sun”. I will be expanding my horizons from the sea to the mountains aiming at more conservation projects that will help communities, nature and wildlife.

Thus, a new adventure is about to begin…and with it come new challenges. Not having any marine or zoological science background did not stop me from knowing what I needed to know. Not being skilled in the water did not deter me from doing what I wanted to do. It took one look into the eye of that whale calf to find myself. With the right amount of passion, I truly believe that anyone can find their own unique way to help protect our environment and its precious living creatures. Three livelihood projects conducted in the Philippines 2013: with Physalus on whale sharks and manta rays in Southern Leyte, Balyena.org on Risso’s dolphins, spotted dolphins and melon-headed whales, and Project Sharklink on thresher sharks and manta rays in Malapascua.

First livelihood project with NGO Physalus in Southern Leyte. Over 100 whale sharks were made by the ladies since February 2013 for sales to tourists.

Second project with NGO Balyena.org on Pamilacan Island, Bohol. Part of proceeds go to support cetacean research.

Third project with Project Sharklink with 70 ladies and students sewing thresher sharks and manta rays in Malapascua.

Proceeds of charity sales from Hong Kong go to support whale shark research in the Philippines.

For more information

[Conservation Sew Mates facebook]

[Physalus' Large Marine Vertebrates Project]

[Balyena.org]

[Project Sharklink]

Zerlina Leung has worked as administration staff for a wildlife conservation foundation in Hong Kong. Her first encounter with both a humpback whale and a whale shark in Hong Kong ignited her curiosity, which brought her to the Philippines to join a field survey. After nine years of working in the office being an advocate through pen and camera, she decided to inspire conservation actions with needle and thread. As the sole Founder of Conservation Sew Mates, she now sells toys to support whale shark research and organizes workshops to small communities as livelihood projects.

CCT Chairman Prof Charles Sheppard awarded OBE in Queen's Birthday Honours List

Jon Schleyer

CCT Communications Officer

Professor Charles Sheppard, Chair of the Chagos Conservation Trust, has been awarded an OBE in the Queen's Birthday Honours List 2014 for services to environmental conservation in the British Indian Ocean Territory.

This is thoroughly deserved recognition for almost 40 years of work in research and conservation in the Chagos Archipelago. Charles' first visits to the territory were in the mid-1970s with his most recent trip being earlier this year.

Congratulations Charles!

Charles hard at work in the 1970s and still going strong this year in the Chagos Archipelago

Chagos Science Expedition Report

March 24th – April 15th 2014

Dr Heather Koldewey

Zoological Society of London

The 2014 Chagos Science and Conservation expedition involved 14 scientists and support team members from four countries and seven organisations, including a graduate of the 'Connect Chagos' environmental training programme as a research trainee. From March 24th to April 15th 2014, the following series of research projects were conducted on the reefs and islands of the Chagos archipelago and are presented in this report:

2014 Chagos Expedition team with the Captain and Crew of the Pacific Marlin

- Video archive for long-term monitoring of coral reef benthic communities
- Understanding coral reef structure
- Assessment of coral cover
- Coral species diversity and abundance
- Assessing coral disease prevalence, severity and susceptibility
- Scleractinian coral functional diversity surveys
- Documenting sea temperature
- Diversity and population abundance of reef fishes
- Assessing the contribution of parrot fish in reef erosion
- Long-term monitoring of sea cucumber populations
- Population assessment of the Coconut Crab, *Birgus latro*
- Long-term monitoring of Important Breeding Areas for seabirds
- Chagos Science Resource Portal

Detailed analysis of data, samples, photographs and videos are now underway, with this report providing a summary of activities and preliminary observations. The main findings are as follows, although as data are still being analysed all figures should be considered provisional:

1. **Over 240 dives (some 1,380 minutes underwater**) were conducted to depths of 25m at 29 sites on six atolls to survey species, habitats and communities on the coral reefs, and 15 islands of ecological importance were surveyed.

2. **Twenty four sites were surveyed using videography**, accounting for over **55 hours underwater and 24 hrs of video records**, 2200 Go Pro habitat images and about 2000 truthing images. 15 of these sites were also visited in 2006, 12 in 2013 and 8 sites were new to the archive. It is anticipated that the sites surveyed during the 2013- 2015 expeditions will duplicate all survey sites recorded in 2006.

3. A preliminary review of the video archive shows **that *Acropora* coral colonies are now less abundant on most reef terraces throughout the atolls**, and many of those remaining display signs of disease or have died. At present, we do not know whether these corals have perished due to old age, bleaching, disease or storms, or a combination of these factors.

4. Initial examination of the data collected of rugosity at 24 sites during the 2014 expedition indicates that **many sites are being impacted by large dead *Acropora* colonies** with 'table' morphology moving down reef slopes during storm events.

5**. Coral cover data were collected at long-term monitoring sites**, building on data from 1978 and then again in 1996. After the Indian Ocean warming event in 1998, these have been regularly monitored the coral cover in the same locations in Chagos (2006, 2010, 2012 and 2014) to determine how well Chagos' reefs have recovered from the 1998 trauma, especially in comparison to other Indian Ocean sites.

6. 143 species of coral were documented during the 2014 expedition, **32 of which have not previously been reported from Chagos, and 16 of which are outside their known ranges**. An average of about 40 coral species was recorded per dive site (compared to previous studies that found an average of 35 species per site in Rodrigues, 65 species per site in the Andaman Islands, and 49 per site in SW Madagascar).

7. One coral species which was first described in 2003, ***Plerogyra diabolotus***, was found which is the **first record known other than the type location** which was in Borneo. Also, ***Parasimplastrea sheppardi* was found for the first time in Chagos**. This species was first found in Oman by Professor Charles Sheppard and is known from the Arabian Peninsula and Rodrigues in 2004. This is the farthest east it has been recorded so far.

8. Overall **most study sites appeared quite healthy with low disease prevalence**. Five disease types including white syndrome, sub-acute tissue loss, multifocal tissue loss, growth anomalies and skeletal eroding band.

9. **Corals were minimally affected** by partial bleaching, *Drupella cornus* predation, algae and sponge overgrowth, physical damage (mostly on exposed seaward sites) and smothering from sedimentation (lagoon sites). Coral bleaching was highly patchy across the reefs and manifested as partial bleaching of the colonies rather than mass bleaching observed during thermal stress events.

10. ***Acropora* white syndrome was documented throughout the archipelago**, with low overall prevalence, but was locally severe at several sites suggesting that not all sites are affected equally. This disease also appeared to target large/older (>40cm) tabular Acroporids, which is not only concerning given this group's important reef-building status, but may help to explain the recent die-off of large tabular Acroporids in Chagos.

11. Temperature logger data were retrieved and new loggers installed. **15 temperature loggers are currently recording temperature at 2 hourly intervals**.

12. **Fish species diversity was found to be lower in Chagos compared with the northern Mozambique Channel** (NMC) of high diversity in the WIO, with total species counts in the order of 102 per site, compared with 135-150 in Cabo Delgado, Mozambique and Mafia island, Tanzania. Around 214 species known from the WIO were not observed in Chagos, with a total species richness of around 226 recorded across all sites, compared with 335 in the NMC. **2-3 species ranges have been extended**.

13. Provisional observations suggest **that fish abundance was generally higher than observed elsewhere in the WIO**, particularly for scarids and acanthurids, but with certain key taxa absent or rarely observed, overall biomass was not as high as expected.

14. The **large size of Plectropomid groupers was notable**, with 100cm total length (TL) frequently observed in *Plectropomus laevis*, which is the maximum size this grouper attains. This suggests little to no fishing pressure on this species. These grouper were also abundant, being present at almost every site.

15. Grouper densities were patchy and require analysis to try and determine the reasons for this. **Notable was the camouflage grouper, *Epinephelus polyphekadion,* which was very common** and may reflect natural population abundance of this species in the absence of fishing. This fish is extremely unwary of divers and therefore very vulnerable to spearfishing. It is rarely or never seen in mainland east Africa.

16. **Reef sharks were relatively common – seen on every dive - when compared to other locations in the WIO**, where they are very rarely observed. This shows the generally dire situation for reef sharks in the WIO, as these fish are known to be depleted in Chagos and poaching continues to be a problem.

17. A total of **63 sites were surveyed for sea cucumbers** resampling were those that had been surveyed in both 2006 and 2010 (68 sites in total).

18. **For the first time, coconut crabs, *Birgus latro*, were surveyed on three islands** on the northern atolls. Initial observations suggest a possible correlation between island size, vegetation composition and rats.

19. **Sooty Tern, *Onychoprion fuscata,* has had a catastrophic breeding episode**. This should be the most numerous breeding seabird and over 100,000 breeding pairs is the annual expected norm on four to ten islands. This year (at least to date) 400 pairs bred on two islands.

20. On Parasol in Peros Banhos **26% of chicks examined held avian parasitic ticks** and the main colony of approximately 32,000 pairs deserted at the egg-laying stage. It is unlikely that tick-infestation was responsible for lack of breeding on all islands.

21. Breeding colonies of **Red-footed Booby, *Sula sula,* and Lesser Noddy, *Anous tenuirostris,* appear to be sustained**.

22. The **Common Noddy, *Anous stolidus*, continues to be of grave concern in Chagos**. In the 1970's, Nelson's and Danger Island and Sea Cow each held terrestrial breeding populations of 10,000+. In 1996 there were c. 42,000 breeding pairs recorded. These numbers had declined to the low thousands by 2006 and terrestrial breeding had all but ceased by then. This situation has not changed and the annual breeding population has remained at under 2,000 pairs.

23. **Terrestrial invasive species require management now** before their negative impact is irreversible; this is especially relevant on the rat-free Important Bird Area (and potentially Important Plant Area) islands.

24. **A database of monitoring sites was established** by carefully recording site positions using a high specification Garmin Montana GPS with built in camera to record the nearest land feature where appropriate.

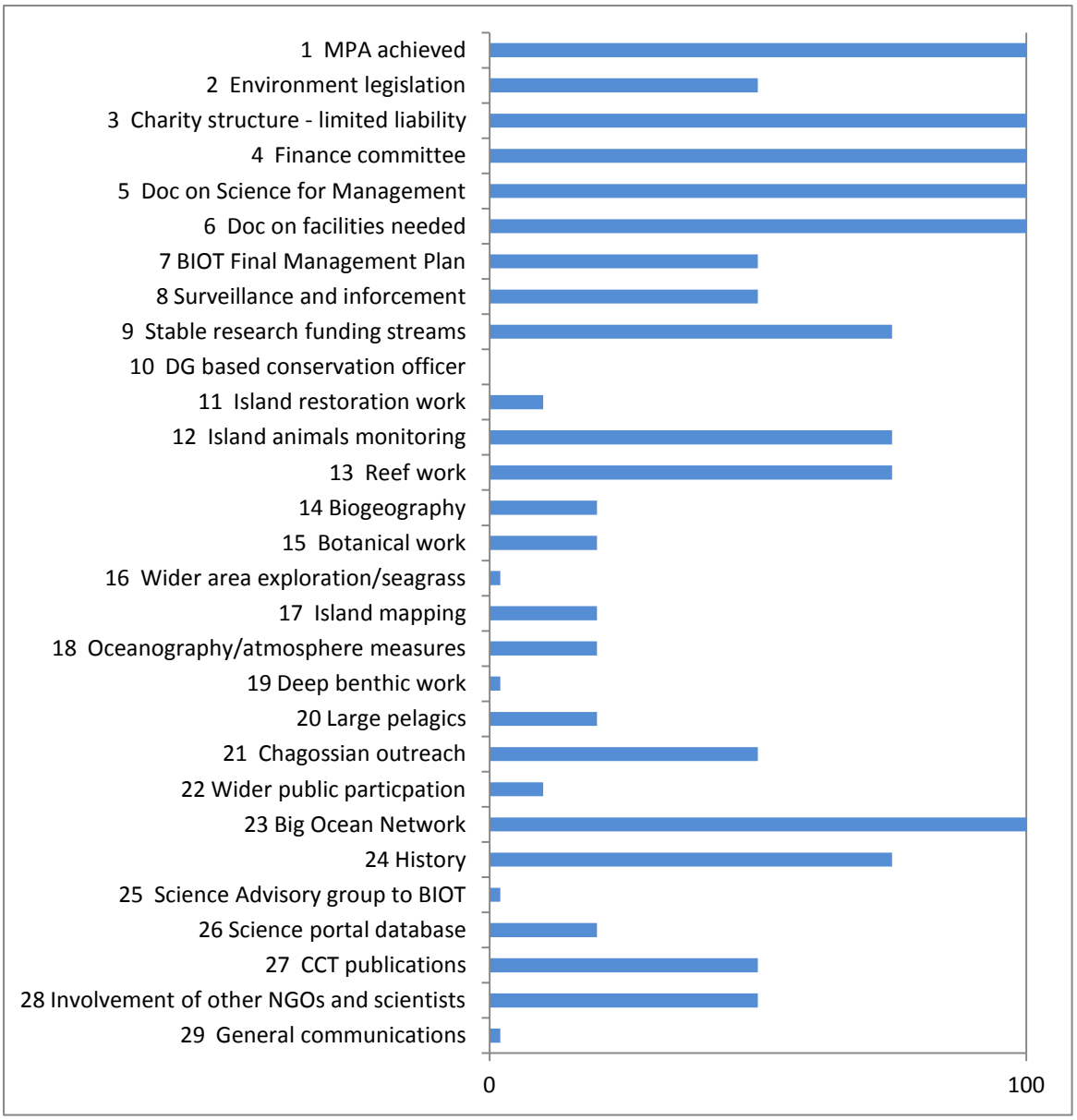
This is the summary of the 31 page Expedition Report. The full report can be found on the CCT website. The expedition blog is also still on the website and can be found here.

Chagos Conservation Achievements, and the Way Ahead for CCT

June 2014

Prof Charles Sheppard
Chairman, CCT

During its 20 years CCT has achieved much. Several institutions associated with the overall 'Chagos project' have also done much complementary work, and often it is difficult (and unnecessary) to distinguish 'ownership' of each element of work done.



Some of these are not CCT, some are partly CCT. There are well over 20 individual science projects, grouped into fewer major categories for clarity. Scores of 0% or 100% are straightforward ; values between these are indicative only: 2%= probably started, 20%= significant progress, 50% or 75% = project has been running for some years.

Notes on the chart:

1. MPA achieved. In 2010, with CEN members, notably Pew Environment Group, with past CCT Chair William Marsden and Secretary Simon Hughes.
2. Revision of environmental legislation. Mostly completed some years ago by Keith Wiggs, legal adviser to BIOT, but stalled awaiting resolutions of various legal issues. In particular we still need full legislation for the Marine Reserve.
3. Incorporation of CCT into limited liability. Led by Simon Hughes, Secretary to CCT, this was achieved in 2014 and is a major housekeeping achievement essential to the now well funded CCT.
4. Establishment of Finance Committee. Having received a large legacy from founder John Topp, finance and investment committee established and led by Treasurer Richard Martin and Birgitta Bostrom.
5. Document on Science Needed for Management. Led by Sheppard with numerous CCT and other scientists, a comprehensive document was produced in 2012. Accepted initially by BIOT, posted on chagos-trust.org with BIOT's agreement, then degraded to provisional or draft by BIOT following complaints from critics.
6. Facilities needed for the science. Written by Sheppard with numerous CCT and other scientists to serve the science needed. A comprehensive document was produced in 2013. Not posted when its companion document "Science needed..." was 'demoted' by BIOT!
7. BIOT Final Management Plan. Not achieved. Interim management plan currently being drafted by Natural England scientist Jen Ashworth. Progress with final management plan put off by BIOT until after decisions on possible resettlement have been made. Unclear, as to the level of incorporation of the existing 'provisional' documents such as item 5 above
8. Surveillance and enforcement. Not adequately achieved. Jon Schleyer produced compelling document for (expensive) requirements. Present capture rates of poachers are likely to be less than 10% from evidence from Sri Lanka. However Marlin's patrols do arrest poachers and probably deter too.
9. Stable research funding streams. Partly achieved but always precarious. Charley Cranmer engaged as fundraiser in 2013. Other funding obtained by several scientists over several years, mainly Charles Sheppard for science expeditions prior to 2012. Currently John Turner, Heather Koldewey and Charles Sheppard are PIs for present series of three largely research trips. No assurance of funding beyond 2015.
10. DG based conservation resident officer. Not achieved. Previously undertaken by Pete Carr, who departed DG in 2013. Proposal made by Charles Sheppard to BIOT in April 2013 for his replacement. Inadequacy of relying on a short annual visit by BIOT conservation advisers (formerly Charles, presently Mark Spalding) is clear. The <u>value</u> of this post in monetary terms has been amply demonstrated, and its need is clear.
11. Island restoration. The 2006 attempt on Eagle island failed. There are advanced plans for an attempt in

2014 led by Pete Carr on Vache Marine. Following success here, this will lead to a proposal for eradication of rats and vegetation restoration on many other islands. Special case: Mangrove restoration. The two known mangrove areas need urgent restoration work or this habitat will be lost to Chagos. Not started.

12. 'Island animals' monitoring: Seabirds, turtles and coconut crabs. Ongoing, led by Pete Carr for birds, turtle work led by Jeanne Mortimer and Graeme Hays, crabs by Pete Carr and Scott Vogt. Bird work also includes survey connected to pelagic fish, with Jessica Meeuwig.
13. Plant monitoring: Plan being prepared by Colin Clubbe and financing set aside, but plan not yet adopted or implemented.
14. Reef work: Corals (several elements); fishes (several elements); monitoring transects (numerous), and genetics (numerous, from Taiwan and Hawaii). Led for years by Charles, Anne, Heather, John, Nick Graham with a dozen others, these have been the main outputs of the reef science work to date with over 200 publications.
15. Biogeography. Started in 2006, this crucial element proceeds slowly. It is expensive in lab time. It should be increased to demonstrate in more detail how Chagos is an important biodiversity hub, stepping stone, reservoir for species, etc.
16. Wider area exploration. Perhaps 98% of the shallow seas of Chagos remain unexamined! Special case: Seagrasses. This is likely to be a major habitat, also almost completely unknown. There is no time on the scheduled research visits to start this element. A new series of cruises is needed, supplemented by remote sensing work. - Perhaps a Darwin Plus grant?
17. Island Mapping. Started in 2013, led by Sam Purkis of CCT-US and Charles Sheppard, this ongoing project has located recent and archived satellite profiles with sub-metre resolution. Useful in mapping changes to islands.
18. Oceanographic and atmospheric measures. For ocean, only temperature is recorded (Charles Sheppard). Important gaps include seawater alkalinity. Good records exist for air measurements from Diego Garcia met station. Atmospheric CO2 is not measured, yet is very important and would fill the world's largest gap in the monitoring network. Sea level is catered for today by satellite.
19. Deep benthic work. We are nowhere near starting this. It is expensive, but the area concerned is 90% of BIOT, and includes many sea mounts. Alex Rogers and Chris Yesson have done satellite interpolations.
20. Large pelagic fishes. Work started from 2012, under leadership of Heather Koldewey, Jessica Meeuwig (U Western Australia) and Barbara Block (Scripps), funding principally by the Bertarelli Foundation, with significant input by Blue. Work involves tuna and major predator tagging and monitoring.
21. Chagossian outreach. From 2012. Led by Heather with several EC members, this continues to be a striking success. Funded by FCO. Also Chagossians are now taken on every expedition, also funded by FCO. There is still a long way to go, particularly with Mauritius based Chagossians.

22. Wider public participation. Whether for tourism or for citizen science approaches, this has been raised with BIOT by Charles Sheppard in past years, but presently it remains not permitted. It is considered desirable to expand appreciation of Chagos wildlife to a much broader audience (but see BBC participation later).
23. Involvement of other NGOs and scientists: The number of scientists involved in Chagos work is expanding and CCT has led the development of the Chagos Environment Network of NGOs.
24. Big Ocean Network. Commenced in 2010, led by Anne Sheppard, this continues to build. Concept is established and successful with the publication of articles, and will achieve a milestone in 2014 with publication by IUCN of a handbook on need for, and management of, Big Ocean sites. BON now has plenty of momentum. Chagos participation mostly from CCT and from BIOT, with buy-in from BIOT in 2013 towards the book publication.
25. History. Several brief accounts of history in plantation days and even earlier, and subsequent histories have been posted to web site, written by Ted Morris, with précis by Simon Hughes. Nigel Wenban Smith's comprehensive pre- BIOT history of Chagos will be published by CCT in 2014. (A couple of other books full of mythology also exist which are not connected with CCT.)
26. Science Advisory Group to BIOT. Started in 2010, this seems mostly dormant. BIOT needs an active advisory group. One adviser, with occasional calls on other individuals or bodies, is certainly inadequate. BIOT remains the largest no-take MPA but is governed with the least scientific input.
27. Science portal database. Started in 2014. Managed by Charles Sheppard with Elizabeth Widman, based at Warwick, this is to be the 'scientific section' of the CCT website. Delayed for two years because BIOT initially intended to fund it, it arose initially from SAG recommendations. It is funded entirely by CCT.
28. CCT publications including websites. Numerous science publications by literally dozens of authors. Regular six-monthly Newsletter *Chagos News* edited by Anne Sheppard, greatly expanded with its online version from 2010. Ongoing and increasing science participation will ensure these continue. Webmaster from 2010 Elisabeth Whitebread, from 2013 Anne Sheppard. Numerous images and film clips, mainly by Anne Sheppard and Jon Schleyer. and short films by Jon.
29. General communications and media. This refers to outlets other than CCT's (i.e. its website, newsletter etc.), such as newspapers, magazines, TV and radio. Little progress in media promotion. Some 'corporate' rewording, stationary, strapline etc was done in 2013. Media contacts to be addressed in 2014. Possible and tenuous but potentially very significant BBC and other media engagement and visits for filming. Rachel Jones kindly agrees to lead this aspect for the EC from early June.

This would all be far too much for CCT alone, and indeed several of the above are done with only a fairly loose association with CCT. All the EC are volunteers, most with other

jobs. Suggestions for different priorities are welcomed, but should please be accompanied by: who can do it or coordinate it, how it would be embraced by CCT, and where money to pay for it (if needed) would come from. One possibility is to revive the idea of a CCT company to tender for the contract presently held by MRAG.

Part 2. The following in blue is the CCT Vision, Mission, Aims and targets.

This was agreed last year. We have a strapline: Protecting a unique environment in the Indian Ocean.

CHAGOS CONSERVATION TRUST (CCT): VISION, MISSION, AIMS & TARGETS

Agreed at EC Meeting on 9 July 2013

VISION

CCT's vision is to ensure that the globally important natural environment of the Chagos is well protected, conserved and understood, inspiring the better management and protection of our planet.

MISSION

CCT's mission is to promote and conduct scientific and historical research and environmental conservation work in the Chagos (British Indian Ocean Territory - BIOT). We work to advance international understanding of the global environmental importance of the Chagos to ensure its protection for the wider public benefit.

AIMS and TARGETS

Aim A. To develop the Trust's capacity as the leading NGO helping to co-ordinate environmental conservation work in the Chagos.

1) to develop and improve links with the BIOT Administration through 3-4 regular planning meetings every year;
2) to negotiate a new, active role for the Chagos Environmental Network (CEN) by end-2013;
3) to identify and contact leading environmental scientists and opinion formers to interest them in the Chagos and the work of the Trust and CEN;
4) to develop the CCT's annual conference as a key event for encouraging wider interest in the scientific work being undertaken in the Chagos;
5) to strengthen CCT's fund-raising and outreach capability in the US through its sister organisation, CCT-US;
6) to participate effectively in major environmental networks, either directly or through CEN partners;
7) to develop communications and fund-raising strategies to support CCT's role; and
8) to put together in draft a high quality bid for the full-time management of the Chagos MPA in time for BIOT Administration's invitation to tender and, if successful, to make the necessary organisational arrangements to carry it out. .

Aim B. to work closely with the BIOT Administration and others concerned with the management of BIOT to influence and assist them in achieving the better conservation of the Chagos

No specified Targets. It is a self explanatory and all- embracing principle.

Aim C. To promote and carry out, with the agreement of the BIOT Administration, an integrated and sustained programme of scientific research and effective, well

targeted conservation projects to protect the rich biodiversity of the Chagos.

1) to encourage the BIOT Administration to adopt a new, more comprehensive Environment Plan for the Chagos and to agree and begin the implementation of a regular monitoring programme by end-2013;
2) to help to organise and support regular scientific expeditions to the Chagos, including two ship-based expeditions (of which one should have a deep sea, pelagic focus) and one land-based expedition, every year;
3) to build up properly protected equipment storage facilities on Diego Garcia and to press the BIOT Administration to allow a scientific base to be established in BIOT;
4) to create and maintain a centralised GIS database covering the Chagos;
5) to undertake the following projects:
    - to complete a comprehensive baseline vegetation survey by 2015;
    - to complete a successful rat eradication project on Ile Vache Marine by 2014 and to implement a progressive rat eradication programme on other suitable islands;
    - to undertake a mangrove restoration project on Moresby Island in 2014 and to develop a further programme of mangrove conservation; and
    - to re-establish 50 sq hectares of natural forest on key islands every two years.
6) to investigate and discuss with the FCO and the BIOT Administration ways to improve enforcement of the ban on fishing (commercial and otherwise) in the BIOT Marine Protected Area (MPA).

Aim D. To raise public awareness, through better communications, education and outreach, of the importance of environmental conservation work in the Chagos, and of its history, in order to influence national and international policies and to advance the better understanding of such issues within the Chagossian community and more widely.

1) to develop and begin to implement a comprehensive communications strategy for CCT in relation to the Chagos by mid-2013;
2) to develop the CCT website as the authoritative 'go to' site for all matters relating to Chagos-related science and conservation by end-2013;
3) to improve the Trust's contacts with parliamentarians and key media commentators interested in environmental conservation issues by personal contact, providing suitably tailored story-lines and offering media assets, such as video/film clips;
4) to continue to share the output of CCT's research and conservation work through the website and the annual scientific conference and, by end-2015, to develop simpler leaflets/background notes as educational and outreach aids; and
5) to develop and expand, with the support of the BIOT Administration, the existing outreach activities with the Chagossian communities in the UK and Mauritius/Seychelles through a sustained programme of activity days, training, provision of bursaries, and expedition places so that at least one Chagossian takes up a relevant post-

graduate equivalent course every year from 2015.

Aim E. To develop the Trust's organisational capacity to carry out its Chagos-related objectives through income generation and good management practice.

1) to secure the incorporation of the Trust and, if necessary, to take out appropriate liability insurance policies by end-2013;
2) to review and agree the organisational structure of the Trust (eg. the possible appointment of patrons and/or a chief executive/chief operations officer) as well as the range of skills needed on the Executive Committee (eg. legal, business, project management skills) and to take the necessary steps to implement any agreed changes by 2015;
3) to agree a Business Plan and related Code of Governance for the Trust by end-2013 and to review such documents at the start of each year;
4) to improve the system of financial controls and budgetary procedures to ensure the completion of properly audited accounts by the end of March every year;
5) to review the need for specific IT programmes for the membership and contacts databases, for fund-raising purposes, and for the Trust's accounts; to purchase them by end-2013 and complete any necessary data transfers by end-2014;
6) to secure the full and final transfer of John Topp's legacy by 2014 and in the interim to arrange for the transfer of his Rathbones share portfolio by no later than April 2013 at the same time as ensuring the sound investment of his legacy funds, with the aim of achieving a return of at least 3% pa over the next few years; and
7) to implement the Trust's fund-raising strategy by:
    - recruiting two High Net Worth individuals as patrons/donors by mid-2014;
    - securing income from Charitable Trusts and statutory bodies by early 2015;
    - hosting one engagement event in 2013 and two such events every year thereafter; and by
    - producing publications and other materials for fundraising purposes by end-2013.

CCT's organisational structure

EC and roles at end May 2014:

Charles Sheppard – Chair, and science co-ordinator
Alistair Gammell – Secretary
Simon Hughes – Membership Secretary
Richard Martin – Treasurer
Birgitta Bostrom – Finance and investments
Pete Carr – terrestrial aspects including restoration
Colin Clubbe –Vegetation survey lead (including as per John Topps will)
Chris Davies – no fixed role
Rachel Jones – Contact point for communications
Heather Koldewey – Chagossian outreach lead, Darwin co-lead science
Pete Raines – Contact point for Development consultant

Anne Sheppard – Editor of Chagos News, Webmaster
Clare Stringer – Liaison with other NGOs
John Turner – Principal Darwin science lead
Elisabeth Whitebread – no fixed role

CCT US
Sam Purkis – Chair of CCT US

Several do other tasks when needed. For example some are recruiting Trustees, some contracted a new website provider, others have improved communications with the help of temporary consultants.

The way things work regarding sub-committees.

- The EC rules and the EC/Board of Trustees always carries the can. But subcommittees do the work of their brief.
- Subcommittees only recommend, for the EC to decide – except where the EC authorizes the subcommittee to do something in particular.
- The EC can make up a subcommittee with anyone it likes. They don't have to be elected to the EC or be Trustees, and people can be added for their personal contribution if we think it useful.
- For any one meeting the Chair can invite other people to attend.
- If a vote at a subcommittee meeting is taken, then only those appointed by the EC may vote.

The subcommittees:

<u>Investment and finance</u>

Richard Martin (chair)
Birgitta Bostrom
Simon Hughes
Charles Sheppard

<u>Fundraising and Communications</u>

Rachel Jones (Chair)
Pete Raines
Charley Cranmer
Anne Sheppard
Charles Sheppard

Postscript points:

- Good science has always been fundamental.
- For Administration, CCT has been particularly fortunate in its Secretary, Simon Hughes, whose indefatigable work has ensured no less than the continuation of CCT. We are fortunate that the equally capable Alistair Gammell who replaced Simon in May 2014.
- Better administrative function will be achieved with the Secretary taking an increased role, taking the lead in any and all administrative matters where this is legal under CCT rules.
- Paid roles: We are (happily) committed to retaining Charley Cranmer for one more year at least for Development. We have committed funds for comms assistance for a similar time, for the time being this being done by Jon Schleyer.
- For projects to fund: Charley Cranmer has a number of projects for raise funds for.
- CCT is the 'go-to' point for a lot of what is achieved regarding Chagos.

This can be sustained because of the co-ordinating science roles and publication outputs.

- We are feeding in to any and all scientific projects such as the Government's feasibility study.
- Chagos Environment Network achieved its purpose (creation of the MPA) and now is somewhat dormant as a body although several members continue active involvement with many of the projects.

Part 3. The Coming Year

Taking from CCT's Aims and from the table of things that have yet to be completed (or not yet started), Alistair Gammell and I have compiled a list of items concerning where we want to go, where we and can go, and who in the EC (or to be appointed to the EC) will lead on that item for us. This Table is on the website in full at http://chagos-trust.org and is not reproduced here (it is many pages long).

Feedback on this for input is invited from all CCT members. This was circulated to the EC members several weeks ago and their feedback has already been incorporated. We will then assemble this into a coherent list for circulation in good time for the next AGM.