Chagos News

No 38

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Welcome to a new format for the electronic version of the CCT newsletter. I confess to not being the most artistic person on the planet and if any members have skills in this area I would welcome any suggestions or assistance.

Those of us who knew him, and many who didn't, were shocked and saddened to hear about the untimely death of the Chagos Conservation Trust founder, Commander John Topp RN OBE. This issue of Chagos News is dedicated to his memory.

We would like to welcome members of CCT US to *Chagos News,* as this is the first issue which will go to both groups. I hope that members there will also contribute material to share with the rest of us who also have a love of the Chagos archipelago.

With the support of the Chagossian communities, the Chagos Marine Protected Area is well established. At a recent meeting, none of the Chagossian groups expressed opposition to the creation of the MPA and there was widespread support for the environmental conservation principles that form the basis of the work of the CCT. This is excellent news and we look forward to further collaboration with Chagossians.

A recent report by an expert workshop at the International Programme on the State of the Oceans (IPSO), concluding that the World's oceans are in a worse state than previously expected, highlights just how important the Chagos MPA is. The IPSO report can be read at www.stateoftheocean.org/pdfs/1806_IPSOPR.pdf

Finally, I would like to give a warm welcome to our new acting chairman Alan Huckle, who has just taken over from William Marsden. William has done a marvellous job steering CCT through the Chagos MPA formation and we wish him very well for the future.

Anne Sheppard
Editor

Commander John Topp OBE Royal Navy

Son of a naval officer, John joined the Navy himself in September 1955 as a Seaman Officer and enjoyed a satisfying career. He achieved every Seaman Officer's ambition in captaining his own ship, the frigate *HMS Grenville*, and found his niche in the intelligence world before retiring after 34 years.

He was very proud to represent his Government and Commissioners (Nigel Wenban-Smith and William Marsden) as the British Representative on the island of Diego Garcia (1984–1986). It was here that he developed his vision for the conservation of the Territory's wonderful natural environment and his initiatives were typically clear-minded and practical, such as rigorous environmental controls in Diego Garcia itself and strict nature reserves in key areas of the Chagos Archipelago. With his sharp mind and scientific interests he then worked with Kew on a major study and collection of the flora of the Chagos Archipelago. (A self-taught botanist he was elected a Fellow of the Linnean Society in January 1998 "for the study of natural history, especially of the Chagos archipelago".)

With other colleagues in 1986–1987 he worked on a scientific proposal for Chagos to become a World Heritage site. Government did not implement the proposal but committed itself to treat the area as if it were a World Heritage site.

In 1992 he founded the *Friends of the Chagos*, which he registered as a charity in 1993 (now the *Chagos Conservation Trust*). As Conservation Consultant for the British Indian Ocean Territory (BIOT) appointed by the Foreign and Commonwealth Office he visited the archipelago every year for 10 years, making sure that his conservation initiatives were followed through. On relinquishing that post he was awarded an OBE for his services to the BIOT.

John lived several lives, one in Ibiza where he maintained his parent's house and invited many friends each year. He was kind and helped others with their personal troubles. He was an active member of Mensa-at-Cambridge reflecting his enjoyment of sharp repartee and following arguments to their conclusion. Sloppiness was anathema to him.

He could also be as persuasive as any of the silver tongued diplomats he affected to despair of. With this skill and his strategic approach he was successful in recruiting many to the Chagos cause. For each requirement during the steady development of the Trust a suitable person appeared on the Executive Committee. A strong team with each chairman building on the success of the former and John always at hand with quiet sensible advice delivered with a wry sense of humour, occasionally ribald. He was always ready to step into any gap when needed. With the resources of the Pew Ocean Trust, the pace gathered quickly and the campaign to make Chagos a marine reserve was successful.

During the campaign John was always full of ideas and energy, and its declaration on 1st April 2010 was for him a matter of immense pride. He rejoiced with us all.

One man can make a difference!

Commander John Martin Williamson Topp OBE Royal Navy, born 28 June 1937, died suddenly on 15 March 2011 of a pulmonary embolism associated with deep vein thrombosis. He never married.

A service of thanksgiving was held for John Topp on Tuesday 28th June, which would have been John's 74th birthday, at the St James's Church Piccadilly. It was attended by many friends and by representatives from the many learned organisations to which John belonged.

It was a very moving memorial to someone who has left behind, amongst other things, the legacy to the world of the world's largest Marine Protected Area.

The world is a better place for him having been here.

"Our aim is to make the world more beautiful than it was when we came into it. It can be done. You can do it." Kurt Vonnegut Jr.

A website which members might find interesting, with up to date information about the global atmospheric CO_2 content is http://co2now.org

The rise in atmospheric CO_2 is the biggest threat to the world's coral reefs.

Carbon dioxide in the atmosphere today!!!

350 is the limit for coral reefs!

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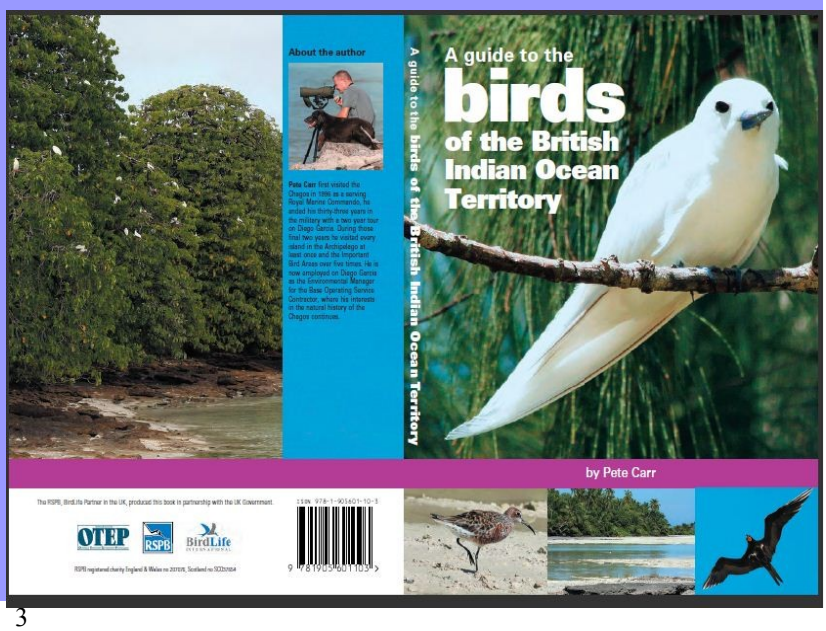
An article by Professor Charles Sheppard, Protecting the Chagos Archipelago - a last chance for Indian Ocean reefs? was recently published in *Ocean Challenge,* the Challenger Society's biannual journal and is available at www.challenger-society.org.uk/node/1095

BIRDS OF THE BRITISH INDIAN OCEAN TERRITORY
NEW BOOK RELEASE

Pete Carr, in conjunction with the RSPB, has put together a book on the birds of BIOT. The RSPB are releasing a series of books on the birds of the UK Overseas Territories; Henderson Island and, Tristan da Cunha and Gough Island have been released, Pete's book is the third in the series.

The book has chapters covering man's historic impact upon avian populations in BIOT, a résumé of bird recording in BIOT, present protection measures for birds, particularly the internationally important breeding seabirds and has recommendations for future breeding seabird conservation. There is a chapter devoted to the best birding sites in BIOT, focussed upon Diego Garcia, the largest land mass and the island that receives the most vagrants. The bulk of the book covers the birds that are likely to be seen when visiting any atoll in BIOT and includes identification tips and photographs. The final chapter is devoted to bringing together all records of birds that have occurred in BIOT since the first ornithological records were published circa 1885. This section includes information on distribution, status and months of likely occurrence



The publication of the book was funded by an OTEP grant. Most of the excellent photographs in the book were taken by members of the Royal Navy Birdwatching Society or military personnel stationed on Diego Garcia; all donated the photographs for free. The book will be available through CCT via the web-site and for sale on Diego Garcia via Cable & Wireless.

Big Ocean Network Meeting

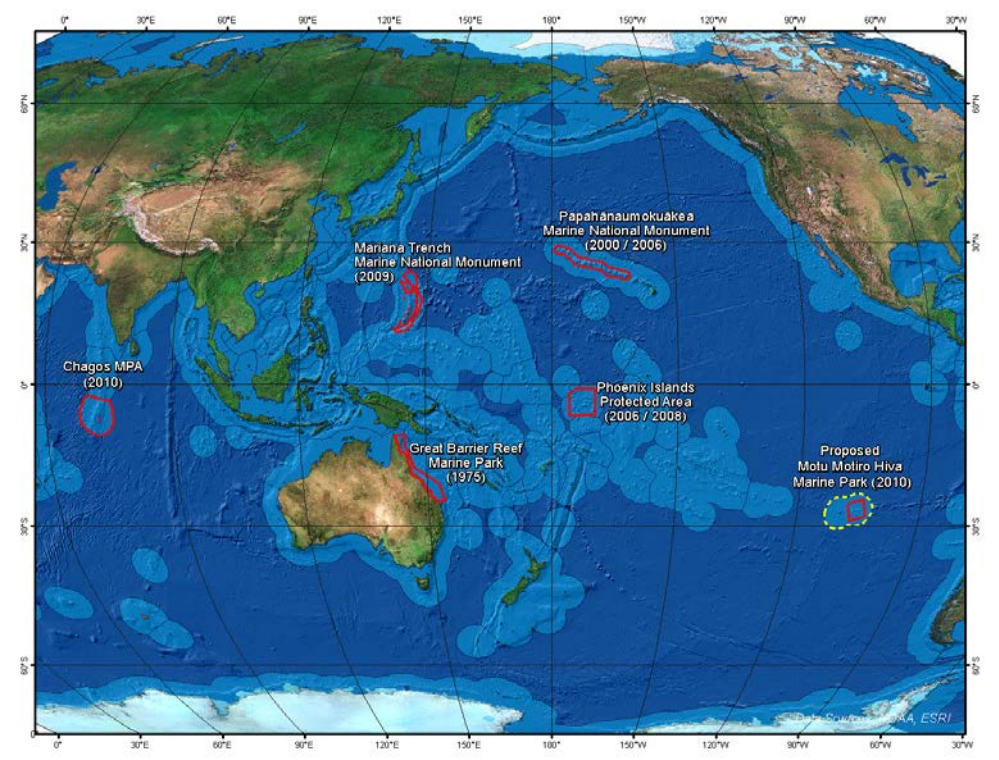
May 13, 2011, Victoria, B.C., Canada

Carol Garner
CCT US

From left to right: John Parks, Executive Officer, John Parks Consulting LLC; Alistair Gammell, Director Pew Environment Group, Chagos Campaign; Carol Garner, Secretary and Co-Founder CCT US and Suzanne Taei, Marine Program Director, Conservation International Apia, Samoa.

Big Ocean is a network of the World's large scale Marine Managed Areas [Marine Protected Areas (MPAs)], and provides a needed forum for communication and networking within the growing genre of large scale MPAs - marine conservation areas over 100,000 square miles (258,998 km) in size - that are actively managed for protection across the entire geographic boundary of the site. Big Ocean's vision is straightforward: establish and foster a forum (known as the Big Ocean Network) to assist large scale MPA site managers in sharing practical experience and knowledge, and to increase engagement with regional and international bodies and non-governmental organizations involved in marine conservation.

Big Ocean was inaugurated in December 2010, and held its most recent meeting in Victoria, British Columbia on 13 May 2011. The organisers and hosts were Papahaumokuakea Marine National Monument (PMNM) (USA) and Phoenix Islands Protected Area (PIPA) (Kiribati). Representing Chagos Conservation Trust (CCT) were Carol Garner, Secretary and Co-Founder of CCT US and Alistair Gammell, Director, PEW Environment Group, Chagos Campaign. Also in attendance were representatives from Mariana Trench MNM (USA); Motu Motiro Hiva Marine Park (Chile); U.S. Department of Commerce, National Oceanic & Atmospheric Administration (NOAA); and Conservation International.



The 6 largest MPAs are estimated to encompass half of all ocean area currently under management around the world. These vast sites represent a growing trend in protecting Earth's oceans. The 6 MPAs are: Chagos MPA (UK), Great Barrier Reef Marine Park (Australia), Marianas Trench Marine National Monument (USA), Motu Motiro Hiva Marine Park surrounding Sala y Gomez Island (Chile), Papahanaumokakea Marine National Monument (USA) and Phoenix Islands Protected Area (Kiribati).

During the meeting there was a sharing of experience and knowledge among site managers. Each representative presented a ten-minute PowerPoint presentation. These presentations served to highlight the many common challenges faced by large-scale MPA managers. Examples of these challenges include:

- Inadequate enforcement presence and monitoring effort given the large and/or remote scales involved.
- Logistical challenges and travel costs associated with management of large, remote areas, far from population centers and resources.
- Existing management capacity and resource allocation limitations that are compounded when spread across such large geographic areas.
- Public interest and outreach relevance challenges given the physical distance such areas may be from human presence and consistent public awareness.
- Poor or incomplete understanding of how reproductive dynamics relate to native species, particularly for economically valuable highly migratory species that may reside in or travel through the large-scale MPAs.

Big Ocean's meeting in Victoria had two objectives: -

Objective 1: To provide Big Ocean site member updates and make decisions regarding proposed Big Ocean activities; identify a set of Big Ocean business action items to be completed over the next year within a common work agenda.

Discussion Items:

- Develop an integrated Big Ocean database, geo-referenced for all member sites with a short list of all of the data layers that are available. Explore the possibility of pooling data that is of common interest.
- Document surveillance and enforcement technology – pros and cons of technologies, costs, and opportunities for pooling resources.
- Leverage the Big Ocean Network to raise profiles of member sites with providers of surveillance and enforcement technologies to foster collective partnerships.
- Promote information gathering and funding to support database compilation and maintenance. By example, PMNM has engaged enforcement agencies and technology providers to assess different technologies, costs, and benefits.
- Explore platforms that already exist, such as Google Earth, to add a profile of the Big Ocean Network to Google Ocean.
- Document case studies to provide the basis for fishing agencies to share data on the Big Ocean Network web site.
- Commit to sharing information with others that are considering creating large MPAs. Define why they are important, why they are needed, and how they can be successful.

Objective 2: To convene a learning exchange between Big Ocean members and invited guests regarding management planning at large-scale MPAs; identify a set of possible activities relating to building the management planning capacity of Big Ocean member sites.

Discussion Items:

- Improve MPA management across and among geographic areas using the Big Ocean Network.
- Identify gaps and provide guidance to better align science, management and community.
- Aid in the development of future large-scale sites to build upon Big Ocean member experiences.
- Provide a vehicle to increase engagement with regional and international bodies and NGOs that are involved in marine conservation, and are particularly interested in supporting the role of large-scale sites.
- Develop a management plan to consider:
    - An adaptive management cycle to handle the amount of time it takes to generate new data such as climate/natural disturbance regeneration time and human disturbance regeneration time.
    - Sister site agreements, e.g., between PIPA and PMNM.
    - Mission oriented partnerships – like with International Panel on Climate Change and international aerospace agencies for remote sensing.
    - Economies of scale in terms of research, e.g., a global facility of Deep Ocean research vessels that could address the common needs of Big Ocean.
    - Resources, expertise, and capacity to obtain required data, including resources beyond what the members can contribute, and support from technology providers.

Future Events

The Big Ocean Network is cognizant of the following conferences; attendance by Big Ocean Network members is encouraged:

1. International Congress for Conservation Biology, *Engaging Society in Conservation*, December 5-9, 2011, Auckland, New Zealand.
2. International Union for Conservation of Nature, October 2012, Korea.
3. International Coral Reef Symposium, 2012, Australia.
4. IMPAC 3, October 2013.
5. World Parks Congress, 2014, Australia.

Think Tank Focus Groups will be held immediately prior to the Society for Conservation Biology meeting in Auckland, New Zealand. Inspired by the Big Ocean Network's inaugural meeting in December 2010, PMNM and PIPA will host the 3-day Think Tank. Formally titled *Big Ocean Network: A Research Agenda and Science Dissemination Strategy for Large-Scale MPAs* the workshop will promote a research agenda for large-scale MPAs. For more information contact Randall Kosaki, Ph.D. at randall.kosaki@noaa.gov.

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Stop Press

The Big Ocean website has been updated and has new features. We are still in the early stages of development so videos and interactive components are still not present. The web site URL: www.bigoceanmanagers.org

Please take a look at your convenience and should you encounter broken links or other errors, please do not hesitate to let us know. The web site is an ever evolving project and aspect of Big Ocean so your feedback is greatly appreciated. We are always looking to improve and seek to provide ever greater functionality for the tools that we provide to our network.

BARTON POINT NATIVE HARDWOOD RESTORATION PROJECT – 2011 UP DATE

Peter Carr

Chagos News 35 of January 2010 provided an introduction to the native hardwood restoration work at Barton Point, Diego Garcia (Carr, 2010). Some eighteen months on, this article updates the progress of the work, focussing on the problem areas, lessons learnt and of course, the successes and satisfactions.

The Barton Point Native Hardwood Restoration Site: The entire area at present covers about 6 hectares and is divided in to three plots. Plot One is positively managed; this means (nearly) all coconut seeds were removed after the initial felling occurred, native saplings were planted, fenced and tended and invasive plants are managed. This plot covers an area of approximately 4 hectares. Plot Two is semi-managed. This means after the initial felling, again, an effort was made to remove all coconut seeds, native tree seeds from elsewhere around the island were scattered throughout and then the plot has been left to its own devices. Plot Two covers about 1 hectare. Plot Three has had the coconuts felled and nature left to its own devices – with repeat visits planned every five years to remove emergent coconuts and leave native trees in situ. This plot also covers an area of approximately 1 hectare.

Successes: Probably the most satisfying part to the Project has been the human interest, both on and off the island. On island, people come and go, particularly the military who are generally on a 12 month tour. One of the resources the project needs is physical labour. Since the project first started in earnest in early 2009 there has always been a very small nucleus of people who were willing to give up their Sunday mornings to come out and spend a few hours at the site, mostly military. This dedicated band was occasionally supplemented by a larger gathering on “volunteer days” when anything up to seventy-five workers would be on site. It is pleasing to report, there is still a very small group who turn out most week-ends and, the larger volunteer days are still a feature of island life.

Figure 1: Natural rejuvenation of native trees at Barton Point Native Hardwood Restoration site in May 2011 (Photo Pete Carr)

However, the availability of physical labour does not always match the work needed to be carried out! And it is here the off island interest has provided dividends. With a generous grant from the Chagos Conservation Trust it has been possible to employ a small group of workers who come to the site once or twice a month to assist with tasks that cannot wait for volunteer days. I am extremely grateful for this grant and the money is being put to good use improving the habitat of Barton Point Strict Nature Reserve / Important Bird Area.

Another satisfying point is watching how quickly the natural recovery of native forest can occur once coconuts are removed. In March 2009 there was not a single native species that was producing productive seeds or fruits at the site due to the density of coconut fronds and sprouting seeds covering the area. With the removal of these, natural regeneration of *Morinda citrifolia* has been both rapid and spectacular, with growth of up to five metres in eighteen months. *Guettarda speciosa* and *Neisosperma (Ochrosia) oppositifolia*, whilst not so rapid in growth, have also sprouted in good numbers from the few trees that were surrounding the old Plantation. Of the seeds that were scattered throughout the plots, *Barringtonia asiatica* has taken root in several areas of Plot One, though it appears to fare better when physically planted.

Figure 2: *Intsia bijuga* saplings protected by plastic fences in March 2010 (Photo Janet Prushansky).

Problem Areas: There have been two major problems encountered to date over the period the project has been running. One is being positively solved and the other is being managed. Donkeys are the problem where the solution, whilst not simple, should provide an immediate remedy whilst longer-term options are considered. Donkeys were identified at the start of the project as a pest that would damage natural new growth and planted trees. To counter this, plastic fences were erected around planted trees.

Figure 3: *Pisonia grandis* sapling damaged by donkey grazing in February 2010 – now protected by wooden fences (Photo Pete Carr).

It was quickly learnt that plastic fencing deteriorates rapidly when left in the Diego Garcia elements for a period of weeks and, does not deter a donkey who is intent on feeding. Interestingly, the donkeys main feeding preference is for *Pisonia grandis* saplings and all accessible plants of this species were damaged to some degree. To prevent further donkey damage, the plastic fences were removed from around most of the saplings and replaced with (recycled) wooden fences and this appears to have stopped the immediate damage to planted trees.

Figure 4: *Pisonia grandis* sapling flourishing behind the protection of a recycled wooden fence in May 2011 (Photo Pete Carr).

In addition to damaging *Pisonia* saplings, it is thought, due to the difference in ground cover in areas readily accessible to donkeys and those that are not, that the donkeys graze heavily on low growing, creeping vegetation and much of the site remains bare of ground cover. The immediate solution has been to erect a wooden fence around the entire plot that is positively managed, about one kilometre of fence. The wood for the fence has all come from demolition projects on the western arm of the island and the labour to build the fence has been financed by the CCT grant – the fence building is on-going and it is intended to fence all three plots eventually.

Figure 5: Erecting a donkey fence around the Barton Point Native Hardwood Restoration site in May 2011 (Photo Pete Carr).

Another option being considered to control the deleterious effects on rejuvenation donkeys have in the Barton Point SNR is to erect a “donkey gate” similar to the one on the western arm of the island. This fence would be straddled across an isthmus south of the site and all donkeys in the Barton Point area would then be driven south of this fence. This potential solution is being assessed at present.

The second problem encountered has been the rapid invasion by *Pipturus argenteus*. Listed as non-native in Topp & Sheppard (1999), this plant is found throughout Diego Garcia and several of the outer islands. It appears very sun-tolerant, proliferating in cleared areas, road and track sides and is fairly common all up the track to Barton Point in areas where the sun penetrates the canopy. There were some mature *Pipturus*, some over five metres high, along the access track that runs through the restoration site, when the work commenced in 2009. Twelve months after the main felling had been carried out, this plant had totally over run the entire site.

At present in Plot One, *Pipturus* is controlled by hand-pulling. This is back-breaking work that to be successful requires the entire root system to be removed. Whilst this plant is now successfully controlled in Plot One, it has taken literally hundreds of volunteers thousands of man hours to bring the situation under control. It now requires a minimum of ten people one full day a month to stay on top of the situation. In the semi-managed Plot Two, the *Pipturus* is over ten feet high and at this stage of restoration/rejuvenation, is totally dominating the entire plot.

Figure 6: *Pipturus argenteus*, a rampant invasive at the Barton Point Native Hardwood Restoration site that is now positively controlled in Plot One

Lessons learnt: In the northern atolls, donkeys are only thought to be present now on Ile du Coin in Peros Banhos, therefore should not present a problem for any future restoration attempts.

However, the invasive nature of *Pipturus argenteus* and its management burden is a very important lesson to be learnt if a similar felling regime as Barton Point is initiated in the northern atolls on islands where it is present. Simply because of man hours, hand-pulling this plant if it overtook a restoration project in the outer islands, would render the project doubtful of success. With this thought in mind, a trial plot of $10m^2$ has been identified in Plot Two and, before this article will have been published, will have been treated with the herbicide glyphosate (*N*-(phosphonomethyl)glycine). It is a hoped this broad-spectrum systemic herbicide will succeed in suppressing this species and be an option for use in eradication of invasive plants on the outer islands.

In summary, to date a small area of Barton Point has had a former coconut plantation felled and replaced with three trial restoration plots. One plot positively managed and is labour intensive; a second plot being semi-managed that was labour intensive to start and a third plot that merely involved felling of coconuts. At this juncture in the restoration process the positively managed plot is far ahead in reaching the desired end state of a mixed native species forest. However, the success of native forest restoration is judged in decades not months. Only time and future monitoring will tell if the other two trial plots ever manage to reach a mixed species climax forest.

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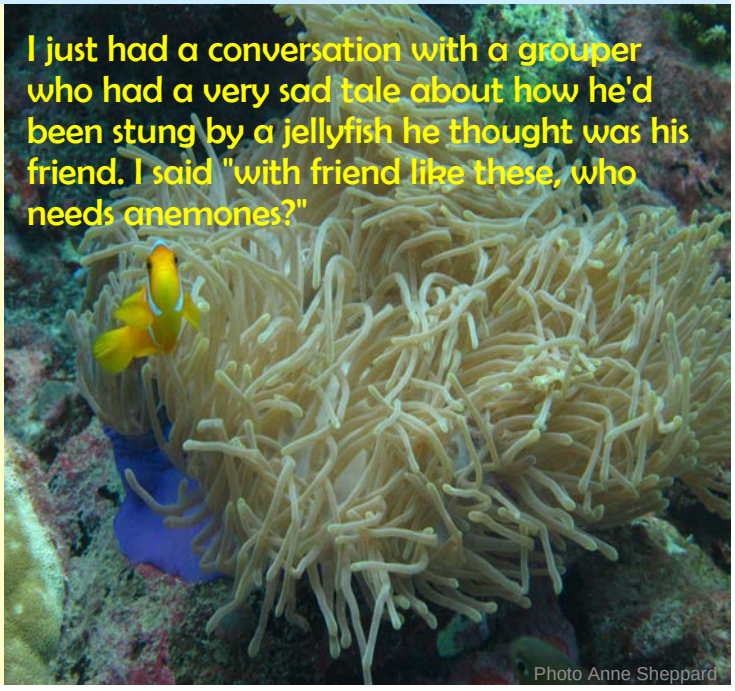
The Chagos Environment Network has a Facebook page. We're one of the largest UK conservation pages on Facebook with more fans than Friends of the Earth! The page is updated several times a week with marine conservation and Chagos-specific news. To stay in the loop, please visit www.facebook.com/pages/Protect-Chagos/258425446058 and click the "Like" button at the top of the page.



New Addition to the Chagos Environment Network

CCT is pleased that Coral Cay Conservation (CCC) has become a member of the Chagos Environment Network (CEN). CCC has been active with CCT in working with the Chagossian community. Last year, two Chagossian scholars went with CCC to Tobago on a diving and marine conservation training course. CCC's founder and CEO, Pete Raines MBE said "CEN has worked tirelessly to promote and assist with the successful designation of the Chagos Marine Protected Area: one of the world's largest and of immeasurable global importance in the conservation of our threatened oceans. Having served for many years on the executive committee of the Chagos Conservation Trust and having had the great privilege to serve as Expedition Manager to Professor Charles Sheppard's 'Chagos 2010 Expedition', I am grateful for this opportunity to play an active role with CEN's vitally important work."

This brings to 10 the number of prestigious organisations which comprise CEN, with more organisations applying to join and support conservation in Chagos.

Professor Charles Sheppard University of Warwick

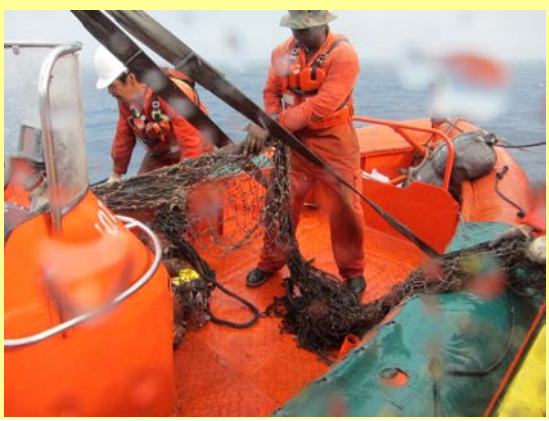
Clearing Destructive Rubbish

While on a filming expedition in April 2010, CCT members Anne Sheppard and Jon Schleyer, accompanied by Sgt Chris Burr from the British Party on Diego Garcia, came across a net which had been lost from one of the tuna boats and was drifting across the reefs of Peros Banhos. The heavy net was causing damage to the corals and would have continued to do so for a long time.

Diver Chris Burr and the net on the lagoonal reef at Ile Diamant, Peros Banhos.
(Photo Anne Sheppard)

The net reached all the way to the surface 10 m above. (Photo Anne Sheppard)

The heavy net was disentangled from the coral and towed by dinghy to the BIOT Patrol Vessel *Pacific Marlin,* where it was hauled aboard, cut into pieces and stored to be returned to Diego Garcia for safe disposal.



Pacific Marlin crew have the difficult task of hauling in the very heavy net.
(Photo Anne Sheppard)

Seamounts and Chagos MPA

Dr Chris Yesson

Seamounts are 'undersea mountains', usually described as conical structures with a summit over 1000m from the surrounding ocean floor. Often they originate as volcanoes and are commonly found by ocean ridges, tectonic plate boundaries or island arcs. Their sloping sides and flat summits provide a variety of habitats within a relatively small area. Seamounts can be areas of high biodiversity, providing many marine animals with feeding opportunities and breeding grounds. Many animals, including commercially important species, are found to aggregate around seamounts. These aggregations have drawn the attention of fishermen, but seamount habitats can be vulnerable to human impacts, particularly trawling. (Pitcher et al., 2007).

As with many other aspects of the ocean, there is still a lot we don't know about the geology and biology of seamounts. This includes basic information, such as how many seamounts are there; where are they located and which animals live on or near them. A recent study by Yesson et al. (2011) used the latest global map of the ocean floor from the Shuttle Radar Topography Mission (Becker et al., 2009) to estimate seamount locations using a computer-based shape analysis of undersea features. This study identified 33,452 seamounts in the world's oceans and estimated the global seamount habitat to be approximately 17 million km^2, or 4.7% of the ocean floor. This represents a globally significant habitat, covering an area equivalent to terrestrial tropical dry forests.

The seamounts of Chagos are potentially important habitats, but as with the rest of the world, their number, location and biology are poorly understood. Yesson and colleagues suggest there are 86 seamounts within the MPA (see illustration). The majority of the shallower, and potentially more productive, seamounts are clustered around the Chagos archipelago. Others are found along the Chagos trench and at the Western limit of the MPA, but the majority of these are at depths below 1,500m. This density in the area is ~158 seamounts per 10^6 km^2, which is nearly double the value for the whole of the West Indian Ocean (87 seamounts per 10^6 km^2). Chagos seamounts represent a habitat covering ~52,745 km^2 almost 10% of the area of the MPA, and to put this in context, the area of the Great Chagos Bank is under 13,000 km^2

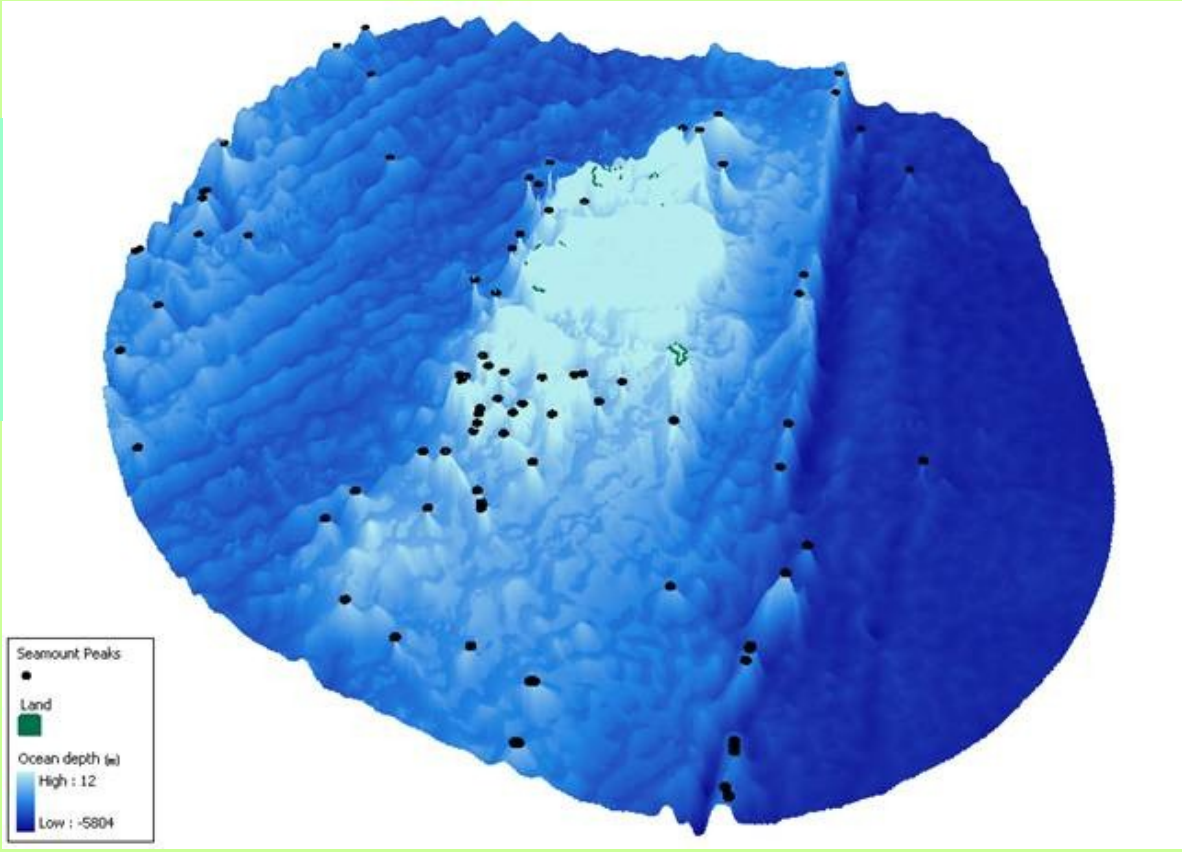


Diagram showing the location of the seamount discovered so far within the Chagos MPA.

Note how small the land area is in comparison to the underwater area.

However, this figure of 86 seamounts may turn out to be an underestimate. The identification of seamounts requires detailed mapping of the ocean floor, typically accomplished by ship-based acoustic scans. When this high resolution data is not available, maps can be inferred from satellite gravimetry data, but this gives much less detail than acoustic scanning and it is difficult to detect smaller features with satellites. Unfortunately, the majority of the ocean floor map for Chagos MPA is based on the lower quality satellite data. Less than 2% of the Chagos sea bed has been mapped acoustically (or at least this is what is in the public domain). This figure compares poorly with the overall global coverage of ~6.5%. The poor quality of the data available means that we are probably unaware of some smaller seamounts in the area.

Few of the known seamounts within the Chagos MPA have been the subject of scientific study, and there is little documentary evidence of the fauna associated with seamounts in the area. If the Chagos seamounts follow the patterns of diversity found elsewhere, then they are likely to be valuable undersea habitats containing significant levels of biodiversity.

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Project Ocean

Rachel Jones
Zoological Society of London

In May, Selfridges, in collaboration with The Zoological Society of London, launched Project Ocean. Running for 4 busy weeks right up to World Ocean Day on the 8 June 2011, the programme brought together more than 20 environmental and conservation groups to celebrate the beauty of the ocean, highlight the issue of over-fishing, help people understand the threats to the marine environment and make positive choices about the right fish to buy and eat.

The Chagos Marine Protected Area featured prominently in talks on marine protected areas and in discussions on how best to monitor large open ocean predators, like tuna and sharks. Selfridges featured marine conservation messages in all of its Oxford Street windows seen by 4 million people over the course of the month. All fish and seafood sold in the store will be sustainably sourced from now on and 45,000 fish guides were given away designed to help people make good choices when buying fish themselves.

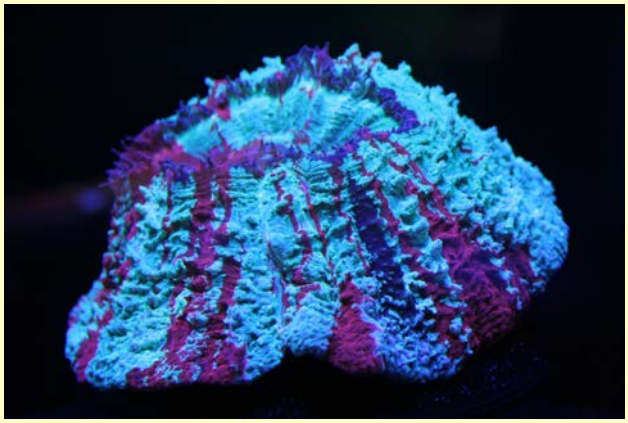
Illegally imported corals are passed to ZSL. The corals shown here are only some of the ones which have been confiscated.
(Photo David Curnick)

The Ultralounge exhibition space featured 20 live coral exhibits throughout the project and more than 17,500 customers took part in an Ultralounge talk or activity based on marine conservation themes.

Donations to the project have raised £96,210 so far and have already paid for a new Marine Protected Area covering a coral reef in the Philippines. Project Ocean has been an innovative way to bring marine conservation issues to a new audience and has attracted lots of positive press in support of key topics such as marine protected areas.

The exhibit above was entitled—'you wouldn't eat a panda – stop eating endangered bluefin tuna'
(Photo David Curnick)

Jellyfish and Chips. This exhibit shows what we're going to be left with if we don't moderate and control the way we fish.
(Photo David Curnick)



Exquisitely beautiful images of corals, in ways that even coral reef scientists don't get to see them. These illustrate the beauty of the corals and show that they are not just lumps of rock.
(Photos Katie Miller)

The Chagos Brain Coral: A Local Flagship for the Gemstone of the Indian Ocean

Catherine Head
Heather Koldewey
Zoological Society of London

Ctenella chagius, seaward reef Grand Coquillage, Peros Banhos atoll. (Photo Anne Sheppard)

The Chagos Brain Coral, *Ctenella chagius*, is a unique coral. Not only is it endemic to the Chagos Archipelago but the species has also been identified as one of the world's top ten priority 'EDGE' coral species. The Zoological Society of London's (ZSL) EDGE of Existence programme (www.edgeofexistence.org) directs conservation efforts towards species which represent a disproportionate amount of evolutionary history and are threatened, while building conservation capacity.

Ctenella chagius seaward reef Ile Poule Peros Banhos Atoll. (Photo Anne Sheppard)

The EDGE of Existence Programme proritises species for conservation within a given group according to a scientific scoring system which combines their relative threat or Global Endangerment (GE; based on IUCN Red List categories) with Evolutionary Distinctiveness (ED; based on genetic information represented on a phylogenetic supertree). As a complete phylogenetic supertree does not yet exist for hard corals (Scleractinia), ten focal EDGE hard coral species were identified and prioritised for conservation action at an international workshop last year, using a combination of expert opinion and current phylogenies (Table 1). The list includes corals from a range of geographical locations, many of which would not be prioritised by conventional criteria such as ecosystem function.

Ctenella chagius is a top 10 EDGE Coral because it is highly evolutionary distinct (Fukami et al, 2008), threatened (Endangered IUCN Red List), virtually unstudied, and receiving no targeted conservation attention. *Ctenella chagius* is also an important flagship species that represents the uniqueness of the Chagos Archipelago. Up to half of the healthy reefs in the Indian Ocean are contained in the Chagos Archipelago, making them one of the most ecologically sound reef systems on the planet.

Close up of the structure of the brain coral *Ctenella chagius.* (Photo Anne

The Archipelago also serves as an important area of biodiversity, is a demonstrated stepping stone for several taxa, potentially helping replenish the western Indian Ocean with the ecological goods and services on which millions of people rely. Chagos also has some of the cleanest waters in the world due to its remote and relatively undisturbed nature.

Table 1: The ten focal EDGE coral species and their distribution

Species	**Distribution**
Crisp pillow coral *Anomastrea irregularis*	West Indian Ocean
Pillar coral *Dendrogyra cyclindrus*	Western Atlantic Ocean
Mushroom coral *Heliofungia actiniformis*	Central Indo-Pacific
Horastrea coral *Horastrea indica*	West Indian Ocean
Parasimplastrea coral *Parasimplastrea sheppardi*	West Indian Ocean
Elegance coral *Catalaphyllia jardinei*	Indian and West Pacific Ocean
Elliptical star coral *Dichocoenia stokesii*	West Atlantic Ocean
Pearl bubble coral *Physogyra lichtensteini*	Indian and West Pacific Ocean
Ctenella coral *Ctenella chagius*	Central Indian Ocean
Elkhorn coral *Acropora palmata*	West Atlantic Ocean

The EDGE Coral Reef Conservation project, launched in January this year, is now implementing projects that enhance both understanding and conservation of the 10 priority EDGE coral species as a novel approach to coral reef conservation. The project plans to promote the Chagos Brain Coral, *Ctenella chagius,* as a flagship species for coral reef conservation and build conservation capacity within the Chagossian community in the UK, in conjunction with initiating the first focused conservation research project on *Ctenella chagius* to better understand the species life history and inform its conservation.

For more information or to support the EDGE of Existence programme please visit our website www.edgeofexistence.org or contact the project co-ordinator at catherine.head@zsl.org

CCT Members Conference Invitation

On Thursday 24 November a one day scientific meeting on both marine and island science of Chagos will be held at the meeting rooms of the Linnean Society of London, in Piccadilly (the same place that the last CCT AGM was held). This is being organised by Professor Charles Sheppard, with officers of the Linnean Society. There will be presentations from several scientists who have been to Chagos recently, covering both their results and suggestions for the way ahead, both regarding scientific as well as management. Final details of the programme are given in the Linnean Society's flier reproduced in the next pages ; results will be presented by scientists from several countries, the UK, USA, Germany and Australia. Funding for travel costs has been generously provided by the Pew Trusts and the Chagos Conservation Trust, and much support is of course being provided by the Linnean Society too.

Members of CCT may remember that the 1999 book Ecology of the Chagos Archipelago (Eds: Sheppard and Seaward) arose out of a similar meeting held at the Linnean after the first of the 'modern' series of science expeditions to Chagos. A volume has been contracted for, and is being compiled now, for reefs of all UK Overseas Territories in a series by the academic publisher Springer. This is to be called Reefs of British Overseas Territories and this will be used on this occasion (it will include other Territories too), edited by Charles Sheppard.

The number of presentations in the 24 November meeting will be limited to nine in order to leave more time than usual for discussions, both formal and informal. Lunch and other refreshments will be provided, and a small charge will be made to cover this. The programme and registration forms as issued by the Linnean Society are in the following pages.

The Chagos archipelago: the world's largest Marine Protected Area

24th November 2011

A joint meeting of the Linnean Society of London and the Chagos Conservation Trust supported by Pew Environment Group, organised by Professor Charles Sheppard FLS

The Chagos Archipelago (also known as the British Indian Ocean Territory) is located in the centre of the Indian Ocean. It is in exceptionally good environmental condition, and yet is surrounded by some of the poorest countries in the world which suffer from some of the most over-exploited marine habitats in the world. Chagos is uninhabited except for a military facility on its most southerly atoll Diego Garcia. For many years, modest research expeditions have shown the very high quality of its ecological condition and its resilience to impacts of ocean warming that have affected other areas. In 1999 the Linnean Society of London published the volume *Ecology of the Chagos Archipelago* which resulted from results obtained during the 1990s. This meeting presents some of the highlights arising from research in the last decade, which have resulted in the government declaring all 544,000 km^2 a fully no-take marine protected area.

For more information about the conference, details of accommodation and directions to the Linnean Society, please contact:

Events, The Linnean Society of London, Burlington House, Piccadilly, London, W1J 0BF
Tel.: +44 (0)20 7434 4479 Fax: +44 (0)20 7287 9364 Email: events@linnean.org

For registration please visit www.linnean.org and visit our upcoming events page to download your registration form.

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The LINNEAN SOCIETY of London
Charity Reference No. 220509

CHAGOS CONSERVATION TRUST

Scientific Programme

10.00am	Registration
10.30am	The BIOT marine Protected Area – Introductory remarks *Professor David C Clary FRS, Chief Scientific Adviser, Foreign & Commonwealth Office*
11.00am	Why Chagos is now the world's largest Marine Protected Area *Professor Charles Sheppard, University of Warwick*
11.30am	Coffee
11.45am	The importance of unimpacted parts of lagoons to the survival of coral reefs in the Chagos *Professor Bernhard Reigl, Deputy Director National Coral Reef Institute, USA and Dr Sam Purkis, National Coral Reef Institute, USA*
12.15pm	How to monitor and manage the oceanic fish of Chagos *Dr Matt Gollock and Dr Heather Koldewey, Zoological Society of London*
12.45pm	Climate interpretation using Chagos coral cores, and the importance of this is the Indian Ocean climate analysis *Dr Miriam Pfeiffer, Geologisches Institut Aachen, RWTH Aachen University, Germany*
13.15pm	Lunch
14.00pm	Connectivity of Chagos marine species: a genetic perspective. Using the NW Hawaiian islands very large MPA as a model *Dr Matt Craig, University of Puerto Rico and Professor Brian Bowen, University of Hawaii*
14.30pm	Biomass, size structure and trophic composition of reef fish communities in Chagos *Dr Nick AJ Graham, JCU, Australia, Dr Tim McClanahan, WCS, Kenya, Dr Morgan S Pratchett, JCU, Australia and Dr Shaun K Wilson*
15.00pm	The Chagos coral islands: past disturbances, current patterns and discoveries, future trends *Dr Colin Clubbe, Royal Botanic Gardens, Kew and Peter Carr, DG21, Diego Garcia, BIOT*
15.30pm	Tea
15.45pm	The way ahead for monitoring and managing the world's largest MPA *Dr David Billet, National Oceanography Centre, Southampton, Alistair Gammell, Pew Trusts and Professor Charles Sheppard, Warwick University*
16.15pm	Open discussion on research and management needs for the BIOT MPA
17.00pm	Drinks Reception
19.30pm	Close

THE CHAGOS ARCHIPELAGO:

THE WORLD'S LARGEST MARINE PROTECTED AREA

24th November 2011

A joint meeting of the Linnean Society of London and the Chagos Conservation Trust, supported by Pew Environment Group

Please complete this form and return it to:
Events, Linnean Society of London, Burlington House, Piccadilly, London, W1J 0BF
Email: events@linnean.org Tel. +44 (0)20 7434 4479 Fax: +44 (0)20 7287 9364

Your Contact Details

Title:_____ Full Name: _____

Institution:_____

Address: _____

_____ Postcode: _____

Telephone: _____ Email: _____

Registration Details

☐ Full Registration £30 ☐ Student Registration £10

Registration fee covers attendance at the meeting including refreshments and an evening reception at the Linnean Society.

Payment Details

☐ Cheque ☐ Credit Card

Card No.: ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ Security Code: ☐☐☐

Expiry Date: ☐☐ ☐☐ Issue Number or Start Date: ☐☐ ☐☐
(If applicable)

Full payment must accompany this form to guarantee a place. Cheques should be payable to 'The Linnean Society of London'. Please note that we are unable to accept American Express or Diners Club cards.

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