

Chagos News

The Periodical Newsletter of the
Chagos Conservation Trust and
Chagos Conservation Trust US

No 59 December 2021

ISSN 2046 7222





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Dr. Natasha Gibson

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The end of 2021 sees the end of an era for CCT as our amazing Director Helen is leaving us for an exciting new rewilding venture.

Whilst we wish her all the very best, we will miss her greatly for her energy, enthusiasm and detailed knowledge of the archipelago and its science.

She has been instrumental in shaping our Trust over the last few years, in formulating our Healthy Islands, Healthy Reefs programme and in the successful Darwin Plus application.

This grant will enable us to undertake the second phase of HIHR and infill our knowledge of the habitat and baiting practices to ensure that once the rodent eradication commences, it is successful.

This funding also allowed CCT to recruit a Programme Manager, the very knowledgeable and capable Dr Pete Carr.

Pete has just completed his PhD on bird life in this area, has had many years of experience on the islands in various roles, and is of course a former CCT trustee.

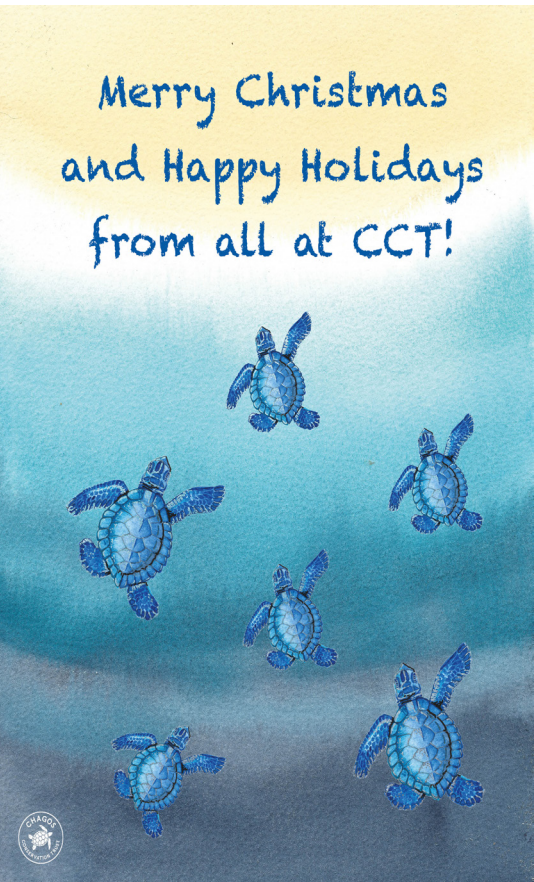
We also welcome a new Trustee, Jean-Francois Nellan, who, as a 3rd generation Chagossian, will bring the views of this community to the Board deliberations.

The Trust has continued its support of Chagossian Voices, in particular the soon-to-be launched website.

There has been significant interest in the Director's position, and we hope to appoint someone in the role at the beginning of 2022.

Next year will also see us launch the next phase of HIHR, Save Eagle Island, with ambitious fundraising.

On behalf of the Board and staff, I thank you again for your continued support of the Trust, and wish you a joyful festive season and New Year!!



Artwork by Yolanda Barnes

Cover image: Ile Bois Mang Butterfly on Scaevola (c) Jon Slayer

Copy editor: Rachel Mills <https://about.me/rachmillstravel>

Significant Funds Invested in Chagos Conservation

Helen Pitman, CCT, Jodey Peyton CEH & David Curnick, ZSL



This year Darwin Plus has committed over £700,000 for three projects focused on conserving the Chagos Archipelago over the next three years.

Darwin Plus provides funding for environmental projects in UK Overseas Territories and since 2012, has awarded over £27m to more than 160 projects.

Three projects proposed and submitted earlier this year have been awarded grants that will help protect and enhance the archipelago's environment.

Filling knowledge gaps to enable rewilding – Chagos Conservation Trust

The seabirds and corals of the Chagos Archipelago are inextricably linked. Seabirds provide nutrients that help the corals survive but, on some islands, because of the presence of invasive rats that eat seabird eggs and chicks, seabirds have disappeared, breaking this important link.

In 2020, CCT self-funded a feasibility study to determine the method for eradicating rats from the archipelago, which highlighted knowledge gaps to be filled in order to carry out a successful eradication.

The aim of this CCT project, in partnership with the British Indian Ocean Territory (BIOT) Administration and Biodiversity Restoration Specialists Limited, is to collect data to fill these gaps.

An expedition team, made up of Dr Grant Harper, Dr Pete Carr and a Chagossian research assistant (to be recruited), will travel to the Chagos Archipelago in 2022.

They will spend one week on Ile Manoel to confirm the presence or absence of rats, then travel to Ile du Coin and Ile Diamant, where it is possible mice are present as they can be highly cryptic in the presence of rats.

An important aspect of this expedition is to determine how much bait could be taken by the islands' crab population. The bait does

not harm crabs but if they take a significant amount this could impact the bait available to rats.

The results of bait off-take trials will inform the operational planning regarding the optimal bait application rate to allow rats access to bait over a four-day period.

Areas of mangrove are problematic for bait application as the bait could fall into water. Therefore, trials for bait application on Moresby Island will also be undertaken to ensure rats in this habitat consume bait.

The collection of this important data will enable CCT to further enhance its capability to plan, manage and implement the rat eradication programme by developing what's called an 'Invasive predator eradication technical strategy' and integrating it into the rat eradication operational plan.

If you would like to know more about this work, please contact Pete Carr, CCT, pete.carr@chagos-trust.org

Building knowledge on invasive non-native species in Diego Garcia – UK Centre for Ecology & Hydrology

Terrestrial biodiversity on Diego Garcia, as with other islands, is at risk from invasive non-native species (INNS).

The UK Centre for Ecology & Hydrology is partnering with an international team and working to survey amphibians, reptiles, invertebrates and plants.

They will create distribution- and risk-maps and produce an updated inventory of invertebrates with DNA-barcodes for selected species, and design and deliver biosecurity training, with outputs shared across other UK Overseas Territories (UKOTs).

Human aided introduction of INNS and their subsequent establishment and spread is globally recognised as having a negative impact on native biodiversity, human health and/or the economy with biodiversity impacts particularly damaging on islands.

Knowledge gaps of native and INNS

distributions and INNS impacts in UKOTs leads to uncertainty in the prioritisation of management actions, biosecurity and conservation planning.

Working with the BIOT Administration, experts will deliver amphibian, reptile, invertebrate and plant surveys to address some of these gaps.

They will also increase awareness of biosecurity issues and, through increasing knowledge and capacity, mitigate impacts of existing, and prevent future, introduction of INNS on Diego Garcia and the wider archipelago.

Distributional data will be used to generate risk maps e.g. heat map of number of INNS with the potential to spread to the outer archipelago.

Along with species action plans co-developed with the BIOT Administration, the maps will help prioritise management for target native and non-native species.

The project will provide, for the first time, DNA-barcodes, supporting species identification for difficult invertebrate taxa.

This will facilitate future meta-barcoding approaches using bulk samples, gut contents and environmental DNA, allowing surveillance at greatly reduced costs.

The team will raise awareness and provide training in INNS surveillance. This will be undertaken through presentations and workshops and co-creation of communication materials with stakeholders as well as monitoring relevant to environment officers, military and civilian staff and biosecurity authorities in Diego Garcia and at key aviation and naval entry points.

A knowledge exchange and identification training workshop for environment and biosecurity staff on the most common invasive ant species will be made available across all UKOTs.

If you would like to know more about this work, please contact Jodey Peyton, UKCEH, joyt@ceh.ac.uk

Improving reef resilience through sustainable fishery management on Diego Garcia – Zoological Society of London

To maximise reef resilience to climate change, local threats such as fishing have to be sustainably managed. The Chagos Archipelago is viewed as a global example of marine conservation.

However, concerns exist over the impact of Diego Garcia's fisheries on its reefs.

There are two fisheries on Diego Garcia, a boat-based sport fishery and a poorly understood shore-based fishery.

Such extraction rates over such a relatively small area could be having a considerable impact on reef health, as important reef predators, such as groupers and snappers, are targeted

Such extraction rates over such a relatively small area could be having a considerable impact on reef health, as important reef predators, such as groupers, are targeted.

Experts from Zoological Society of London, Bangor University and the University of Guam will assess the impact of both fisheries, quantify the extent of the shore-based fishery,

and reveal key locations and spawning seasons for important reef predators.

They will then derive growth rates and age-at-maturity for focal species, vital biological reference points needed to inform local and regional management.

Further, they will determine the drivers of fishing activity on Diego Garcia, awareness of existing fishery regulations, and community perceptions of management options.

This will allow the development of feasible, effective management recommendations and will engage and empower local stakeholders to ensure long-term sustainability and compliance.

This project will therefore provide the ecological and social baselines needed to develop implementable guidelines to improve fishery management.

These will benefit all island personnel as a more sustainable fishery model safeguards long-term fishery persistence and the provision of social benefits, whilst minimising impacts to local marine biodiversity.

If you would like to know more about this work, please contact David Curnick, ZSL, David.Curnick@ioz.ac.uk



Invasive alien species

Animal species to watch out for on islands and how can you help prevent their arrival

Red Palm Weevil

Rhynchophorus ferrugineus

Native to southern Asia. It has major impacts on palm trees. This species is spread through movement of wood which contains pupae.



House Crow

Corvus splendens
Native to Asia and, where it is introduced, it eats small reptiles and mammals. This bird can hitchhike on boats to travel to new locations around the world.



Bed Bug

Cimex hemipterus

Found around the world in tropical regions. It can cause skin lesions and itching. It is spread with people in infested luggage, clothing and bedding.



House Mouse

Mus musculus
Native to India but found widely around the world. It can attack seabirds on islands and spread diseases that affect humans.

Little Fire Ant

Wasmannia auropunctata

Native to South and Central America. It can cause humans painful stings, attack hatchlings and adults of land and sea turtles, and reduce the abundance of insects. This species can be spread through infested soil and on plants.



Brown Tree Snake

Boiga irregularis

Native to eastern and northern Australia. It lives in trees. Where it is introduced it eats native bird species. It can stow away in containers.

Asian Green Mussel

Perna viridis

Native to Asia-Pacific, but introduced to tropical waters worldwide. It can damage submerged structures like drainage pipes. This species travels by hull and ballast water.



Illustrations © Chris Shields

News in Brief



CCT Welcomes a New Trustee

CCT is pleased to announce that Jean-Francois Nellan has joined the Board of Trustees.

Jean-Francois is a third generation Chagossian and an active member of Chagossian Voices, a community platform for the Chagossian global diaspora, so he is in touch with a wide range of community members here in the UK and in Mauritius.

'I am joining the board as a community member of Chagossian descent and hope that by doing so this will allow the community to have a voice over the future and the conservation of their homeland and the surrounding environment.'

Read the news story [here](#).



Pygmy Blue Whales Discovered

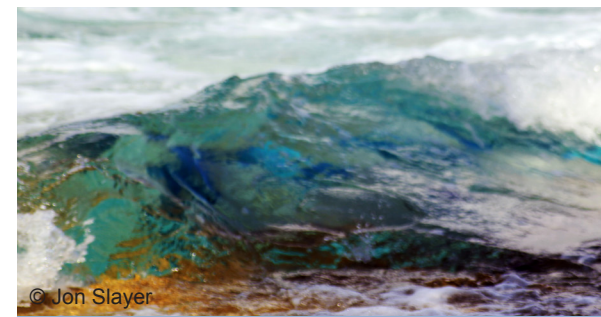
A team of scientists led by UNSW Sydney are confident they've discovered a new population of pygmy blue whales, the smallest subspecies of blue whales, in the Indian Ocean.

And it was the whales' powerful singing – recorded by underwater bomb detectors – that gave them away.

'We've found a whole new group of pygmy blue whales right in the middle of the Indian Ocean,' says UNSW Professor Tracey Rogers, marine ecologist and senior author of the study.

'We don't know how many whales are in this group, but we suspect it's a lot by the enormous number of calls we hear.'

Read the full story [here](#).



How Natural Nutrient Subsidies affect Coral-reef Fish

By improving resource quality, cross-ecosystem nutrient subsidies may boost demographic rates of consumers in recipient ecosystems, which in turn can affect population and community dynamics.

However, empirical studies on how nutrient subsidies simultaneously affect multiple demographic rates are lacking, in part because humans have disrupted the majority of these natural flows.

In new research published in Nature the demographics of a sex-changing parrotfish (*Chlorurus sordidus*) are compared between reefs where cross-ecosystem nutrients provided by seabirds are available versus nearby reefs where invasive, predatory rats have removed seabird populations.

Read the full paper [here](#).

Letter to the Editor

Dear Editor

I was pleased to see that the July edition of Chagos News carried a short obituary of Bruce Dinwiddy. I was his Deputy BIOT Commissioner from 1995-97.

We remained in touch after we both retired and often met at CCT functions.

Bruce was kind and thoughtful and felt strongly that the FCO should not hide its human side, especially over the plight of the Chagossians and the way they had been treated by a callous officialdom.

When I became Coordinator of the Chagos Islands (BIOT) All-party Parliamentary Group in 2008 he supported our efforts to rectify this human rights transgression and bring about an overall settlement of the issues with Mauritius.

David Snoxell

Coordinator of the Chagos Islands (BIOT) APPG



© Rob Dunbar

The Effects of Wave Exposure on Reefs

Ines Lange, Postdoctoral Research Fellow, University of Exeter

Coral reef communities are shaped by a multitude of factors, including physical environmental conditions and human impacts. Remote areas such as the Chagos Archipelago enable us to study natural controls on community patterns and a reef's ability to recover from disturbances.

The onset of the COVID-19 pandemic in 2020 hit most of us a bit unexpectedly. We, a team of 12 scientists from the UK, the USA and Australia, had just arrived in the Chagos Archipelago for our annual field trip.

Happy and safe on board our research vessel *Grampian Frontier* we managed to do three days of work before the news of countries shutting their borders reached us.

Now, although this part of the world resembles paradise in many aspects, the prospect of getting stuck in the middle of the Indian Ocean for an unspecified amount of time did not appeal to everyone and we had to plan our escape.

We hurried to store our equipment on Diego Garcia and started to steam north towards the Maldives.

Learning that we would have to spend another 10 days on the ship before being allowed to disembark, but unable to do our planned work without any dive equipment, we made the best of our situation and as a group came up with an interesting small science project.

During a first sunny then pretty stormy day we circled the whole of Salomon atoll on a small boat, surveying the outer coral reefs every kilometre around the circumference in order to document differences in reef communities.

We know that the main swell direction in this region is from the southeast, especially during the summer monsoon, which we confirmed by modelling wave energy around the atoll using wind data collected at Diego Garcia airport.

Our analyses of benthic photographs from each survey site showed that reef

communities along the exposed southeast shore of Salomon atoll are very different from those along the sheltered northwest shore.

At the former, single coral colonies grow on top of a hard, flat reef structure, which in large areas is infested by boring sponges. At the latter, structural complexity of the reef substrate is much higher, with high cover of massive and encrusting corals, but also a lot of dead coral rubble.

As the reefs are still in the process of recovery from the 2015/2016 bleaching event, we were curious to know if the same community patterns were present before the disturbance and how the difference in exposure influenced recovery trajectories.

We found out that other researchers in 2006 had done a similar circumnavigation of Salomon atoll (what a great idea on a sunny day with nothing better to do!) and were able to compare both sets of photographs and additional data from a subset of exposed and sheltered sites in intervening years.

The comparison revealed that reef communities at exposed and sheltered sites were already very distinct before the bleaching, but both had high live coral cover.

After the bleaching event in 2015/2016 all sites shifted towards bare reef substrate and dead coral rubble.

The subsequent recovery trajectories at sheltered and exposed sites are surprisingly

parallel and lead communities towards their respective distinct pre-bleaching community states.

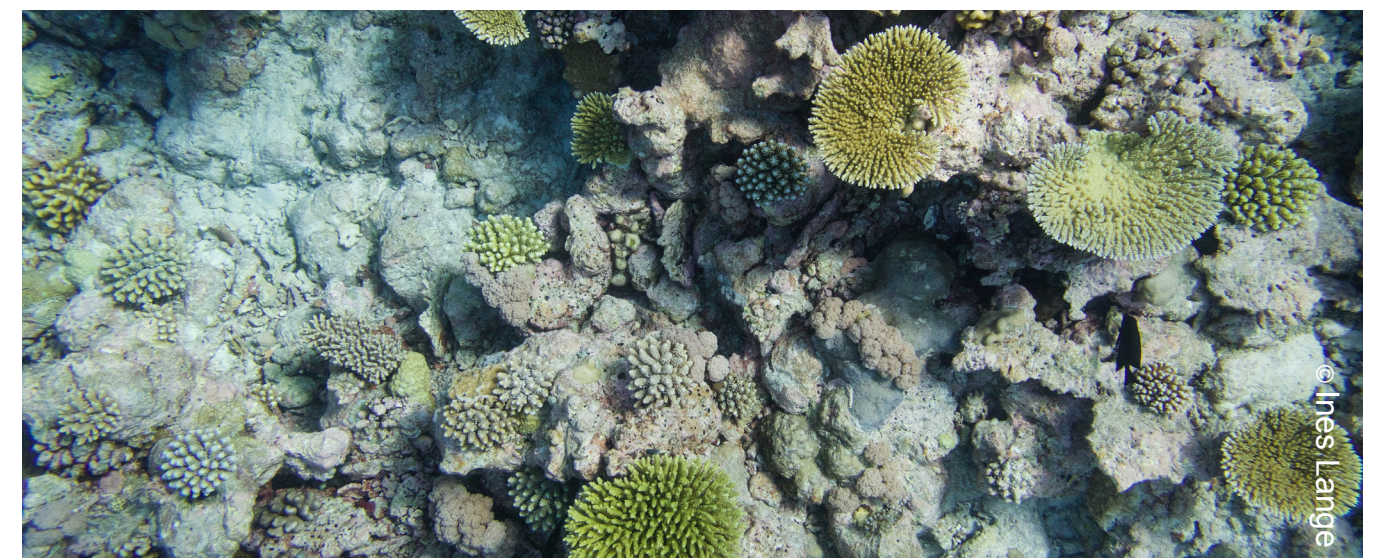
Recovery speed is also similar at all sites, but as new coral growth is periodically stripped off by storm events at exposed sites, final coral cover will likely be lower than at sheltered sites.

At sheltered sites, the high complexity of the reef structure supports high coral cover and diversity, but unstable rubble and dead table corals continue to accumulate as this material is not transported off-reef.

Our results demonstrate that in the absence of human stressors, community patterns on coral reefs are strongly controlled by wave exposure, even during and after widespread coral loss from bleaching events. We also show that sometimes exciting science is just down to team work and taking opportunities when they present themselves.

This research was conducted as part of the Bertarelli Programme of Marine Science (BPMS), and we want to thank the BPMS funders and the amazing coordinators at ZSL for bringing us home during a global pandemic.

Lange, I.D., Benkwitt, C.E., McDevitt-Irwin, J.M., Tietjen, K.L., Taylor, B., Chinkin, M., Gunn, R.L., Palmisciano, M., Steyaert, M., Wilson, B., East, H.K., Turner, J., Graham, N.A.J., Perry, C.T. (2021) Wave exposure shapes reef community composition and recovery trajectories at a remote coral atoll. Coral Reefs <https://doi.org/10.1007/s00338-021-02184-w>



© Ines Lange



Taking Action Against a Sea of Plastic

Alice Chamberlain, Zoological Society of
London

The beaches of the Chagos Archipelago are globally significant as nest sites for Critically Endangered hawksbill turtles and Endangered green sea turtles.

However, the marine environment of the archipelago is facing one of the biggest global threats to our ocean – plastic pollution.

Since 2019, a team from the British Indian Ocean Territory (BIOT) Administration, the Zoological Society of London (ZSL) and Swansea University have been working to reduce the impact of plastic on the coastal ecosystems in the archipelago, with a focus on turtles.

This Darwin Plus funded project has three objectives 1) Reducing the impacts of plastic waste on turtles 2) Reducing and eliminating single-use plastic usage on Diego Garcia (the only inhabited island of the archipelago) 3) Improving the management of plastic waste streams on Diego Garcia.

After an initial expedition in 2019, followed by

two years of Covid related delays, in October 2021 the team were finally able to return to continue what they'd started.

Surveying a remote island for plastic and turtles

The expedition began on the BIOT patrol vessel *Grampian Frontier*, which took our team and volunteers 75 nautical miles from Diego Garcia to Egmont Atoll, which despite being white sand beaches surrounded by crystal clear turquoise water, were covered in shocking amounts of plastic debris.

Two years earlier, the project team had travelled to the same spot in Egmont to undertake scientific surveys to record the presence of sea turtles using their tracks and to quantify the volume and types of plastic present on these islands.

This time the team were back to document what had changed since their last visit and repeat the methodologies they'd used previously.



The team spent the first day in a tropical rainstorm recording 28 turtle tracks and 7,726 plastic litter items from ten litter transects. Sadly, they recorded more than one plastic bottle per metre surveyed on average.

On the second day, all volunteers undertook a beach clean to collect as much plastic waste as possible from the north tip of the northern island – a site that is used heavily by nesting turtles, and the same site that was cleaned two years ago.

Thankfully the sun was shining, and the volunteer effort was outstanding! We filled up 42 bags, each with a 50-litre capacity, with plastic dominated by flip flops, polystyrene fragments, fishing gear and plastic bottles. We collected 1,178 plastic bottles in less than four hours until all the bags we had with us were filled.

This was more plastic than we had collected in 2019 – showing us that the plastic is returning at an alarming rate, washed in from across the Indian Ocean.

Hello DG, goodbye ocean plastic

Once the team returned to Diego Garcia, they continued to implement the island wide campaign, 'Hello DG, Goodbye Ocean Plastic'. Our message was and is simple: 'Drink the DG water. Say #GoodbyeOceanPlastic by not using single-use plastic water bottles'.

Instead, we encouraged all military personnel and civilians to turn to more ocean-friendly options like the drinkable tap water, refillable water bottles, drinking fountains and refill points all available on the island.

We gave out a free limited edition refillable water bottle with every 'pledge' to stop using plastic water bottles.

Within no time at all, 'Hello DG' had spread across the island. Branded posters (written in English and Tagalog, the main language of the civilian contractor community) had been put up at every bus stop and shop entrance.

Live radio interviews with the project team were broadcast via the local radio station AFN, and pledge stations were set up at island-wide events including the Zombie Run and the Flea Market, and at key island locations such as the Ship Store's (the island's only supermarket) and the gym.

The project team also worked closely with the BIOT environment department to organise an island-wide beach clean.

The turn-out for the event was exceptional – with more than 85 individuals registered to attend and clean Diego Garcia's beaches of plastic waste. In just 1.5 hours, volunteers collected and removed 1,180lbs (535kg) of rubbish and 3,000 plastic bottles.

By the end of the expedition, nearly 1,000 individuals had pledged to stop using plastic water bottles – that's the equivalent of one in three choosing to use a refillable bottle instead of single-use plastic.

What's next?

Although the project team has returned home, the campaign is still ongoing in Diego Garcia.

Milly Fellows, the BIOT Administration environment officer, continues to promote the campaign in Diego Garcia with support from the project team in the UK.

In six months' time a follow up survey will investigate whether all those pledges have been maintained and if people are still using refillables instead of plastic bottles.

Our aim is that people's reduction in plastic use has become a permanent habit they will take with them wherever they are in the world.

We will be continuing to process information from the plastic bottles we collected during the expedition that will allow us to understand further where the plastic has travelled from, and how long it has been in the ocean before it beached in the Chagos Archipelago.

We will be sharing our findings with bottle producers and governments to ensure more action is taken to stop plastic pollution at source.

Finally, the team is working on a strategy for recycling plastic waste in Diego Garcia; this will be shared with the BIOT Administration in 2022.



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

For more information please visit chagos-trust.org

If you would like to contribute to Chagos News please email chagosnews@chagos-trust.org

