# GREAT BLUE OCEAN



## Achieving an Effective Blue Belt: Opportunities and Threats

**RECOMMENDATIONS FOR MARINE CONSERVATION IN THE UK OVERSEAS TERRITORIES** 

## **Executive Summary**

The waters of the United Kingdom and its 14 Overseas Territories stretch over millions of square kilometres, and together they provide a habitat for an incredible breadth of flora and fauna. However, as this report makes clear, these priceless environments are under threat on several fronts, including: overfishing; climate change; pollution; and invasive species.

Tackling these intertwined threats will require a concerted, holistic approach, but many of the necessary actions are within the power of the UK Government and the Territory Administrations. Here, we set out a series of recommendations for how marine conservation in the Territories can be developed to help mitigate these threats over the coming years.

### **Great Blue Ocean**

Since 2015, the Great Blue Ocean coalition (GBO, formerly Great British Oceans) – Blue Marine Foundation, Greenpeace-UK, Marine Conservation Society (MCS), The Pew Trusts, the Royal Society for the Protection of Birds (RSPB) and the Zoological Society of London (ZSL) - have worked alongside island communities, local governments, and British Governmental departments to establish and enhance marine conservation in the UK Overseas Territories.

### Contents

Click on items in contents list below to navigate directly to required page. To return to contents click on  $\leftarrow$  symbol (top right of each page)

Introduction			NO MT	4
Overfishing	445		y the	6
Climate change				8
Pollution				10
Coastal development		7		11
Invasive species	8.21			12
Stony coral tissue loss disease	aller		Sel Y	13
Lack of on-island capacity			1. 1990	14
Recommendations			2 March 10	15
References				18

## Introduction

Spread across every major ocean basin, the United Kingdom Overseas Territories are home to an extraordinary range of biodiversity. From spectacular coral reefs to hydrothermal vents, they encompass enormous whale sharks and tiny krill, and are the breeding grounds for one quarter of the world's penguins. Evolution on these isolated islands has proceeded undisturbed to the extent that they hold 94% of the UK's unique wildlife species. The Overseas Territories are environmental treasures, but their uniqueness makes them highly vulnerable.









The UK and its 14 Overseas Territories are stewards of the fifth largest marine estate in the world, covering over 6.8 million km<sup>2</sup>.<sup>1</sup> Some of the islands of the Territories are uninhabited, and some are thousands of miles from the nearest landmass, but despite being so remote, none of them are immune to a growing range of human-induced pressures. The threats are as varied as the habitats of the islands – a number of the Territories must contend with illegal, unreported and unregulated (IUU) fishing fleets; others are suffering from poorly planned coastal development; tonnes of plastic pollution is washing up on their beaches; and the catastrophic effects of the climate crisis are felt everywhere.

These threats are impacting the marine species of the Territories, sometimes devastatingly so. Hurricanes are increasing in severity as the world warms, and in 2017 they caused huge marine habitat damage in the Caribbean Territories, including drastic coral cover loss in the British Virgin Islands (BVI).<sup>2</sup> Introduced rodents in Tristan da Cunha (South Atlantic) have been recorded attacking and killing adult albatrosses as they nest,<sup>3</sup> while illegal fishing around the British Indian Ocean Territory / Chagos Archipelago has driven a decline in the population of globally endangered grey reef sharks *(Carcharhinus amblyrhynchos).*<sup>4</sup>

Fortunately, significant steps have been taken by Territory communities and governments towards protecting the marine environment over the last decade. Vast marine protected areas (MPAs) covering 1.1% of the world's ocean have been designated around several of the Territories, including over 2.8 million km<sup>2</sup> of full protection, the gold standard, from which all extractive activities are banned.

This remarkable achievement has been a collaborative effort between Territory communities and governments, NGO partners, such as the Great Bue Ocean (GBO) coalition, and the UK Government, which has provided crucial support through its Blue

Some of the islands of the Territories are uninhabited, and some are thousands of miles from the nearest landmass, but none of them are immune to a growing range of human-induced pressures



Belt Programme. Initiated in 2016 and delivered by the Foreign, Commonwealth and Development Office (FCDO), the Marine Management Organisation (MMO) and the Centre for Environment, Fisheries and Aquaculture Science (CEFAS), the Blue Belt Programme has contributed a wide range of services to the Territories, from scientific research on fish stocks, to enforcement assistance through satellite monitoring.

The Blue Belt Programme has so far been implemented in nine Territory jurisdictions and ranks as one of the UK's most ambitious environmental policies to date. The UK's record on overseas marine conservation has enabled the Government to take a position of global leadership in efforts to protect at least 30% of the world's ocean by 2030, a target adopted by the IUCN World Conservation Congress.<sup>5</sup> Funding for the Blue Belt in 2022-25 stands at £8 million per year, meaning the MPAs of the Territories are also some of the best value for money conservation in the world. However, the UK Government has yet to make permanent longterm funding available beyond 2025, and this risks creating a series of MPAs that could become largely ineffective.

The waters of the Territories are negatively impacted by numerous human influences. Here, we discuss four of the main and most urgent of those threats: overfishing; climate change; pollution; and invasive species. These threats are by no means acting in isolation and mitigating them needs to be a holistic process. We also look at one of the key barriers to conservation in these tiny communities: lack of on-island capacity. As this report shows, the job of marine conservation is a huge and on-going task and combating the threats facing the Territories in the coming decades will require continued ambition, innovation, collaboration and resources.

## Overfishing

Unsustainable fishing practices are having a devastating toll on the marine environment. Further, they are endangering the health and employment of the 10% of the global population that relies on the ocean for livelihoods and an accessible source of protein.<sup>6,7</sup> Overfishing can have many drivers, from legal quotas being set too high, to government subsidies incentivising overcapacity, to IUU fishing.

MPAs such as those in the UK's Blue Belt Programme place restrictions on where and how fishing takes place, and when combined with well-regulated and managed fisheries, they can help to ensure stocks are not overfished. The strongest forms of spatial marine protection are fully-protected MPAs, of which the Blue Belt now contains 2.8 million km<sup>2</sup>. These cover almost the entirety of the exclusive economic zones (EEZs) of the Chagos Archipelago, the Pitcairn Islands, Tristan da Cunha, and Ascension, as well as 23% of the EEZ around South Georgia and the South Sandwich Islands.

Although legal designation of an MPA can prevent overfishing by removing or decreasing legal fishing activity, the subsequent boundary line on a map is not enough to prevent IUU fishing. Compliance and enforcement problems have dogged the Chagos Archipelago MPA since its creation in 2010, with a significant record of Sri Lankan and south-west Indian vessels fishing illegally in the MPA for tuna, billfish and sharks with gillnets and longlines.<sup>8</sup> The Chagos Archipelago MPA is enforced by a patrol boat, but a more holistic approach that combines patrols with data from satellite monitoring, an assessment of the effectiveness of deterrence measures, and engaging in dialogue with Sri Lankan communities and authorities, may produce improved results.

IUU fishing by both domestic fleets and vessels from neighbouring countries is a major problem across the Caribbean Territories. Several Territories have experienced a significant rise in IUU fishing as a result of increased on-island unemployment during the COVID-19 pandemic,<sup>9</sup> which is aggravated by the difficulties of under-resourced departments surveilling and enforcing regulations over wide archipelagic states.



Of the Caribbean Territories, currently only Turks and Caicos and Anguilla have entered the Blue Belt Programme, and Bermuda has joined the related Blue Shield Programme, so there is an opportunity for the Blue Belt to make a marked contribution to resolving some of these problems. By supporting Caribbean Territories in their identified marine priorities of improving management and enforcement of MPAs, the status of biodiversity conservation, sustainable fisheries, local livelihoods, and their blue economies can be significantly improved.

Fishing activities are still permitted by local communities and residents within 12 nautical miles of the shorelines within the Ascension and Pitcairn Islands MPAs, and within 50 miles of the islands within the Tristan archipelago. While the communities on the islands are small, careful regulation is required to ensure that the standards of the MPAs are maintained. In line with best global practices, catch and release is advocated for commercial sport fishing, and recreational fishing should be managed to ensure inshore stocks of vulnerable species are not overfished.

Tristan da Cunha is home to millions of breeding seabirds, such as the endangered Atlantic yellownosed albatross (*Thalassarche chlororhynchos*) whose protection requires ongoing strict enforcement of bycatch measures and appropriate seasonal closures for Tristan's seamount-based longline fishery. Further offshore on the high seas, albatrosses from Tristan and South Georgia are highly vulnerable to drowning on the baited hooks of long-liners, necessitating wide adoption of good



MPAs such as those in the UK's Blue Belt Programme place restrictions on where and how fishing takes place and, when combined with well-regulated and managed fisheries, they can help to ensure stocks are not overfished

mitigation practices through engagement with the relevant regional fisheries management organisation.

The MPA around St Helena is a Category VI MPA according to the International Union for Conservation of Nature (IUCN) classification system, allowing for some *'low-level non-industrial use of natural resources compatible with nature conservation'*.<sup>10</sup> All fishing is one-by-one which has significantly less by-catch than other pelagic fishing types. The Saint Helena Government has a detailed research plan for the new fishery, and if delivered effectively it should provide information on sustainable levels of fishing for the seamounts.

Some 5,000 km to the south west of St Helena, South Georgia and the South Sandwich Islands have a significant quota to catch krill in their waters (279,000t and 93,000t respectively). South Georgia supports 25% of the world's gentoo penguin *(Aptenodytes forsteri)* population and recent research has shown that their foraging grounds overlap with the industrial krill fishery, and more could be done to mitigate this risk via dynamic management of the fishery or additional area closures.<sup>11</sup> Although the inaccessibility of the islands means that fishing licenses are not sought or issued around the South Sandwich Islands, the ongoing existence of the quota remains a risk.

Fully protected MPAs are one of the best methods the Overseas Territories have for conserving their waters, and the livelihoods of those who rely on them, both through tourism and the remaining small-scale fisheries that exist adjacent to the no-take areas. In the coming years, the Blue Belt Programme must support the improved management and enforcement of the existing MPAs, including consideration of inshore no-take areas, while also involving the Caribbean Territories to support existing MPA management, and expanding the MPA of the South Sandwich Islands.

## **Climate Change**

Multiple ocean and coastal ecosystems sequester and store globally significant amounts of carbon which can be released if these ecosystems are disturbed by anthropogenic activities. In particular, coastal ecosystems – mangroves, seagrasses and salt marshes – store more carbon per unit area than terrestrial forests, and benthic ocean sediment ecosystems are known to sequester and store carbon.<sup>12</sup>

Coastal ecosystems also offer protection from adverse weather conditions that are expected to increase in intensity and frequency through the 21st century.<sup>13</sup> It is clear that healthy marine ecosystems help to build resilience against the impacts of climate change, such as warming ocean temperatures. Within this context, every step must be taken to protect the ability of systems, habitats, and species to continue to function in order to provide benefits to both biodiversity and coastal communities.

The polar regions are warming faster than anywhere else, placing South Georgia and the South Sandwich Islands at the forefront of the impacts of climate change.<sup>14</sup> Antarctic krill underpin the Southern Ocean's food web, and increasing sea temperatures have caused their range to contract 400 km southwards since the 1970s.<sup>15</sup> This leaves species that rely on krill, such as the millions of macaroni penguins (Eudyptes chrysolophus) that live in South Georgia, vulnerable to the increased competition for resources that comes with shifting foraging grounds. The polar Territories are also home to a range of endemic shallow water invertebrates and fish, all of which are range-limited. South Georgia and the South Sandwich Islands are extremely remote, so it is extremely difficult for these species to expand their range in the face of changing oceanographic conditions.

Along with the polar regions, coral reefs are some of the habitats most vulnerable to climate change. When exposed to unusually warm water, corals expel the symbiotic algae living in their tissues and turn a bone-white colour, a so-called 'bleaching event'. If the heat is sustained, the lack of algae will deny the coral its main source of food and it will eventually perish. Bleached corals are also much more susceptible to disease than healthy corals. Rising sea surface temperatures have led to several bleaching events being recorded in the Chagos Archipelago since 1998. To date the reefs of the Chagos Archipelago have shown greater resilience in the face of these global pressures than many others in the region, resilience won by a combination of the Territory's no-take MPA status and remote location. However, the fact that water temperatures in the Chagos Archipelago are rising by as much as 0.4°C per decade indicates bleaching may become an annual event as early as the mid-2030s.<sup>16,17</sup> Annual bleaching reduces coral recovery time and presents a severe threat to the continued existence of the reefs they sustain. One path to improving their survivability is by restoring the link between reefs and islands that healthy seabird populations provide. Removal of invasive rats and restoration of hardwood forest, mangrove and open savannah habitats will increase suitable nesting habitat for seabirds on the islands and benefit the adjacent reefs through nutrient inputs.<sup>18</sup>





The Caribbean Territories are home to enormous coral reefs, including the 340 mile-long Turks and Caicos barrier reef, but rising temperatures are expected to cause more frequent and severe coral bleaching events across the Caribbean region.<sup>19</sup> The damage is exacerbated by extreme weather events such as hurricanes, which along with bleaching events are increasing in severity as the climate crisis deepens.<sup>20</sup> The Category 5 hurricanes Maria and Irma in 2017 were catastrophic to reefs in Anguilla, British Virgin Islands and the Turks and Caicos Islands, with the result that by 2018 some areas in British Virgin Islands exhibited significantly reduced coral cover.<sup>21</sup> The devastation caused by hurricanes is not limited to reef habitats, and the same storms reduced red mangrove (Rhizophora mangle) coverage in British Virgin Islands by 90%.<sup>22</sup>

Extreme weather, in conjunction with sea level rise, poses a severe threat to the health and livelihoods of Caribbean Territory communities. Hurricanes Irma and Maria, for example, caused significant infrastructural damage, with the costs of damage in Anguilla estimated at US\$55.6 million, and \$455 million in British Virgin Islands.<sup>23</sup> Cayman has the largest contiguous mangrove system in the insular Caribbean, which, along with reefs, provides excellent protection to coastal communities from storm surges while also reducing coastal erosion. The restoration and future protection of these habitats should be a priority for all marine conservation work in the region. The climate crisis is an existential threat, and the UK Government must do everything necessary to reduce carbon emissions and keep warming as close to 1.5°C as possible. As part of a combined biodiversity and climate strategy, MPAs provide a nature-based solution to climate change, particularly those that sufficiently curtail damaging human activities and allow for blue carbon sequestration, coastal habitat protection and enhanced ecosystem resilience. If properly protected from additional human stressors, the Territories will present an invaluable refuge to some of the world's most iconic species, as well as vital sinks of blue carbon, and as flagships for how small island states can adapt to and mitigate against climate change.

Healthy marine ecosystems help to build resilience against the impacts of climate change, such as warming ocean temperatures... The restoration and future protection of these habitats should be a priority for all marine conservation work in the region.

## **Pollution**

It is estimated that 11 million tonnes of plastic waste enters the ocean each year, with this figure potentially tripling by 2040 if business continues as usual.<sup>24</sup> That would be the equivalent of 50 kg of plastic for every metre of coastline in the world, yet the devastating effect it has on the marine environment can already be seen.

Henderson Island, a UNESCO World Heritage Site in the Pacific, is one of the most remote islands in the world, but beach surveys have found huge quantities of plastic washed up on the shore. A 2019 beach clean on Henderson's East Beach collected six tonnes of plastic from 2.25 km of beach in two weeks, including 1,200 fishing buoys.<sup>25</sup> Fishing is prohibited in the Pitcairn MPA, so lost fishing gear has travelled hundreds or thousands of kilometres to arrive at Henderson, and this so-called 'ghost gear' remains a threat to wildlife as it drifts on the waves, continuing to catch fish, marine mammals and seabirds.

While abandoned fishing gear entangles marine life, smaller plastic items pose a threat as they are mistaken for food and ingested. Leatherback turtles (Dermochelys coriacea), which nest on Anguillan and BVI beaches,<sup>26</sup> hunt using sight alone, and plastic shopping bags drifting on the ocean's currents look

remarkably similar to jellyfish, their main prey.<sup>27</sup> It is estimated that 52% of all sea turtles have ingested plastic,<sup>28</sup> but some populations are at a significantly higher risk: green turtles make 2,000 km migrations from coastal Brazil to nest on Ascension Island, and research has shown that 90% of the juvenile green turtle (Chelonia mydas) population in the southwest Atlantic has eaten plastic.29

Plastic waste is a global problem. Grey-headed albatrosses (Thalassarche chrysostoma) and giant petrels (Macronectes giganteus) in South Georgia are eating more and more food wrappers and plastic gloves, as levels of marine debris are increasing even in the unpopulated Antarctic.<sup>30</sup> When plastic washes ashore, it continues to pose significant danger to marine animals. A two-hour beach clean in the Chagos Archipelago in 2021 recorded over 1,178 bottles, and there is evidence that plastic waste



aggregations on beaches impede access to nesting sites of green and hawksbill turtles (*Eretmochelys imbricata*).<sup>31</sup>

The majority of the debris that washes up on the coastlines of the Territories is generated offisland by other landmasses and ships. The limited infrastructures of the islands are ill-equipped to deal with the many tonnes that arrive via ocean currents each year, making collection and subsequent recycling difficult. Island communities also generate their own waste, and even managing this poses challenges. Open landfills and incineration are commonplace across the Territories, with very limited recycling currently taking place.<sup>32</sup>

Their beautiful waters and extraordinary biodiversity mean that several of the Overseas Territories are very popular tourist destinations. South Georgia is regularly visited by cruise ships, which present a pollution risk. Heavy fuel oil, widely used in shipping and particularly dangerous, was banned from being carried near South Georgia and the South Sandwich Islands in 2020,<sup>33</sup> but a spill of any fuel or other ship waste in such a remote location would be a huge threat to marine life.

Tristan da Cunha's constrained ship access means it has very limited tourism, but it faces a different problem: it sits squarely on an international shipping lane between South America and Asia. A major oil spill occurred in 2011 when the bulk carrier MS Oliva ran aground, with the Tristanian community heroically rescuing and cleaning over 750 oil-covered endangered rockhopper penguins (Eudyptes chrysocome). The Tristan Government has subsequently explored legally binding means of pushing shipping traffic further offshore but has so far only been able to implement a voluntary system of Areas To Be Avoided (ATBA) in a 25 nautical mile circle around the islands.<sup>34</sup> This is not currently proving sufficient in reducing the risk of further incident: in 2020-21, 109 vessels still passed through the ATBA.<sup>35</sup>

The UK needs to work internationally to start taking serious action to limit the flow of plastic and other debris that is threatening to engulf the waters of the Overseas Territories. Projects should be supported that assist with reducing, managing, and finding solutions to recycling and repurposing waste onisland, as well as mitigating the waste washing up on their shores – and working to reduce the impact it has on wildlife.

### **Coastal development**

Tourism is a vital part of the Caribbean economy, but the building of hotels and marinas has generally taken place without conserving valuable marine habitats, and cruise ships and other tourist vessels are extremely common. On BVI, damage to corals and sea fans by anchors from private vessels and mega-yachts is a documented problem,<sup>36</sup> while coastal development has led to the destruction of over a quarter of the mangroves in Cayman since 1965.<sup>37</sup> Other marine habitats have suffered from construction and agricultural projects in other Caribbean Territories, such as Montserrat's last significant mangrove habitat, the Piper's Pond Wildlife Reserve, the majority of which was cleared as in 2012 to designate the bay as the new capital and administrative centre.<sup>38</sup>

There is also a lack of a systematic approach to waste water management in many Caribbean Territories, and poor treatment in hotels and farms can be detrimental to coastal waters. Coral reefs are very sensitive to nutrient levels, which are altered by sewage discharges and run off of fertilisers from land.<sup>39</sup>

Fortunately, community pressure has been successful in stopping some of these developments, such as the Cayman Cruise Port Terminal, which posed a threat to the adjacent reefs and MPAs.<sup>40</sup> A healthy marine environment is crucial to tourism in the Caribbean,<sup>41</sup> and Territory economies would be well supported by the development of comprehensive integrated coastal zone management plans. This would build resilience by protecting MPAs and important coastal habitats, with appropriate buffers and setbacks to prevent indirect impacts from planned developments.



## **Invasive species**

For many thousands of years, the movement of humans around the world has transported plant and animal species into environments that are different to those they evolved in. On occasions where they are no longer constrained by natural predators and climatic conditions, the invasive species are able to feed, grow and reproduce in ways that can have disastrous effects on their new habitat and the associated native species.

The seabird populations of remote islands such as those of the Territories are particularly susceptible to the introduction of small rodents such as mice and rats. South Georgia is home to enormous nesting populations of penguins, albatrosses and pintails, and Henderson is home to four endemic landbird species, as well as being the only known nesting site for the Henderson petrel (Pterodroma atrata). Polynesian sailors brought Pacific rats to Henderson Island 800 years ago, while mice and brown rats stowed away in the holds of whaling ships and arrived at South Georgia in the middle of the 18th century. The absence of rodent-catching predators and the fact that the birds nest on the ground has led to devastating results, as the chicks are practically defenseless to attacks by rats and mice. Fieldwork on Henderson has shown that 95% of petrel chicks are eaten within one week of hatching, and overall seabird numbers have dropped from 5 million breeding pairs before the rats arrived to just 40,000.42

The interconnectedness of ecological systems means that the impact of invasive rodent species can stretch far beyond the bird populations that they prey on. The black rat is found on some of the islands of the Chagos Archipelago after being introduced by humans in the late 18th and 19th centuries. In a study of six islands with rats and six islands without, it was found that seabird densities were 760 times higher where the rats were absent.<sup>43</sup> Subsequently, important herbivorous damselfish on reefs adjacent to the rat-free islands grew faster, and fish communities had greater overall biomass. This is because when the birds return to the islands from foraging out in the ocean, they deposit rich nutrients from the fish they feed on, increasing the productivity on the islands and within the waters around them. Restoring this nutrient link between open ocean, islands and reefs can have positive effects on reef resilience to bleaching.

Invasive rodents are such a threat to island seabird populations that extensive effort has been put into

Fieldwork on Henderson has shown that 95% of petrel chicks are eaten by rats and mice within one week of hatching

REAT BLUE OCEAN • 1

entirely eradicating their presence from some of the Overseas Territories. In 2018, South Georgia was declared rodent-free, the culmination of a 10-year project that cost £10 million, and South Georgia pipits (*Anthus antarcticus*) and Wilson's storm petrels (*Oceanites oceanicus*) were seen to be recovering soon after the rats and mice disappeared.<sup>44</sup> The situation on Gough Island in the Atlantic has become so dire that even adult Tristan albatrosses are being attacked and killed by mice while they nest. A mice eradication project was delivered by RSPB on Gough through 2021, despite the severe logistical challenges of the COVID-19 pandemic.<sup>45</sup>

Glacial retreat means that another eradication effort on South Georgia would be unlikely to be effective, so to prevent even tiny numbers of invasive species making their way back to the island, biosecurity checks are extremely stringent. Eradication programmes are so expensive that it is always more cost-effective to stop invasives at source, and the seabirds of the uninhabited South Sandwich Islands are so vulnerable to rodents that recreational tourists are prohibited from going ashore.<sup>46</sup>

Since the 1990s, the Caribbean has been struggling with a different type of invasive species: the Indo-

Pacific lionfish *(Pterois volitans)*.<sup>47</sup> Likely inadvertently introduced by amateur aquarium enthusiasts, a lack of any natural predators means they have spread across the entirety of the Gulf of Mexico, the Caribbean and up the US east coast. Now, over 200 Atlantic fish species have been identified as being eaten by lionfish.<sup>48</sup>

Their preferred hunting grounds are reefs, and with coral cover already under threat in the Caribbean Overseas Territories from bleaching, extreme weather and coastal development, the lionfish are putting significant additional pressure on fish populations.<sup>49,50</sup> Furthermore, lionfish target commercially valuable fish species such as snappers, jeopardising fisher livelihoods. Montserrat and other Territories have developed programmes to help train divers to spot and remove lionfish, in an effort to drive numbers down.<sup>51</sup>

While invasive species are a biological threat, there is no doubt that their cause is anthropogenic, and the danger to coastal habitats and communities in the Territories is severe. Efforts to remove invasive species should continue to be championed, and resources for the enforcement of biosecurity measures must be provided by the UK Government.

### Stony coral tissue loss disease

First identified in 2014, coral reefs in the Caribbean have been afflicted by a new biological scourge: stony coral tissue loss disease (SCTLD). The disease is lethal to corals, with some species displaying an 80% mortality rate, and the large, slow-growing, reef-building corals like brain corals, star corals and pillar corals are among the most susceptible.<sup>52</sup> SCTLD has spread rapidly to TCI, BVI and Cayman Islands, faster than would be expected by ocean currents. New research suggests that the disease has been transported in ship ballast water,<sup>53</sup> and conservationists and reef managers are scrambling to deal with the threat.

Citizen science diver networks have been mobilised to report and monitor the occurrences of SCTLD in the reefs before applying treatments to infected corals (including antibiotic ointments), while a Caribbean UKOT-facilitated working group is enabling member Territories to share information and experience on SCTLD monitoring and treatment efficacy across the Caribbean.<sup>54</sup> The timeliness and success of these projects are critical, since SCTLD and its impacts on coral colonies is now being regarded as an extinction level

event for certain coral species.

### Lack of on-island capacity

All the Territories participating in the Blue Belt Programme have highly limited capacity. St Helena is the largest Blue Belt Territory in terms of inhabitants, but has a total island population of just 4,500 people to carry out all the functions of a small country. Tristan has less than 300 people, whilst Pitcairn has less than 50. There is thus a chronic shortage of onisland capacity to deliver the collective ambition for the management of the Blue Belt MPAs to be world-leading.

CEFAS and MMO are providing technical support to the Blue Belt Territory Governments in recognition of this capacity shortage, but this is not currently appropriately balanced. Technical staff in the UK are developing monitoring plans and enforcement plans, yet there has been very limited direct funding provided to Territory Governments and civil society to increase their staff capacity to actually perform all this work. The likely result is that these technical plans remain largely undelivered, and the ambitions of achieving world-class active management are undermined.

The Blue Belt Programme must use its new threeyear settlement to immediately commence a new and more partnership-based approach, consulting Territory Governments on the staffing realistically required to deliver on all their new science and management plans, and then providing the appropriate core funding to enable direct Territory hiring. This approach should also be extended to those Caribbean UKOTs wishing to join the programme, whose under-funded and overstretched departments would greatly benefit from strategic hiring to fill technical gaps. Ultimately, the proportion of Blue Belt funded staff in the Territories and the UK should be at least equal, rather than outnumbered Territory staff struggling to service all the plans and requests coming in from the UK.

Finally, it is inequitable that certain Blue Belt Territories have benefited from a more direct grant approach, being provided with funds to spend themselves on their marine priorities, whilst others have simply been able to advise MMO and CEFAS how they would like money to be spent on their behalf. A much more significant proportion of Blue Belt funds should be provided to Territory Governments directly for spending on their immediate and locallyunderstood management needs.

Pitcairn has a total island population of less than 50 people which means there is a chronic shortage of capacity to deliver on the Blue Belt Programme

## Recommendations

It is clear that the Territories are facing an intimidating range of diverse threats; however, the achievements made in marine protection over the last decade – by Territory communities and governments, NGOs, and the UK Government – show the path forward. Ambition and funding need to be maintained from the UK Government via the Blue Belt Programme, or the gains that have been hard won will be lost. The spending does however need to be re-balanced so that Territory Governments and civil society are able to spend a higher proportion of the funding directly on their core priorities and needs.

Here, GBO sets out a series of recommendations for how marine conservation in the Territories can be developed to help mitigate these threats over the coming years.









### Recommendations for the UK Government's Blue Belt Programme

In the 2020/21 financial year, only around 20% of the £7m Blue Belt Programme budget was made available directly to the Territories to spend themselves on their marine conservation priorities. The vast majority (circa 80%) was instead spent by the UK Government and its agencies (MMO and CEFAS).

We recognise that establishing the Blue Belt Programme has required a significant amount of investment in baseline science and physical infrastructure. Now that the foundations of the programme have been established and longer term spending commitments secured, we believe it is important that capacity must now be built in the Territories themselves.

We therefore call for the Foreign, Commonwealth and Development Office (FCDO) to:

Only allocate Blue Belt spending on DEFRA agencies (CEFAS and MMO) where specialist expertise required is not available, or cannot be recruited for, on-island.

Increase direct grants to Territory Government Departments and civil society so that funds can be more cost-effectively and accurately applied to local priorities.

Provide further financial support for increased local staff capacity. Territory Government Departments are unable to deliver all the top-down work programmes being recommended by Blue Belt agencies, and increased numbers of long-term local staff are required to achieve the ambitions of the programme.

Enable Territory Governments and NGOs to allocate funding towards a wider range of local marine-linked priorities:

- Local waste management, including those focused on plastic waste, scalable solutions to beach debris, and to waste water management.
- Biosecurity / invasive species projects as part of the UK's contribution to the UN Decade of Ecosystem Restoration, including rodent eradications for protection of seabirds and the fight against Stony Coral Tissue Loss Disease.
- Infrastructure (e.g. vessels, vehicles) to improve capacity in managing Marine Protected Areas (MPAs) and wider marine management.

Provide long-term funding for centralised UK Government-led MPA satellite surveillance, monitoring and enforcement to counter Illegal, Unreported and Unregulated (IUU) fishing. Small Territory Governments will never be able to cost-effectively set up similar systems. Funding should include:

- Sharing transparent performance metrics on IUU enforcement activity across the Territories.
- Follow up on any infringements, ideally to prosecution.
- Funding appropriate observer coverage on commercial fisheries.

Enable the UK's membership, attendance and ambitious leadership at the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), whose members' longline fleets overlap with nearly the entire range of the Blue Belt Territories' albatross species.

Support proactive management of inshore recreational, sports and commercial fisheries, to ensure best practice, sustainable catch levels and support fisher livelihoods and sustainable blue economies.

Support Caribbean Territories in significantly improving management of existing inshore MPA networks, and to develop and implement their marine spatial plans.

Support Caribbean Territories to undertake a locallyled analysis of their blue carbon stocks (mangroves, seagrass and wetlands), the findings of which can be used to support new designations and local planning (e.g. decisions on coastal development).

Continue the open invitation to all non-participating Territories to join the Blue Belt Programme, with a commitment to community-led expansion of marine protections, effective management of existing MPAs and comprehensive integrated coastal zone management.

Now that the foundations of the Blue Belt Programme have been established and longer term spending commitments secured, capacity must be built in the Territories themselves

### G

### **Recommendations for Territory Governments**

#### **Marine Protected Areas:**

- The Government of South Georgia and the South Sandwich Islands should expand its no-take zone to cover the entirety of the South Sandwich Islands Exclusive Economic Zone (EEZ).
- The Governments of Ascension, Pitcairn, St Helena and Tristan da Cunha should work towards establishing some inshore no-take zones to serve as reference points and refuges for their inshore biodiversity.
- The Chagos Archipelago administration should hold all-stakeholder meetings to review progress against the objectives of the Conservation Management Plan.
- Governments of Territories that have yet to join the Blue Belt should continue national efforts to improve existing management of inshore marine protected areas, while designating new inshore and offshore sites where appropriate.

#### **Overfishing:**

Introduce proactive management of inshore commercial, recreational and sports fisheries to ensure sustainable catch levels and best practice.

#### Waste Management:

Initiate capital expenditure, systemic change and outreach projects with Blue Belt funding to strengthen waste management, reduction, recycling and reuse.

#### **Biosecurity / Invasive Species:**

Assign Blue Belt funding to build proactive biosecurity capacity, and control / eradicate priority invasive species impacting on marine wildlife (land and sea).

#### **Climate Change:**

All Blue Belt Territory Governments should seek to have the UNFCCC and Paris Agreement extended to them so that they come within the global framework for decarbonisation.

#### **Coastal Development:**

Establish coastal zone management plans that are resilient to increasing sea levels and maximise the use of natural environments to adapt to the impacts of climate change.

#### References

1 The British Overseas Territories are: Anguilla; Bermuda; British Antarctic Territory; British Indian Ocean Territory / Chagos Archipelago; British Virgin Islands; Cayman Islands; Falkland Islands; Gibraltar; Montserrat; Pitcairn, Henderson, Ducie and Oeno Islands; St Helena, Ascension and Tristan da Cunha; South Georgia and the South Sandwich Islands; Sovereign Base Areas of Akrotiri and Dhekelia (Cyprus); and the Turks & Caicos Islands.

**2** Soanes L, and Zaluski S (2020) – Improving small island resilience and self-sufficiency in habitat monitoring and management, Darwin Plus Final Report DPLUS073.

**3** RSPB. 2021. Island Restoration News: Gough Restoration Update. Website accessed 28/07/21.

**4** Collins C, Nuno A, Broderick A, Curnick DJ, de Vos A, Franklin T, Jacoby DMP, Mees C, Moir-Clark J, Pearce J and Letessier TB (2021) Understanding Persistent Non-compliance in a Remote, Large-Scale Marine Protected Area. Front. Mar. Sci. 8:650276. doi: 10.3389/ fmars.2021.650276.

**5** IUCN (2016). WCC-2016-Res-050-EN Increasing marine protected area coverage for effective marine biodiversity conservation https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC\_2016\_ RES\_050\_EN.pdf.

**6** Taylor, S.F.W., Roberts, M.J., Milligan, B. et al. Measurement and implications of marine food security in the Western Indian Ocean: an impending crisis?. Food Sec. 11, 1395–1415 (2019). https://doi. org/10.1007/s12571-019-00971-6.

**7** FAO. 2020. The State of World Fisheries and Aquaculture 2020. Sustainability in action. Rome. https://doi.org/10.4060/ca9229en.

8 Collins C, Nuno A, Broderick A, Curnick DJ, de Vos A, Franklin T, Jacoby DMP, Mees C, Moir-Clark J, Pearce J and Letessier TB (2021) Understanding Persistent Non-compliance in a Remote, Large-Scale Marine Protected Area. Front. Mar. Sci. 8:650276. doi: 10.3389/ fmars.2021.650276.

**9** MCS / CIEEM (2020) – Proceedings of the online webinar 'Marine Management Challenges for the Caribbean UK Overseas Territories in the Context of Covid-19', 15th June 2020.

**10** IUCN. Category VI: Protected area with sustainable use of natural resources. https://www.iucn.org/theme/protected-areas/about/protected-areas-categories/category-vi-protected-area-sustainable-use-natural-resources.

**11** Ratcliffe N et al (2021) Changes in prey fields increase the potential for spatial overlap between gentoo penguins and a krill fishery within a marine protected area. Divers Distrib. 27:552–563 https://doi.org/10.1111/ddi.13216.

12 IUCN, 2017. Issues Brief: Blue Carbon.

**13** Knutson, T. et al (2020). Tropical cyclones and climate change assessment: Part II: Projected response to anthropogenic warming. B. Am. Meteorol. Soc. 101, E303–E322.

**14** IPCC, 2019: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)].

**15** A.D. Rogers, B.A.V. Frinault, D.K.A. Barnes, N.L. Bindoff, R. Downie, H.W. Ducklow, A.S. Friedlaender, T. Hart, S.L. Hill, E.E. Hofmann, K. Linse, C.R. McMahon, E.J. Murphy, E.A. Pakhomov, G. Reygondeau, I.J. Staniland, D.A. Wolf-Gladrow, R.M. Wright Antarctic Futures: An Assessment of Climate-Driven Changes in Ecosystem Structure, Function, and Service Provisioning in the Southern Ocean Annual Review of Marine Science 2020 12:1, 87-120.

**16** Koldewey, H., Atchison-Balmond, N., Graham, N., Jones, R., Perry, C., Sheppard, C., Spalding, M., Turner, J., and Williams, G. (2021) Key climate change effects on the coastal and marine environment around the Indian Ocean UK Overseas Territories. MCCIP Science Review 2021, doi: 10.14465/2021.orc06.ind.

**17** van Hooidonk R, Maynard J, Grimsditch G, Williams GJ, Tamelander J, Gove J, Koldewey H, Ahmadia G, Tracey D, Hum K, Conklin E, Berumen M (2020) Projections of future coral bleaching conditions using IPCC CMIP6 models: climate policy implications, management applications, and Regional Seas summaries. United Nations Environment Programme, Nairobi, Kenya.

**18** Rat eradication restores nutrient subsidies from seabirds across terrestrial and marine ecosystems Cassandra E. Benkwitt, Rachel L. Gunn, Matthieu Le Corre, Peter Carr, Nicholas A.J. Graham Current Biology April 21, 2021 DOI:https://doi.org/10.1016/j.cub.2021.03.104.

**19** Marine Climate Change Impacts Partnership (2021) Changes in coral reefs and associated communities – Caribbean and Mid-Atlantic report card.

**20** James P. Kossin, Kenneth R. Knapp, Timothy L. Olander, Christopher S. Velden. 2020. Global increase in major tropical cyclone exceedance probability over the past four decades Proceedings of the National Academy of Sciences, 117 (22) 11975-11980; DOI: 10.1073/ pnas.1920849117.

**21** Soanes L, and Zaluski S (2020) – Improving small island resilience and self-sufficiency in habitat monitoring and management, Darwin Plus Final Report DPLUS073.

**22** The BVI Beacon. 2018. Study finds that mangroves will grow back. Website accessed 27/07/21.

**23** Murray, P.A., Nichols, K.E., Thomas, A., Lockhart, K., O'Garro, M., McCoy, C., and Austin, T. (2021) Key climate change effects on the coastal and marine environment around the Caribbean and Mid-Atlantic UK Overseas Territories. MCCIP Science Review 2021, 27pp.

**24** Pew Charitable Trusts. 2020. A Comprehensive Assessment of Pathways Towards Stopping Ocean Plastic Pollution.

**25** The Guardian. 2019. Henderson Island: the Pacific paradise groaning under 18 tonnes of plastic waste.

**26** Peter B. Richardson, Annette C. Broderick, Michael S. Coyne, Shannon Gore, James C. Gumbs, Arlington Pickering, Susan Ranger, Matthew J. Witt, Brendan J. Godley (2013). Leatherback turtle conservation in the Caribbean UK overseas territories: Act local, think global? Marine Policy, 38, https://doi.org/10.1016/j. marpol.2012.08.003.

**27** Schuyler, Q.A., Wilcox, C., Townsend, K. et al. (2014). Mistaken identity? Visual similarities of marine debris to natural prey items of sea turtles. BMC Ecol, 14, 14. https://doi.org/10.1186/1472-6785-14-14.

**28** Schuyler, Q.A., Wilcox, C., Townsend, K.A., Wedemeyer Strombel, K.R., Balazs, G. van, Sebille, E. and Hardesty, B.D. (2016). Risk analysis reveals global hotspots for marine debris ingestion by sea turtles. Glob Change Biol, 22: 567-576. https://doi.org/10.1111/gcb.13078.

**29** Carman V.G., Acha E.M., Maxwell S.M., Albareda D., Campagna C. and Mianzan H. (2014). Young green turtles, Chelonia mydas, exposed to plastic in a frontal area of the SW Atlantic. Marine Pollution Bulletin, Volume 78, Issues 1–2, Pages 56-62, ISSN 0025-326X. https://doi. org/10.1016/j.marpolbul.2013.11.012.

**30** Richard A. Phillips, Claire M. Waluda (2020). Albatrosses and petrels at South Georgia as sentinels of marine debris input from vessels in the southwest Atlantic Ocean. Environment International, 136. https://doi.org/10.1016/j.envint.2019.105443.

**31** ZSL (2020) Darwin Plus: Overseas Territories Environment and Climate Fund Annual Report – Reducing the impacts of plastic on the BIOT natural environment, Annual Report 1.

32 Fiona Llewelyn, personal communication.

**33** Government of South Georgia. 2020. Heavy Fuel Oil (Prohibition of Carriage and Use). Website accessed on 20/07/21.

**34** Tristan da Cunha Government. 2020. ATBA: Areas To Be Avoided in Tristan Waters. Website accessed 20/07/21.

**35** Karen Leech, 2021. How technology is assisting Tristan da Cunha to monitor compliance in its Areas to Be Avoided. Blue Belt Programme.

**36** Pascoe N.W., Smith-Abbott J., Gore S. (2013) Marine Protected Areas and Management in the British Virgin Islands. In: Sheppard C. (eds) Coral Reefs of the United Kingdom Overseas Territories. Coral Reefs of the World, vol 4. Springer, Dordrecht. https://doi. org/10.1007/978-94-007-5965-7\_4.

**37** Katrina Jurn, Joseph Lavallee, Lawrence King (2018). Environmental destruction in the new economy: Offshore finance and mangrove forest clearance in Grand Cayman. Geoforum, 97, https://doi.org/10.1016/j.geoforum.2018.10.019.

**38** Gore S, Wynne SP, Myers A. UK Overseas Territories in the Northeast Caribbean: Anguilla, British Virgin Islands, Montserrat. In: Sheppard C, ed. World Seas: An Environmental Evaluation. Volume 1: Europe, the Americas and West Africa. 2nd ed. Academic Press; 2019:549-565. doi:10.1016/b978-0-12-805068-2.00027-9.

**39** Frederieke J. Kroon, Britta Schaffelke, Rebecca Bartley (2014) Informing policy to protect coastal coral reefs: Insight from a global review of reducing agricultural pollution to coastal ecosystems Marine Pollution Bulletin, Volume 85, Issue 1, Pages 33-41, https://doi. org/10.1016/j.marpolbul.2014.06.003.

**40** Cayman Compass. 2020. Premier: Cruise referendum no longer on government's agenda. Website accessed 20/7/21.

**41** A Guzmán et al (2017) The Economics of Enhancing the Marine Protected Areas of the Cayman Islands. Wolfs Company, for the Department of Environment of the Cayman Islands Government.

**42** RSPB. 2015. Henderson Island restoration programme. Website accessed 21/07/21.

**43** Graham, N.A.J., Wilson, S.K., Carr, P. et al. Seabirds enhance coral reef productivity and functioning in the absence of invasive rats. Nature 559, 250–253 (2018). https://doi.org/10.1038/s41586-018-0202-3.

**44** Martin, A., & Richardson, M. (2019). Rodent eradication scaled up: Clearing rats and mice from South Georgia. Oryx, 53(1), 27-35. doi:10.1017/S003060531700028X.

**45** RSPB. 2021. Island Restoration News: Gough Restoration Update. Website accessed 28/07/21.

**46** Government of South Georgia and the South Sandwich Islands. 2021. Protect Sustain Inspire. Website accessed 21/07/21.

**47** Reef Resilience Network (2014). Lionfish invasion in the Caribbean – Mitigating the Threats of Invasive Alien Species in the Insular Caribbean. Accessed 3 November 2021.

**48** Acero P. A., Bustos-Montes D., Pabón Quintero P., Polo-Silva C.J., Muñoz A.S. (2019) Feeding Habits of Pterois volitans: A Real Threat to Caribbean Coral Reef Biodiversity. In: Makowski C., Finkl C. (eds) Impacts of Invasive Species on Coastal Environments. Coastal Research Library, vol 29. Springer, Cham. https://doi.org/10.1007/978-3-319-91382-7\_8.

**49** Linardich, C., Brookson, C. B., & Green, S. J. (2021). Trait-based vulnerability reveals hotspots of potential impact for a global marine invader. Global Change Biology, 00, 1–17. https://doi.org/10.1111/gcb.15732.

**50** Palmer, Grayce, et al. "Invasive Lionfish Pterois Volitans Reduce the Density but Not the Genetic Diversity of a Native Reef Fish." Marine Ecology Progress Series, vol. 558, 2016, pp. 223–234. JSTOR, www.jstor. org/stable/2489743. Accessed 22 July 2021.

**51** Darwin Initiative. 2021. Reducing the Impact of Invasive Lionfish on the Marine Ecosystem. Website accessed 24/08/21.

**52** UKOTCF. 2020. Stony Coral Tissue Loss Disease – Special Issue. UKOTCF Wider Caribbean Working Group (WCWG) eBulletin.

53 Dahlgren Craig, Pizarro Valeria, Sherman Krista, Greene William, Oliver Joseph (2021). Spatial and Temporal Patterns of Stony Coral Tissue Loss Disease Outbreaks in The Bahamas. Frontiers in Marine Science , 8, 767, https://www.frontiersin.org/article/10.3389/ fmars.2021.682114, 10.3389/fmars.2021.682114.

**54** Darwin Initiative. 2021. Collaborative approach to managing coral disease in UK Overseas Territories. Website accessed 21/07/21.

#### Photo credits

Front cover (main picture): © Shutterstock • Front cover (small, L to R): © Johnny Briggs: Pew Bertarelli Ocean Legacy; © Johnny Briggs: Pew Bertarelli Ocean Legacy; © Peter Richardson; © www.ukotcf.org.uk/british-indian-ocean-territory/ • Page 2: © David M. Stone • Page 3: © Lucie Machin / Blue Marine Foundation • Page 4 (main picture): © Johnny Briggs: Pew Bertarelli Ocean Legacy • Page 4 (small, L to R): © Peter Richardson; © Danny Copeland; © Johnny Briggs: Pew Bertarelli Ocean Legacy; © David M. Stone • Page 5: © Johnny Briggs: Pew Bertarelli Ocean Legacy • Page 6 (heading): © Shutterstock • Page 6 (bottom): © Pressmedia • Page 7: © Johnny Briggs: Pew Bertarelli Ocean Legacy • Page 8 (heading): © Shutterstock • Page 8 (bottom): © Shutterstock • Page 9: © Shutterstock • Page 10 (heading): © Shutterstock • Page 10 (bottom): © Johnny Briggs: Pew Bertarelli Ocean Legacy • Page 11: © Shutterstock • Page 12 (heading): © Shutterstock

• Page 12 (bottom): © www.nbcnews.com/id/wbna8739804, Ross Wanless • Page 13: © Shutterstock • Page 14: © Johnny Briggs: Pew Bertarelli Ocean Legacy • Page 15 (main picture): Wikipedia Commons, Brian Gratwicke • Page 15 (small, L to R): ©Andy Schofield; © Johnny Briggs: Pew Bertarelli Ocean Legacy; © David M. Stone; © Lucie Machin / Blue Marine Foundation • Page 17: © Johnny Briggs: Pew Bertarelli Ocean Legacy

