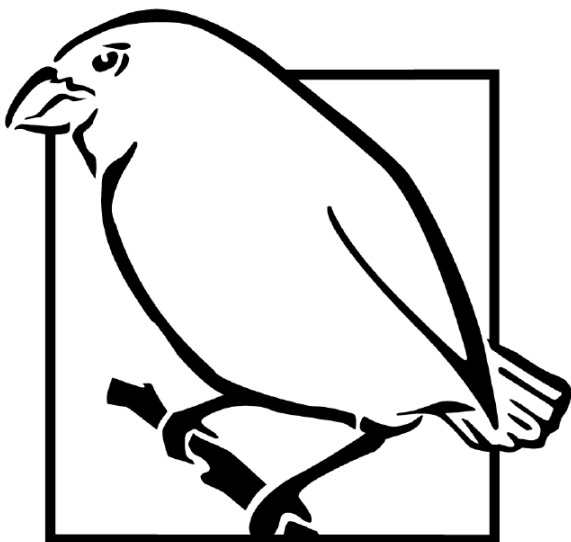


Newsletter

June 2020



Mating pair of Darwin's nudibranchs (*Thecacera darwini*), Credit: SAERI



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The Darwin Initiative supports developing countries to conserve biodiversity and reduce poverty. Funded by the UK Government, the Darwin Initiative provides grants for projects working in developing countries and UK Overseas Territories (OTs).

Projects support:

- the Convention on Biological Diversity (CBD)
- the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- the Nagoya Protocol on Access and Benefit-Sharing (ABS)
- the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)
- the Ramsar Convention on Wetlands
- the Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- the Convention on Climate Change (CCC)



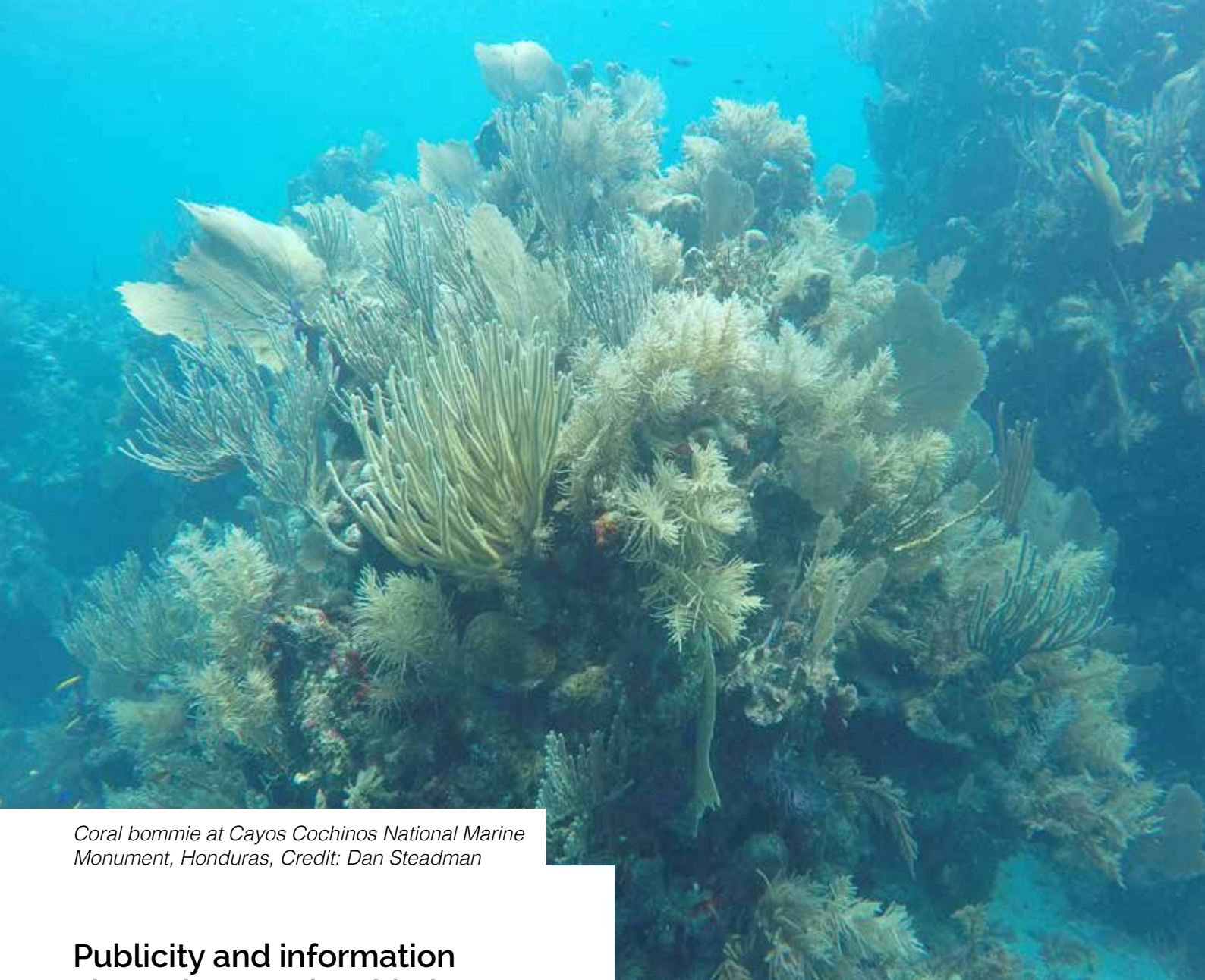
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Coney Cove haul net, Credit: Joanna Pitt

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Coral bommie at Cayos Cochinos National Marine Monument, Honduras, Credit: Dan Steadman

Publicity and information about the Darwin Initiative

For more information on the Darwin Initiative please visit [gov.uk/government/groups/the-darwin-initiative](https://www.gov.uk/government/groups/the-darwin-initiative)

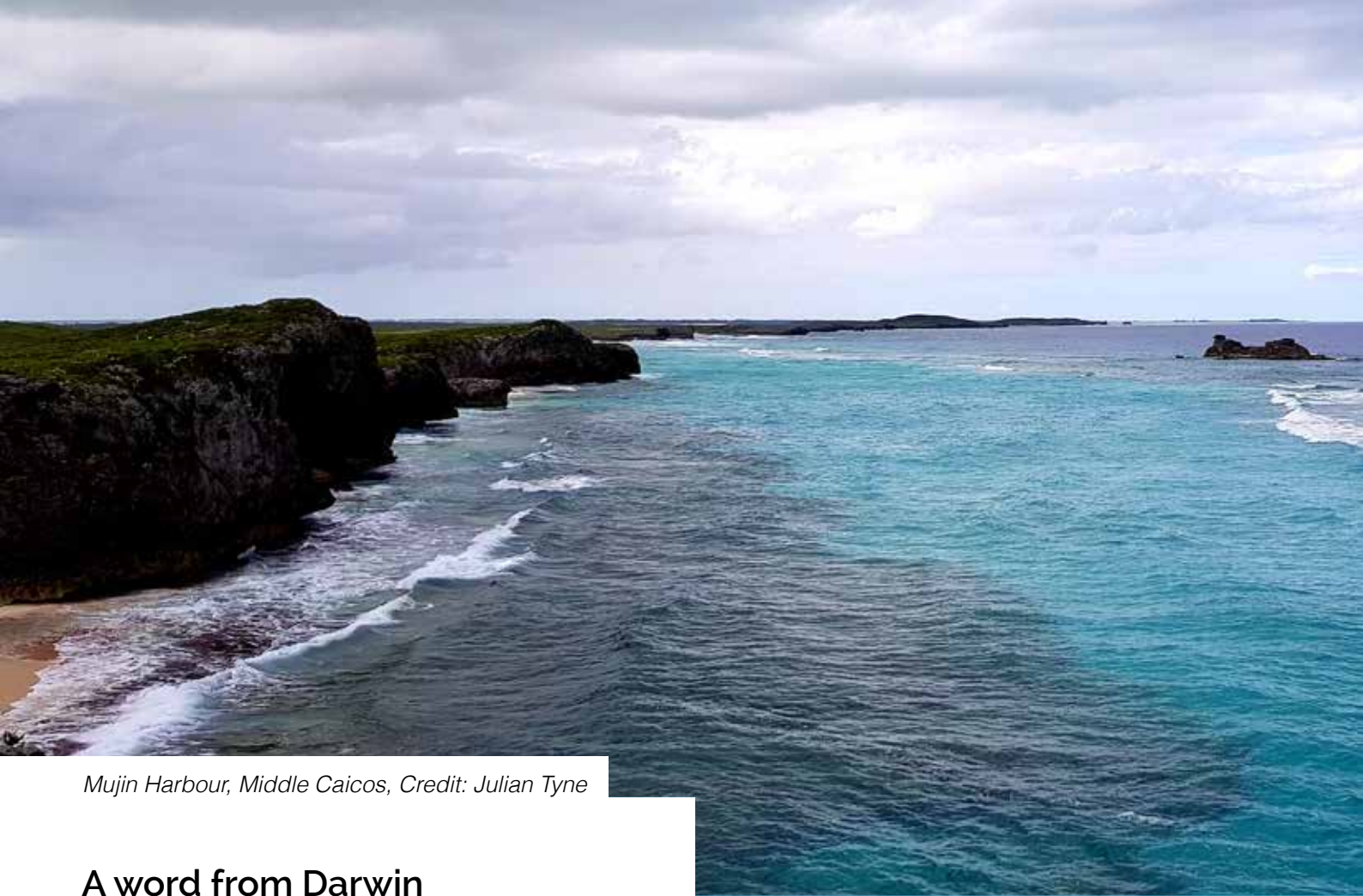
For further details about current and completed Darwin Initiative projects, including their final application forms, please visit darwininitiative.org.uk

We also have a blog, that includes news and thoughts on issues being tackled by the Darwin Initiative – both at the project and programme level. You can read it here darwininitiativeuk.wordpress.com

We're also keen to share other Darwin project blogs. If you have a blog you'd like to share on our website, please get in touch at darwin-newsletter@ltsi.co.uk

Publicity and referencing Darwin Initiative

We kindly remind project leaders that if they are publicising their work then it is important that they make every effort to mention Darwin Initiative funding. This is important as it helps us to ensure the Darwin Initiative retains a high profile and secures continued Government funding.



Mujin Harbour, Middle Caicos, Credit: Julian Tyne

A word from Darwin

Our oceans cover 70% of the Earth's surface and are home to some of the most diverse ecosystems on the planet and a multitude of species, from those that reside in the nearshore coral reefs and seagrass meadows to those that dwell in the depths of the twilight zone. The oceans provide crucial natural resources to a vast majority of the global population who rely on them for their nutritional needs and livelihoods. However, threats to the health and wellbeing of marine ecosystems have significantly increased in recent years due to the rise of unregulated and often unsustainable fishing practices coupled with the rapidly changing and warming climate.

In this edition of the newsletter we feature projects working in some of the most ecologically diverse marine environments on Earth, from the South Atlantic to the Caribbean Sea. These projects are focused on safeguarding our seas for future generations through raising awareness of the importance of the ecosystem services provided by the marine environment, through the establishment of marine protected areas and mitigating against threats such as invasive species and pollution.

The Covid-19 pandemic has significantly impacted populations and ecosystems across the globe. The Darwin Initiative is proud to support projects that are working to reduce the risks associated with the virus.

By tackling poverty, promoting sustainable livelihoods, working to ensure natural habitats remain intact and healthy, and reducing encroachment, many projects are reducing or managing the risks of emerging zoonotic infections. We recognise this is a difficult time for all of our projects and the communities they work with. In the next edition of the Darwin newsletter we encourage projects to share how they have been tackling the pressures of Covid-19 in their target countries, and share how they have been able to adapt to the unforeseen Covid-19 circumstances.

We would like to take this opportunity to commend those projects that have been successful under the Round 26 of the Darwin Initiative and the Round 8 of Darwin Plus. We would like to extend a warm welcome and congratulations to those 17 Darwin Main and 21 Darwin Plus projects that were successful. We look forward to working together, and hearing from you in future editions of the newsletter. More information on the new projects can be found [here](#).

If you would like the opportunity to assess future applications and help shape the future of Darwin, we are recruiting for new members of the Darwin Expert Committee. Further information on how to apply can be found [here](#).

General project updates



*Pastoralist village in Tana Delta,
Credit: Dominic Mumbu*



Taking turns to wash hands after visiting the Matumbi beach, Credit: RIPPLE Africa

How is community fish conservation in Malawi helping in the fight against Covid-19?

Ripple Africa's Fish for Tomorrow project operates along 300 km of Lake Malawi's shoreline, with almost 2,500 empowered community volunteers now monitoring fishing practices, protecting breeding areas, ensuring that illegal fishing gear is removed from the lake and educating community members about fish conservation. The Darwin Initiative has helped fund this project in the northern part of Nkhosha District, however the project has expanded its efforts and it is also operating in Nkhosha Bay District and more recently in the Salima District. As well as protecting endangered freshwater fish and increasing revenue from fishing, the project is now also playing a vital role in Malawi's efforts to reduce the spread of coronavirus.

There is concern that Malawi will be hit hard by the virus - despite a youthful population, many people have underlying existing conditions such as HIV, TB, diabetes and malaria, making them extremely vulnerable. With only 25 ventilators for more than 19 million people, treatment options will be limited.

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So far there are no lockdown restrictions as a High Court Injunction has been in place since April following protests. There is little assistance for those who will lose their income and many fear starvation.

Information on frequent handwashing and social distancing in line with WHO guidance is being given out via television and radio but many of the people living in the remote rural areas of the country have no access to TV and only limited numbers have radios. There is therefore concern that these people will be less likely to know how to protect themselves from the virus.



Fisher at Ngala washing his hands, Credit: RIPPLE Africa

Ripple Africa is now working with District Councils in Nkhata Bay and Nkhotakota Districts to ensure that as many people as possible have access to water for handwashing – broken boreholes are being repaired and buckets and soap have been provided to fish landing beaches, medical centres and markets. One of the main challenges we faced was getting the right information to isolated communities along the lakeshore.


“ Simple, visual and locally relevant educational materials in local languages on social distancing and handwashing have been produced and FCC members are sharing this information with others in small groups, observing social distancing at all times





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However, an obvious solution was to use the volunteer Fish Conservation Committee (FCC) members as they already have experience of community education and live alongside those target communities.

Ripple Africa’s Fish for Tomorrow project has a considerably larger outreach network than the District Health Departments in the three districts where the project is operating, ensuring that the messages will be able to reach those in need. Simple, visual and locally relevant educational materials in local languages on social distancing and handwashing have been produced and FCC members are sharing this information with others in small groups, observing social distancing at all times. This is ensuring that the most vulnerable members of Malawi’s population understand how the virus is transmitted, how to protect themselves and their families and what to do if they have symptoms.

Coronavirus - Covid-19 - Simple Guide
SAVE LIVES - How to try and stay well and avoid spreading the virus



1) Wash hands frequently with soap and water for 20 seconds	2) Cover mouth with elbow when coughing or sneezing	3) Avoid touching your eyes, nose and mouth with unwashed hands	4) 2 metres apart keep two metres distance from each other
			
5) Stay Home Where possible stay home	Symptoms: Fever - Headache - Dry cough and shortness of breath - Muscle pain		
6) Avoid meetings and being together with other people	If you think you have the Virus keep away from other people for two weeks Most people will only have mild symptoms		

Covid-19 infographic, Credit: RIPPLE Africa

In Kasitu, committee members have taken on the responsibility not only to make sure that people stick to the new rules in place at the beach landing site but also to make sure that the buckets are always topped up with clean water – quite a challenge with so many fishers using the beach and with a long walk to the nearest borehole.

Chair of Ngala FCC, Mr Kayola, said that despite resistance at first, people now understand the new measures and they are abiding by them - people visiting the beach landing site are now all washing their hands. Chief Maluma is full of praise for his local FCC's efforts. "Liwaldzi is one of the most congested beach landing sites but people are really observing social distance now and also, they are washing hands regularly."

In Matumbi, FCC members report any new arrivals at the beach to the Health Group so that they can be assessed and monitored. Chande FCC members are also working directly with other community groups to make sure that people stick to the measures that have been put in place.

The beach is a passenger ferry terminal as well as a fish landing beach and a screening house has been built for all ferry passengers who are checked for Covid-19 symptoms and given information on social distancing and handwashing. The chair of the FCC said: "observing social distance and washing hands regularly has become the order of the day. This is a sign that people around the fishing community have really understood the message of combating Covid-19 pandemic."

These activities are being replicated at all 246 beach landing sites along the northern shores of Lake Malawi. Empowering communities to protect fish is paying dividends in other ways as well - protecting the people that rely on them is equally as important in these difficult times!

For more information on project 25-009, please click [here](#).



Chief Maluma from Liwaldzi washing his hands, Credit: RIPPLE Africa



Fish farmer feeding fish at site in Ndai Village, Credit: Moses Nyawasa

Fish farming initiative easing pressure on wild fish stocks in Lake Victoria

Lake Victoria is located in East Africa and shared by Kenya, Uganda and Tanzania. The lake acts as the main livelihood source for the fisher folk living around its basin. Over the last few decades, there has been a significant decline in wild fish stocks due to a number of threats including overfishing, invasive species, changing climatic conditions and pollution. Our project is supporting fisher folk in fish farming as an alternative livelihood source to boost resources, resulting in a reduction in pressure on the lake's wild fish.

Through this project over 150 fish farmer households made up of 750 people are now rearing fish in 17 ponds stocked with tilapia (*Oreochromis niloticus*) and catfish (*Clarias gariepinus*). The County Fisheries Departments in Siaya and Busia provide technical support to fish farmers through trainings and extension services. The farmers are also trained through mentorship and on-site demonstrations on best practices in fish farming by experienced Trainer of Trainers (ToT) farmers. Over the last 12 months, fish farmers benefitted from the harvest of 3.1 tons of fish worth Ksh. 933,000 (£7,068).

The fish farmers have organised themselves into separate groups, with the main umbrella group being made up of twelve different autonomous community-based groups. The umbrella group - Yala Fish Farmers Community Based Organisation - supports farmers in fish production through ToT mentorship.

Within the umbrella group, fish farmers have established common interest groups for production, bulking and marketing. These interest groups will be formalised into producer and marketing cooperatives in the second year of the project.

In addition to the rearing of fish, the project is also supporting fish farmers to establish feed production units on the shores of Lake Victoria, in Usenge. The production unit will not only provide fish farmers with quality fish feeds but also help them to source quality fingerlings from certified hatchery suppliers through a loaning scheme. Overall, the fish farming initiative provides households with an affordable source of high value protein that is vital for nutrition and health. It generates an alternative source of income, creates employment opportunities within the fish value chain and protects the precious natural resources of Lake Victoria from further threat.

The project has gained the support from two county governments, national government agencies and 62 villages on the establishment of a 8,404 ha Indigenous and Community Conservation Area (ICCA) with a management plan. Within this conservation area, production will take place, using sustainable methods. Biodiversity will be conserved. Communities and county governments will be supported to find sustainable financing for ICCA management and operations.

For more information on project 26-003, please click [here](#).

Safeguarding our Seas



Caribbean reef shark cruising, Credit: Rupert Ormond



Wandering albatross in South Georgia, Credit: Alex Dodds

Bycatch risk of wandering albatrosses from radar detection: fieldwork a success so far

There is increased global awareness that our oceans are under threat. Fishing and other human activities endanger a number of marine megafauna species such as seabirds, marine turtles, marine mammals, sharks and rays. Fisheries affect these top predators by directly competing for the same resources, deliberately targeting them for food, and through incidental capture (bycatch). Additionally, the behavioural and life-history traits of many marine megafauna populations make them particularly vulnerable. This is particularly true for these long-lived and slow-breeding species, where the smallest increases in mortality can result in significant population declines.

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The population has declined catastrophically since the 1960s, with longline fisheries playing a major threat

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Unfortunately, this grim scenario applies to the wandering albatrosses breeding at South Georgia. The population has declined catastrophically since the 1960s, with longline fisheries playing a major threat. Despite their high levels of protection within the UK Overseas Territory, both on land and in local waters, many of these albatrosses fall victim to bycatch from longline fishing in their broader foraging range. Scavenging seabirds, lured by the prospect of an easy meal, are attracted towards fishing vessels by the bait and fish discards. Seabird bycatch in longline fisheries mainly occurs when they attack baited hooks, and become hooked and drowned as the line sinks.

The good news is that we already know what needs to be done to turn things around. If appropriate measures such as seasonal closures, heavier line-weighting, night setting, and the deployment of bird-scaring lines are implemented, bycatch can be reduced significantly in the future. In order for these mitigation measures to be effective, they need to be introduced in combination with close monitoring of compliance. Gaining a greater understanding of where, when and which fleets the wandering albatrosses most likely to interact will help



Wandering albatross parent protecting the nest, Credit: Alex Dodds

“
The overall objective of our project is to link habitat preference, at-sea activity patterns and detections from novel bird-borne radars to better understand the interactions of tracked wandering albatrosses with legal and illegal, unreported and unregulated fishing vessels

stakeholders and policy-makers to allocate the limited resources available to improve regulations. These efforts, coupled with targeting observer programmes, will enable bycatch rates and vessels' compliance to be monitored.

The overall objective of our project is to link habitat preference, at-sea activity patterns and detections from novel bird-borne radars to better understand the interactions of tracked wandering albatrosses with legal and illegal, unreported and unregulated (IUU) fishing vessels. Thanks to Darwin Plus funding we have now partially completed our data collection at Bird Island, South Georgia. In November 2019, we deployed state-of-the-art loggers and transmitters on wandering albatrosses of different ages and sexes to quantify interactions of tracked birds with fishing vessels in the South Atlantic.

Using our loggers we are able to monitor fisheries in remote areas in near-real time, with one of the biggest game changers being their capacity to identify IUU fishing.

Much like other tracking devices, they are attached to the animal's back feathers, and record GPS location during foraging trips. However, the devices we use also have something novel - they regularly scan the surroundings to detect the presence of a vessel radar. All ships at sea use radar for safety and operational reasons, which can be used to determine their proximity to our tracked birds. With these results, we hope to greatly improve our knowledge of where and when wandering albatrosses and other seabirds are at particular risk of bycatch.

Next year, after completing data collection and analysis, we will gather relevant stakeholders including representatives of fisheries management bodies and NGOs to discuss how the results of the project can feed into better targeting of bycatch mitigation, and monitoring of compliance and bycatch rates in the southwest Atlantic and elsewhere. We hope that our results will contribute to making all of the waters used by these ocean wanderers as safe as those around South Georgia.

For more information on project DPLUS092, please click [here](#).



Baitball in the middle of Whalebone Bay, Bermuda, Credit: Joanna Pitt

Characterising Bermuda's baitfish populations to improve management and fishery sustainability – a multidisciplinary collaboration

Small coastal pelagic fishes play an important role in marine food webs, providing food for larger fishes, as well as seabirds and shore birds. They also play an important economic role as they are targeted by commercial and recreational fishers for use as bait. It is increasingly being recognised that these species need to be managed in a way that accounts for all of these functions.

In Bermuda, there are six species of baitfishes, which can often be found in multi-species schools. The Reef silverside, Dwarf herring and endemic Bermuda anchovy attain adult sizes of <10 cm, while the Redear herring, Atlantic thread herring and Round sardinella reach sizes >20 cm. Currently, management measures restrict the size and type of nets that can be used, and in four inshore bays net fishing of any kind is prohibited.

However, despite these measures a number of stakeholders expressed concern over the population status of some of these species. Critical knowledge gaps were identified in the existing management plan, noting that a greater understanding of the abundance, distribution, local life history characteristics and population genetics of these species could create opportunities for a wider range of management measures to be applied.

Our team observed and sampled baitfishes at six bays, including two bays that are closed to net fishing, in order to monitor seasonal changes in abundance, track the reproductive cycles of the various species, and evaluate the contribution of protected bays to the maintenance of local populations. This information influenced the timing of the broadscale survey around Bermuda.

“Critical knowledge gaps were identified in the existing management plan, noting that a greater understanding of the abundance, distribution, local life history characteristics and population genetics of these species could create opportunities for a wider range of management measures to be applied”

The six bait species exhibited different annual cycles, and while baitfish presence and species richness were relatively consistent at some locations, including one protected bay, they were highly variable at others. Overall abundance and species diversity were greatest in the autumn months, and baitfish were only present at the other protected bay at this time, but the abundance of some species peaked earlier in the year.



Main species found in baitballs, Credit: Joanna Pitt

The autumn broadscale survey found that the three smaller baitfish species were relatively abundant and widely distributed, with some preferences for particular types of inshore habitats. However, while the Redear herring was relatively common, the other two large species were rarely found. Further, our observations showed that multi-species shoaling behaviour puts juveniles of the larger species at risk of capture when the smaller species they are shoaling with are targeted by fishers. The larger baitfish species appear to reproduce primarily in the spring and summer, but the three smaller species produce small quantities of eggs in each spawning cycle and reproduce throughout most of the year to compensate. These differences have implications for the effectiveness of seasonal closures as a potential management measure.

Understanding that successful management of marine resources requires input from resource users, commercial and recreational fishers were interviewed to examine bait fishing and bait use practices, as well as perceptions regarding the status of baitfish populations. In addition, to corroborating the field survey results that indicated depletion of the Atlantic thread herring and Round sardinella, these interviews provided several important insights.

Fishers highlighted that bait fishing is largely opportunistic and timed to precede primary fishing activities, which peak during the summer months, so management measures that would reduce flexibility were viewed unfavourably.

Although commercial fishers were familiar with the bays that are closed to net fishing, awareness was poor amongst recreational fishers. This, along with some poaching incidents observed during monitoring, indicates a need for increased outreach.

After reviewing the population genetics, it was clear that there is a general lack of connectivity with populations elsewhere in the region. This means that management should be precautionary, as replenishment from other populations is highly unlikely.

Based on all this information, a new management plan has been developed for baitfish species in Bermuda. As the plan enters the stakeholder consultation process, the multi-pronged approach of this project should mean that the proposed changes are both practical and largely acceptable to fishers.

Importantly, data on the distribution and habitat preferences of baitfish species will be included in the marine spatial planning process currently being undertaken, informing the selection of areas that will form a network of marine reserves and contribute to the overall conservation of key inshore habitats. We anticipate these management actions will combine to improve the sustainability of baitfish fisheries and ensure that these species continue to fulfil their key ecological role.

For more information on project DPLUS064, please click [here](#).



Local volunteers assisting on boat survey, Credit: Caroline Weir

Establishing a key biodiversity area for endangered sei whales in the Falkland Islands

The Falkland Islands are a remote archipelago situated approximately 500 km from the southern tip of South America. With a sub-Antarctic climate and surrounded by productive shelf waters of the South Atlantic, the Falklands support a wealth of marine biodiversity. Top predators include internationally significant breeding colonies of several seabird species including black-browed albatross, southern giant petrels and penguins, large populations of South American sea lions and fur seals, and 26 documented species of cetacean.

Human marine activities in the Falklands, while relatively low compared to other geographic regions, include an offshore fishing industry primarily targeting squid, tourism (cruise and expedition vessels), shipping, and oil and gas exploration. Many of these sectors are expanding, with the recent approval of a new port facility and plans for offshore oil field development. Additionally, the introduction of coastal salmon farming is under consideration.

In recent years, awareness of the need to manage and protect marine biodiversity in the Falklands has increased, with ongoing consultation around Marine Spatial Planning (MSP) and Marine Protected Areas (MPAs).

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In 2016 the European South Atlantic overseas territories were assessed as part of a BEST initiative to ascertain whether any areas may be suitable as Key Biodiversity Areas (KBAs). That process highlighted the lack of systematic data on whale populations in the Falkland Islands, and recommended the onset of targeted field research.

Since 2017, Falklands Conservation has conducted systematic surveys in Falklands' coastal waters to collect data on the distribution, abundance and ecology of baleen whales (whales with plates of keratin bristles that are used for filter feeding) to inform the KBA process. During 2019 and 2020, with funding from Darwin Plus, Falklands Conservation has focussed on boat-based and acoustic monitoring of whales in Berkeley Sound and Falkland Sound.

Important questions to address in relation to a KBA, and in a wider management context, include which species of whale were using Falklands' waters, their population sizes, whether there were core areas of higher occurrence (and what factors defined them), what time of year they were present and for how long, whether the same individuals repeatedly use Falklands waters, what component of the population was present (e.g. mother-calf pairs, immature animals), and why they occur (i.e. for feeding, breeding, during migration, or a combination).

Additionally, information on potential threats were assessed by examining the spatial and temporal overlap between whales and human marine activities.

The primary focus of the work has been the globally Endangered sei whale (*Balaenoptera borealis*), a species that occurs offshore and unpredictably in most regions worldwide, yet is seasonally-common in coastal waters around the Falklands.

The project also focusses on wintering southern right whales (*Eubalaena australis*), a species classified by the IUCN Red List as Least Concern globally, but for which conservation status in the south-west Atlantic is of concern.

One principal aim of our project was to acquire a robust and extensive dataset on sei whales to facilitate an assessment against the standard global KBA criteria.

That assessment is currently underway, and we have provided evidence that the Falklands shelf supports globally-important numbers of mature sei whales, and that the occurrence of these whales is occurs at the same time annually, and is primarily driven by the whales foraging for food. If achieved, KBA status would influence environmental impact assessments and help

to direct the subsequent MSP and MPA processes within the Falklands to protect relevant habitat and manage potential impacts on whales.

Protecting the marine environment around the Falklands also depends heavily on community engagement and stakeholder support. Our project works to raise awareness of whales with government, local community members, and school children. To date 17 volunteers have accompanied the boat surveys and assisted with spotting whales, photo-identification, and faecal sampling, and a further 20 community members attended a cetacean field training course.

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People take away a new enthusiasm for whales and marine life from those opportunities, which slowly spreads across the wider community
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People take away a new enthusiasm for whales and all marine life from those opportunities, which slowly spreads across the wider community.

The scientific datasets collected during our project will provide an evidence-base for managing whales in the Falkland Islands. However, the interest and support of the local community is equally as crucial to achieving our long-term goal of sustaining these fantastic animals, and their key habitats for future decades.

For more information about project DPLUS082, please click [here](#).



Sei whale breaking the waters surface, Credit: Caroline Weir



Magnificent frigatebirds and a juvenile red-footed booby in Little Cayman Credit: R. Austin



Magnificent frigatebirds lend a helping hand to regional-scale conservation efforts

Marine and coastal ecosystems are under threat from a multitude of human activities, and an important first step towards the conservation of these areas is to identify hotspots of biodiversity as priorities for management. Through our project, led by the University of Liverpool in partnership with BirdsCaribbean, we are using magnificent frigatebirds (*Fregata magnificens*) as indicators of these hotspots in the Caribbean. Our project spans across all five of the Caribbean's UK Overseas Territories (UKOTs) (Anguilla, the British Virgin Islands, the Cayman Islands, the Turks and Caicos Islands and Montserrat) as well as Bermuda, which shares a similar ecology and conservation challenges to those in the Caribbean.

The marine and coastal environments of the UKOTs are well known for their outstanding levels of biodiversity, which benefit from varying levels of protection and conservation action.

The project was developed in response to recognition that effective protection of marine and coastal environments in these UKOTs relies on multilateral management cooperation, and the need to encourage transboundary working. Cooperative management is particularly important in regions such as the Caribbean, which are composed of multiple governing nations and a diverse array of socioeconomic challenges.

“ The project was developed in response to recognition that effective protection of marine and coastal environments in these UKOTs relies on multilateral management cooperation, and the need to encourage transboundary working ”

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Seabirds can be used as potentially powerful tools to achieve such goals due to their high mobility, and the ease with which they can be accessed and tracked using miniaturised data loggers

Seabirds can be used as potentially powerful tools to achieve such goals due to their high mobility, and the ease with which they can be accessed and tracked using miniaturised data loggers. We know from previous territory-specific projects in the Caribbean that magnificent frigatebirds may be a powerful indicator species, due to their tendency to use and link the onshore, coastal and offshore habitats of multiple territories. Our project aims to use these unique movements of frigatebirds to help identify ecologically important areas in marine and coastal environments that may be relevant to a range of fauna.

Furthermore, the project is bringing partners together to discuss ways to extend networks, which will in turn help to protect biodiversity in the UKOTs and beyond. In March 2020, representatives from all partners came together in Anguilla for a seabird-focused project workshop.

” In the project’s second year, partner organisations will begin to implement activities, such as seabird surveys and feasibility studies for future work, to help address the training, data and management gaps that were identified during the workshop. At the end of the project, outputs will be combined and presented at a large final workshop focused on ‘Biological and Stakeholder Connectivity’, which will run during a conference hosted by BirdsCaribbean in 2021. The project team aim to extend this meeting to the wider Caribbean. It is hoped that this project will not only establish a unique approach with frigatebirds for identifying biodiversity hotspots, but also build long-lasting working relationships amongst those in Caribbean states and territories with common biodiversity goals.

For more information on project DPLUS097, please click [here](#).



Dr. Austin and field team in the Cayman Islands, Credit: Federico de Pascalis



*Leeward beach, Providenciales,
Credit: Julian Tyne*

Developing marine spatial planning (MSP) tools for the Turks and Caicos Islands

Our project is led by the South Atlantic Environmental Research Institute (SAERI) in collaboration with the Department of Environment and Coastal Resources (DECR), the Joint Nature Conservation Committee (JNCC) and Economics for the Environment Consultancy. Through this collaboration the project will develop Marine Spatial Planning (MSP) Tools for the Turks and Caicos Islands (TCI).

In the 1980s the first protected areas systems were implemented in TCI and consists of eleven National Parks, eleven Nature Reserves, four sanctuaries and nine Areas of Historical Interest. However, with increased use of the marine environment and growing global threats from climate change, there is a growing need to look holistically at planning activity within the marine space.

The aim of the project is to create a framework and tools to bring together the functions of the TCI marine environment with the commercial activities within the TCI Exclusive Economic Zone and to develop processes that are sustainable for the long term. The project has made a great start, SAERI project staff are based in the TCI in DECR offices on Providenciales, and form part of DECR.

Metadata training has been delivered to DECR representatives across the islands, with over 50 stakeholders attended four project start-up workshops that were held in South Caicos, Grand Turk and the Providenciales.

Stakeholder engagement is essential for the successful protection of the TCI marine environment, to date the project has interacted with the TCI Government, Schools, NGOs, fishermen, tourism operators and local community members. Through regular workshops stakeholders will be made aware of project progress of the project, garner feedback and help to raise awareness of the potential threats to marine biodiversity in TCI. To date over 20 spatial data sets have collected and collated and uploaded to a WebGIS server.

In an effort to ensure the long-term success of the MSP, surveys are being developed to investigate the coastal cultural values and cultural ecosystem services of TCI, as these are important aspects of the marine environment and will be included in the establishment of the MSP.

For more information on project DPLUS094, please click [here](#).



Southern Rockhopper penguins (Eudyptes chrysocome), Credit: SAERI

Achieving marine conservation through the development of a network of marine management areas in the Falkland Islands

The marine environment around the Falkland Islands support rich and diverse ecosystems. From the unique benthic habitats of the Burdwood Bank, to coastal and offshore areas, which provide feeding and breeding habitats for globally significant populations of seabirds and marine mammals. The marine environment is also important to the Falkland Islands economy. Commercial fisheries, tourism, shipping, potential offshore resources, coastal landscapes and marine seascapes are central to Falkland Islands economic success.

The increase in uses of the marine environment has come with increasing risks. Industries such as offshore gas extraction, shipping, coastal development and aquaculture threaten the biodiversity of these habitats.

Recognising the need for holistic marine management across all sectors and our maritime spaces, the Falkland Islands embarked on a long-term process of marine spatial planning (MSP) through the help of a previous Darwin Plus project ([DPLUS027](#)).

“ A fundamental consideration whilst developing the marine spatial planning process has been to respect culturally and economically important activities, whilst at the same time maintaining sustainability of the marine environment ”

A fundamental consideration whilst developing the MSP process has been to respect culturally and economically important activities, whilst at the same time maintaining sustainability of the marine environment.

The Assessment of Fishing Closure Areas as Sites (AFCAS) case study made evidence-based recommendations on potential Marine Managed Areas (MMAs) that would meet international criteria for Marine Protected Areas (MPAs).

The AFCAS study identified three key areas:

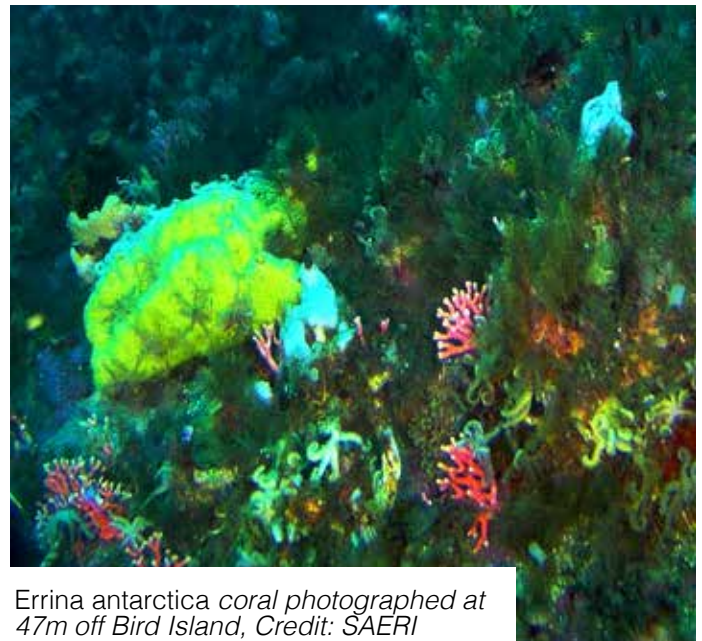
1) the inshore areas of the Falkland Islands three nautical miles from the baseline, 2) Beauchene Island, and 3) the Burdwood Bank areas. The design of these MMAs is the key aim of project DPLUS071. This multidisciplinary project represents collaboration between the Falkland Islands Government, the South Atlantic Environmental Research Institute (SAERI), the Shallow Marine Surveys Group and the British Antarctic Survey.

One of the main objectives is to deliver key baseline data for the three proposed MMAs. This project uses diverse, cutting-edge scientific methods to build an integrated understanding of Falkland Islands marine ecosystems. In conjunction with stakeholders, evidence-based recommendations will be developed to zone the three key biodiverse MMAs identified. Following agreed and informed designs, an economic assessment will aid understanding the present and future consequences of policy formulation. The project has made great progress and is currently in the process of completing its data collection and analyses phase.

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Some of the areas explored by the team have received little to no scientific attention to date, meaning that much of the data collected is new for the region and will support the development of a comprehensive Marine Managed Area plan
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The project has conducted two successful inshore research expeditions on board the Golden Fleece, which circumnavigated the islands and collected a vast array of biological data as well as physico-chemical data.

Some of the areas explored by the team have received little to no scientific attention to date, meaning that much of the data collected is new for the region and will support the development of a comprehensive MMA plan. During these expeditions the discovery of a previously unknown species was reported as well as the presence of cold-water corals. We even spotted rare nudibranchs (soft-bodied marine molluscs) during their mating season. Another useful output of this work was detecting invasive species at some sites – baseline data that will be of value to any future monitoring efforts. Invasive species included the anemone *Metridium senile* and parchment worm *Chaetopterus variopedatus*.



Errina antarctica coral photographed at 47m off Bird Island, Credit: SAERI

The team conducted one of the first in depth surveys to characterise the benthic communities of the Burdwood Bank. Specifically, the MMA team assessed how benthic (sea floor) communities differed between the Burdwood Bank sea floor and slope. Initial results indicate that benthic biodiversity is high, and biological assemblages differs between locations.

While much of our fieldwork has focussed on improving our understanding on the inshore and Burdwood Bank benthic ecosystem, we haven't forgotten about charismatic megafauna! Our research includes the collation and analysis of seabird and pinniped population and tracking data, and cetacean transect data. This data will be used to quantify important at-sea areas through a range of methods. Through the collection of this data we have been able to support and better inform the proposed Falkland Islands MMAs.

Our project is now in its second phase, which includes proposed site management plans, policy formulation and suggested legislative frameworks. The MSP/MMA process in the Falklands encapsulates the requirements for both multiple sustainable economic use of the marine environment, and marine conservation and protection. It has people at the heart of its processes, with on-island consultation and stakeholder engagement being an integral part of each step. The requirement for a robust evidence-base to make designation of MMAs meaningful from an ecological perspective is also key. Additionally, the in-territory ownership and leadership has been a particular strength, coupled with the long-term commitment to protect these unique and diverse ecosystems.

For more information on project DPLUS071, please click [here](#).



Caribbean reef shark (Carcharhinus perezii) caught by scientific long-lining, Credit: Rupert Ormond

Shark protection - supporting coral reefs and the tourism in the Cayman Islands

In April 2015 the Cayman Islands gave full legal protection to all sharks and rays throughout its Exclusive Economic Zone. This was the culmination of a UK Overseas Territory and Darwin Plus funded research programme, which began in 2008, with the aims of determining the status of sharks in waters throughout the Cayman Islands and assessing their need for conservation.

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By 2010 shark and ray tourism was estimated to involve at least 376 operators in over 29 countries, and to be generating US\$314 million of economic expenditures per year

Through granting legal protection to sharks, the Cayman Islands joined around ten other countries, such as the Bahamas, Maldives and Palau, that have established shark sanctuaries covering part or all of their waters. Since then work has continued to monitor and protect these threatened species.

When the project started, the need to make shark conservation a global priority was becoming widely recognised. It had been estimated that by the early 2000s, 26 - 73 million sharks globally were being caught every year. As a result, across the world's oceans, including the Caribbean, the populations of many species had declined by over 90%. Globally, six shark species are now classed (by IUCN) as Critically Endangered, four as Endangered, and 24 as Vulnerable. Besides the need to conserve shark and ray biodiversity for their own sake, there is evidence that - as apex predators - large-bodied sharks play a key role in maintaining the health of marine environments, including coral reefs. In addition, sharks and rays have become increasingly important as a source of tourist income. By 2010 shark and ray tourism was estimated to involve at least 376 operators in over 29 countries, and to be generating US\$314 million of economic expenditures per year.

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At the start of the project there was much uncertainty around which species of large sharks were present in the Cayman Islands, or how common they might be. The project's early work to assess species abundance made use of a variety of methods. The small numbers of commercial fishermen still active on the islands were interviewed, a Facebook group was established to



Event to celebrate increased protection of sharks in Cayman Islands, Credit: Rupert Ormond

collect details of sightings by divers, and systematic surveys commenced using two techniques – baited remote underwater video stations (BRUVS) and scientific long-lining. BRUVS, which are in effect underwater camera traps, were deployed annually at some hundred locations for one or two hours at a time around all three islands. Scientific long-lining uses hooks stretched over a much shorter distance (500 m) than the commercial equivalent, and the fish caught were promptly released after identification, measurement, tagging and DNA sampling.

This survey work discovered that the most common species on Cayman Island reefs are Caribbean reef sharks (*Carcharhinus perezii*), blacktip sharks (*C. limbatus*), nurse sharks (*Ginglymostoma cirratum*), tiger sharks (*Galeocerdo cuvier*), silky sharks (*Carcharhinus falciformis*), oceanic whitetip sharks (*Carcharhinus longimanus*) and great hammerhead sharks (*Sphyrna mokarran*) also occurred either locally or seasonally in much smaller numbers. The results of eight years of monitoring showed that shark abundance on Little Cayman, the least impacted (and least developed) of the islands, is about three times that on the other two islands, and abundances in the Cayman Islands were overall higher than most other Caribbean locations.

To assess how effective at protecting sharks local conservation measures could be (in particular the 25 year old network of Marine Protected Areas), the project also investigated the movement patterns and home range sizes of the various shark species. A portion of the medium-bodied sharks caught during long-lining were fitted with acoustic tags and larger-bodied ones with SPOT GPS tags. Acoustic tag data was collected by a network of acoustic receivers permanently positioned on the reefs, and the SPOT tag data collected via satellite. The results revealed that while some individuals of the smaller shark species may be semi-resident, other individuals may travel significant distances around or between the islands.

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The largest shark species were found to travel even greater distances. For example, most tagged tiger sharks travelled widely across the Caribbean basin, and one returned seasonally to Grand Cayman for at least three further years.

To further assess whether wider protection was justified, the project also undertook socio-economic studies. Interviews with several hundred residents and visitors recorded how much both groups were spending on their holiday or recreational activities. The results revealed that both groups valued the islands' marine life more highly than other activities, such as sports fishing, and the rich marine life was a major factor for divers to choose to visit Cayman. Overall, it was estimated that the non-consumptive use value of sharks to the Cayman Islands (i.e. the value for tourism and recreation of having sharks present on the reefs) was estimated at US\$46.8 to 62.6 million per year, compared with an estimated consumptive use value (if the sharks were fished commercially) of only US\$1.3 million per year.

Since the completion of the Darwin Plus project, work to implement shark protection has continued, with support from the Cayman Islands Department of Environment and other local sources, particularly the Cayman Islands Brewery. Research has focussed on monitoring shark numbers, using two methods, a Shark-logger citizen science initiative that relies on participating SCUBA divers reporting how often they see sharks, and a refinement of the BRUVS surveys, in which distinctive features visible on video are used to detect re-sightings of known individuals. Both methods have confirmed the differences in shark abundance between different islands or parts of islands and suggested that shark numbers are being sustained, if not yet recovering more sharply.

Further application of mark-recapture modelling to the re-sightings frequencies has permitted first reliable estimates of local population sizes, suggesting that about two hundred Caribbean reef sharks and three to four hundred nurse sharks are now present in the waters around the Cayman Islands.

For more information on DPLUS036, please click [here](#).



Cayos Chocinos National Marine Monument in Honduras, Credit: Vance Russel

Turning shared problems into solutions – marine conservation connects people and protected areas in Honduras

At the southern tip of the globally important Mesoamerican Barrier Reef on the Caribbean coastline of Honduras lies a vibrant and interconnected patchwork of coral reef, mangrove, seagrass, and estuary habitats. This 'seascape' is home to a high diversity of species, including globally threatened Antillean manatees (*Trichechus manatus*), hawksbill turtles (*Eretmochelys imbricate*) and Utilan spiny-tailed iguanas (*Ctenosaura bakeri*). Some seventeen coastal communities depend on the integrity and productivity of these ecosystems for their livelihoods and wellbeing. Three MPAs within the seascape - Cuero-Y-Salado Wildlife Refuge (CSWR), Cayos Cochinos Marine National Monument (CCMNM) and Bay Islands National Marine Park (BIMNP) – aim to safeguard these habitats and species.

Over the years, biodiversity and fisheries have declined due to degradation of mangroves and estuaries as well as the use of harmful fishing practices and overfishing. Illegal poaching of wildlife threatens vulnerable species and pollution and sedimentation from agriculture smother coral reefs and other sensitive habitats.

Through an earlier Darwin Initiative project (**19-017**), Fauna & Flora International (FFI) and partners helped to strengthen participatory governance of the CSWR. It was clear that these threats needed to be addressed at a larger scale, however, not only for enhancing ecological connectivity but also for "social connectivity". This refers to the need to build collaboration between protected area co-managers and the empowerment of communities by increasing dialogue and cooperation regarding their shared resources, problems and aspirations.

This funding enabled FFI to launch the seascape initiative in 2016 alongside five Honduran NGO partners: three protected area co-managers (Fundacion Cuero-y-Salado, Fundacion Cayos Cochinos, Fundacion Islas de la Bahia) and two with cross-cutting scientific, technical and social expertise (Centro de Estudios Marinos, LARECOTURH). The project aimed to establish an integrated management system, conserving critical habitats and species and enabling fishing communities to improve their livelihoods while increasing their management responsibilities.

Collaboration between NGO partners soon proved its value on practical management issues, such as fisheries management and monitoring, and also led to changes in institutional culture. In the words of Marcio Aronne, who co-manages the team for Cayos Cochinos, "The problem before was that we couldn't see the big picture; we couldn't see that all the partners had things in common and that working together we could achieve more. Before, we saw each other as rivals, but now we see each other as potential partners."

**“
The problem before was that we couldn't see the big picture; we couldn't see that all the partners had things in common and that working together we could achieve more**

The project established several bodies as mechanisms for seascape-wide collaboration. An annual 'seascape forum' brings authorities, the NGO partners and stakeholder representatives together to discuss seascape issues, the results of studies and priorities for action. A smaller 'seascape committee' meets regularly and focuses on joint management actions, while a 'fisher roundtable' has enabled fishers across the seascape to reach agreement on their collective priorities for improving fisheries and increasing their sustainability. Through the synthesis of existing information and new research, the project was able to inform the development of fisheries regulations and contribute the design of spatial management measures that results in two new no-take zones within BIMNP. Improved cooperation and communication across the seascape also contributed to improving community livelihoods and resilience, a key project aim.

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Participation by both women and men in the seascape committee and official government recognition of the fishers' roundtable both represent major advances in the empowerment of coastal communities**

Participation by both women and men in the seascape committee and official government recognition of the fishers' roundtable both represent major advances in the empowerment of coastal communities. Their voices are now being heard and are – to a large extent - unified. For example, long-standing conflict between fishing communities in Utila Island and CSWR was ameliorated by creating dialogue mechanisms and enabling exchanges between the fishers in the two communities. These two communities have now fostered a friendly relationship, which has in turn led to the adoption of sustainable fishing practices and the establishment of an agreement as to where each community is allowed to fish. Jerry Boden, an Utila fisher, reported that "Bringing Utila and Cuero-y-Salado fishers together meant improved communication, respect for each other and more people using environmentally friendly fishing methods."

” Following the completion of the Darwin Initiative project in March 2019, FFI and the project partners, stakeholders and authorities aim to expand the practical fisheries and ecosystem management work across the seascape. The collective strength and organisation that now exist make it possible to tackle external land-based threats to marine resources, especially sediment, chemical pollution and plastics. The most immediate challenge, however, is to recover from the impacts and after-effects of Covid-19. There is work to be done to enable communities to get through the crisis, to tackle associated threats to biodiversity, to restore fisheries markets and to adapt tourism-related livelihoods. Shared knowledge and mechanisms for cooperation can facilitate this work and are part of the legacy of the Darwin project. Unforeseen shocks will continue to occur – especially due to climate change – so FFI and partners will continue to build ecological and social resilience in this globally important area for marine biodiversity.

For more information on project 23-028, please click [here](#).



Life along the Tana River Delta, Credit: Peter Usher

Safeguarding the Tana River Delta coastal zone for biodiversity and livelihoods

Covering an area of 130,000 ha Tana River Delta is Kenya's largest wetland. It is a biodiversity hotspot, a Key Biodiversity Area and Ramsar site – a wetland of international importance. Over five thousand water birds of at least thirteen species use this site to raise their young. There are 22 different species of water birds that gather in internationally important numbers in the delta, including pelicans, herons and storks. Most recently birders sighted more than 50 Critically Endangered White-backed vultures and thousands of Vulnerable Madagascar pratincoles in the delta. Marine turtles nest along the beaches, and three different species of true eels have been recorded from the Tana River.

Tana River Delta is a land of opposites and extremes. Here dry land meets the sea. Its habitats, wildlife and people have adapted their lives to the extremes of drought and flood.

The seasons themselves vary dramatically from year to year. A series of drought years, in which ponds dry up and the grasslands are eaten bare, may be followed by great floods that occasionally wash away critical infrastructure including tarmac roads, destroy the irrigation dykes, and fill the delta with a few meters of water submerging homes and displacing populations.

Farmers cultivate on receding lake edges, where the river spills fresh water into their fields with the tidal flow. When the wetlands are left undisturbed, they act like sponges, absorbing floods, storing the water and remaining green during the dry season. The thick vegetation absorbs carbon dioxide gas from the air. In dry and drought conditions pastoralists bring livestock from as far as the Somali and Ethiopian borders to graze on the grasslands. In times of flood, the Delta fills with water, and water birds from all over Kenya nest and raise young, replenishing bird populations throughout the country.

Sea level rise and its impact on the Tana Delta is a new phenomenon. The latest GIS maps on the drainage of the lower Tana Delta indicate that a fifth of the Delta is now under the influence of the sea, with sea water going some 30 km inland. Sea water intrusion into community areas poses great challenges and as a result farm and pasture lands are increasingly becoming saline and are unable to sustain food production. Ms Bahati Hassan, a farmer in Ozi Village says “For many years, we grew rice and had bumper harvests. This is no longer possible as our farms are an extension of the sea.”

Through our Darwin Initiative project, for the first time in many years, the Ozi community is able to practice rice farming. Mr. Dzillambe, the local agriculture officer says that the challenges of food production in the lower Tana Delta have become the new normal. Dzillambe notes “When people have no food it is a problem for the government. Thanks to Nature Kenya through the Darwin Initiative project, we provided 2,571kg of quality rice seeds for the Ozi community. The variety survived the brackish waters in the farms and we produced 78,897kg of paddy rice that once milled at a conversion rate of 65% would yield around 51 tonnes of milled rice valued at Ksh 3,076,983 (£23,165) at farm gate and Ksh 3,589,813.50 (£27,026) at market prices.” It is our hope that as sea level continues to rise the Ozi community will continue to produce rice. When communities are able to produce food and when their wellbeing improves, they are unlikely to engage in activities that lead to degradation of nature.

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Mangrove is our life - we depend on it for building, it supports fishing and is a source of income for us, we need to guard it jealously

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*- Islam Abdalla,
Kipini Community Forest Association*

An interesting outcome for nature is that Ozi Community Forest Association has intensified patrols of the nearby mangrove forest. Community Forest Associations have also engaged in restoration of mangroves through direct planting. Mr. Islam Abdalla, chairman of Kipini Community Forest Association says “It has taken our partners and leaders to remind us of our role as a people. Mangrove is our life. We depend on it for building, it supports fishing and is a source of income to us. We need to guard it jealously.”

“
It is likely sea water intrusion will get worse, exacerbating human survival challenges in the delta unless realistic and scientifically sound efforts can be taken very seriously, or alternatives sought

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In January GIS maps on land use and land cover showed that over the three years of the Darwin Initiative project, forest cover in the Tana Delta has increased by 20% with the highest increase in mangrove forests (101%).

The aggressive sea water intrusion in the Tana Delta is attributed to many causes. One of the most significant causes for the intrusion is due to the reduced water quantity in the Tana River that allows sea water to push river water backwards during high tide, turning that stretch into brackish water.

Serah Munguti, the Policy and Advocacy Manager at Nature Kenya, notes that sea level rise is likely to continue as long as underlying climate change causes continue. She says “It is likely sea water intrusion will get worse, exacerbating human survival challenges in the delta unless realistic and scientifically sound efforts can be taken very seriously, or alternatives sought. Water demand in the catchment will continue to rise as water flow down to Tana Delta possibly continues to reduce.”

Nature Kenya has brought together two county governments, national government agencies and 45 villages to set up a 116,867ha Indigenous Community Conserved Area. The aim is to promote sustainable production (livestock, crops, fisheries) that allows biodiversity to thrive and maintain the flow of ecosystem services.

For more information on project 24-013, please click [here](#).



Sargassum on the beach and in rafts, Credit: Debbie Bartlett

Searching for a sustainable solution to the seaweed inundations on Caribbean beaches

On the white sandy beaches of the Caribbean an unwanted visitor has arrived, leaving the once beloved beaches unsightly and smelling distinctly of rotten eggs. The inundations of seaweed on these beaches throughout the Caribbean in recent years has attracted the attention of the Turks and Caicos Island (TCI) Government and caused concern for the health of the local community and also the marine environment.

Our project aims to determine the impact Sargassum is having on the environment, people and businesses of TCI and to find out how much is arriving on the beaches and assess if there is a seasonal pattern. Additionally, gaining a greater understanding of this seaweed through the project efforts could result in finding sustainable alternative uses, such as biofuel. The project is a collaboration between the University of Greenwich, CIEEM's Overseas Territories Special Interest Group, and the School for Field Studies and the Department of Environment and Coastal Resources (DECR), Turks and Caicos Island Government.

The project is currently at the halfway point, and steady progress has been made to date. Through interviews with over 100 locals the project team has been able to compile these findings into a report and raise the awareness of the impact of sargassum in TCI.

The funding from Darwin Plus has enabled us to support the completion of two MSc research projects - for more information on these projects please see the 'Early Career Researchers' article on the Darwin Initiative [blog](#).

In an effort to inform and educate, ID sheets were created to enable schools to get involved in sorting the sargassum into different types. One of the major findings of the project has been the discovery that the sargassum that washes up on the TCI beaches is in fact three different morphotypes. Samples have been taken from these 'golden tides' to determine the level of contamination with organic and inorganic materials and the deposition and seasonality has been closely monitored. Research is still ongoing and chemical analysis has been completed on some of the initial samples brought back to the University labs.

The first results from the labs have been published ([Milledge et al 2020](#)) but more samples are needed to look at the potential to find a viable commercial use for the Sargassum deposited on the beaches. We are sharing results with others working on this issue across the Caribbean and are hopeful of success within the remaining year of this project.

For more information on project DPLUS100, please click [here](#).



Fisherman and his sailboat in the lower Tana Delta, Credit: Peter Usher

Newsletter Contacts

The Darwin Initiative Secretariat (Defra)

The Darwin Secretariat is based in Defra and includes Tim Pryce, Siriol Leach, Scott Nelson and Chelsea Goodwin.

If you have any general queries about how the Darwin Initiative operates please e-mail us at darwin@defra.gsi.gov.uk

For any queries on project applications or existing projects please contact our Darwin Administrators (LTS International) at darwin-applications@ltsi.co.uk or darwin-projects@ltsi.co.uk

This newsletter is produced quarterly. To include an article on your project please contact us at darwin-newsletter@ltsi.co.uk

The UK Government's Darwin Initiative aims to promote biodiversity conservation and sustainable use of resources around the world including the UK's Overseas Territories. Since 1992, the Darwin Initiative has committed over £177 million to 1,220 projects in 159 countries.