

# FOR THE LOVE OF NATURE

ANNUAL  
REPORT 2017

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The Mohamed bin Zayed Species Conservation Fund provides financial support to species conservation projects worldwide.

In 2017 the Fund provided 182 grants totaling \$1,525,473.

Since being established in 2008, the Fund has distributed \$16,494,529 to 1,738 projects across the globe.

True conservation is the result of passionate individuals dedicating their time, resources, expertise and ingenuity, all for the love of nature.



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# FOREWORD

IN SUMMARISING HIS OWN DEEPLY PERSONAL EXPLORATION OF THE CONNECTION BETWEEN MANKIND AND NATURE, THE ENVIRONMENTALIST E.O WILSON COINED THE TERM 'BIOPHILIA' TO DESCRIBE THE INNATE HOLD THAT THE NATURAL WORLD RETAINS OVER US. IT IS BOTH EMOTIONAL AND INSTINCTIVE; FROM THE SIMPLE SENSATION OF FEELING THE WIND ON OUR FACES TO THE UNIQUE INNER PEACE DERIVED FROM THE LAPPING OF WAVES ON A DESERTED SHORELINE, WE ARE DRAWN TO ALL THINGS NATURAL.

Of course, this ongoing love affair is grounded in simple biological fact – we are, and will forever be, part of nature. However, our disproportionate intelligence and success as a species has equipped us with the notion that we have somehow transcended nature, that we have carved out our very own reality that is distinct from that of the other life that surrounds us. It has allowed us to blaze a technological trail unhindered – for the ‘machine’ of human progress to proceed whilst ignoring the health and biodiversity of our back yard.

If ever there was a time to embrace our biophilia it is now. Of the 10 million or so species thought to inhabit the world today, estimates suggest we lose as many as 10,000 to extinction each year. The number of large wild animals has halved in the past four decades; more than one third of amphibians are thought to be on the verge of extinction; and a recent study suggests flying insect numbers have plummeted by 75% over just 25 years.

While biophilia describes a deep emotional connection to these disappearing elements in nature’s complex equation, there is an even more visceral underlying bond we

share; namely, our essential dependence on the natural world. Whether we like it or not, we are inextricably linked to our surroundings, and depend on the health of our environment to preserve our own. The air we breathe, the water we drink; the raw materials we rely on to support our continued development as a species – they are all products of our planet’s astounding biodiversity.

The UAE is a relatively young nation having only recently celebrated its 46th anniversary. And despite our rapid development, our connection to the desert and the sea is still very strong.

There is perhaps no better exemplar of the innate biophilia of our people than the founding father of our nation, the late Sheikh Zayed bin Sultan Al Nahyan. In the Year of Zayed, one hundred years after his birth, this profound connection to our environment lives on in our benefactor, His Highness Sheikh Mohamed Bin Zayed Al Nahyan, and in the Fund that he established to support organic conservation projects across the world. During 2017, we provided 182 grants with a total value of \$1,525,473, bringing the

number of projects supported by the Fund since 2008 to 1,738 across more than 180 countries. Our total disbursement through December 2017 reached \$16,494,529 to projects of all sizes.

By providing small, targeted grants to conservationists in the field, the Fund continues to deliver immediate aid to those who are having a direct impact on the survival of threatened and endangered species around the world, whilst also providing them with the necessary exposure to win further financial and material support from other donors.

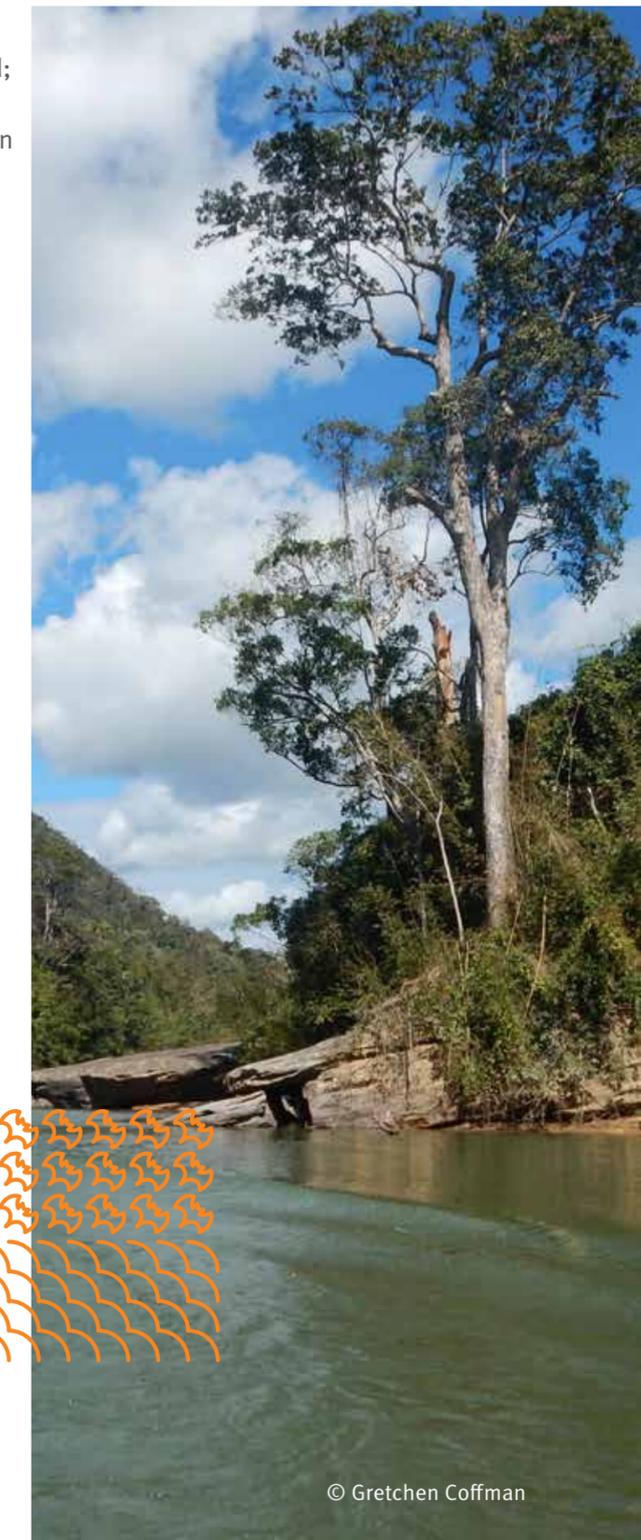
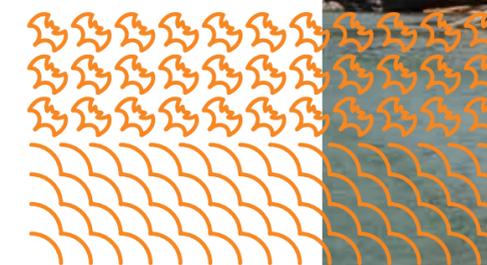
This is often the case, and many of our grant recipients attribute their ability to attract additional funding directly to the grants they received from the Fund.

We continue to be humbled by the passion and dedication of these intrepid conservationists, those who trek through Laotian mountains to gather seedlings from 1,000-year old trees, explore the subterranean waterways of northern Italy for cave-dwelling flatworms, or spend months being harassed by mosquitoes whilst suturing tiny beads to the backs of Bica anoles on the tiny island of Utila.

Without them, many more of the world’s species would have long since disappeared; that is why we remain committed to them and to delivering grants to small conservation projects whenever needed, without bureaucratic constraints, so that their urgent work may continue uninterrupted.

A small sample of these projects is presented in this Annual Report. As ever, these brief insights into the efforts of this global community of largely independent conservationists are as fascinating as they are inspiring. This year, I hope they also serve to put more of us in touch with our own inner biophilia, which perhaps holds the key to stemming the seemingly unstoppable decline in global biodiversity occurring all around us today.

**Razan Khalifa Al Mubarak**  
Managing Director



Arabian Pipistrelle © Jacky Judas

© Gretchen Coffman

# DEAR GRANT RECIPIENTS

DURING 2017, THE FUND DELIVERED FINANCIAL SUPPORT TO DEDICATED SPECIES CONSERVATION PROJECTS WORLDWIDE, REACHING A TOTAL DISBURSEMENT OF ALMOST \$16.5M SINCE ITS INCEPTION IN 2008.

The volume of grant applications received by the Fund continues to rise, and it remains the case that more requests are received than can be supported; during 2017, we received requests amounting to roughly \$26.4m, yet were only able to distribute \$1,525,473.

The Fund is adapting to this challenging supply and demand equation by applying more stringent review criteria; only 11.3% of applications gained approval in 2017, the majority of which received only partial funding. Nevertheless, we continue to proceed according to the belief that part-funding is preferable to rejection, and in the hope that the Fund's support adds sufficient credibility to projects to attract additional financing from other sources. This approach has again been validated by successful examples of subsequent additional funding being secured by a number of this year's grant recipients.

In 2017, the Fund maintained its focus on supporting less high-profile projects while still targeting threatened species – particularly those listed on the IUCN Red List as Critically Endangered or Endangered. The Fund also continued to provide strong

financial support for species listed as Data Deficient or Not Evaluated, with over \$199,674 dispersed to 32 projects concerning species in these categories.

Above all, the Fund remains committed to providing support to conservationists who dedicate their lives to saving the world's most threatened and least well-known species, making this planet a better place for all.

Our approach is to provide small, targeted grants to local and grassroots projects. To cover the widest possible spectrum of species conservation efforts, two grant categories are available: up to \$5,000; or between \$5,000 and \$25,000.

The Fund will continue to adapt to the multiple challenges facing species conservation whilst seeking additional capital, striving to maximise its investments and refining the qualifying criteria for grant applications.

Our efforts are truly global, and grant eligibility extends to all plant and animal species conservation efforts, regardless of location or species type.

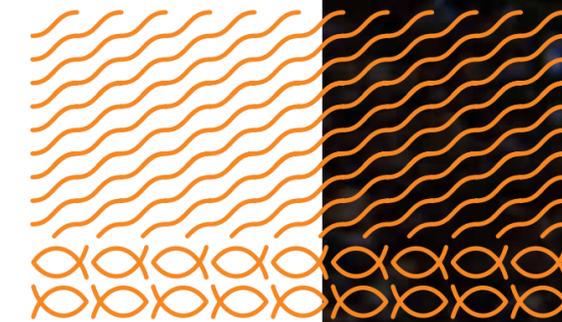
The Fund also continues to make the grant application process more user-friendly and efficient, especially for smaller projects where onerous administration can undermine the benefits of financial contributions. Grants are subject to independent review and are awarded following Advisory Board meetings which are held at least three times each year. However, during 2017 the Fund fast-tracked the delivery of an emergency grant to safeguard what was thought to be the only surviving group of Santa Cruz Ground-doves following a volcanic eruption in the Solomon Islands.

We also offer an online system which makes it more convenient for conservationists worldwide to submit applications and brings greater efficiency to the Advisory Board's review and award processes. Grant submissions can be made via the Fund's website, [www.speciesconservation.org](http://www.speciesconservation.org); Board members can log in and evaluate projects; and grant recipients can upload their project reports twice a year for Board review or submit case studies at any time to highlight their progress.

We wish to thank our applicants and recipients who help implement the Fund's ideals of assisting individual species conservation initiatives, as well as all those who have supported the Fund by generously giving their valuable time and experience.

Together, they have made an invaluable contribution to the preservation of the Earth's extraordinary biodiversity and elevated the importance of species-specific conservation initiatives in the broader conservation debate.

**The Board of Advisors**  
**Mohamed bin Zayed**  
**Species Conservation Fund**





Hinge-back Tortoise © Luca Luiselli

# WHY SPECIES CONSERVATION?

THE SENSE OF LOSS RESULTING FROM EXTINCTION IS A RELATIVELY MODERN PHENOMENON. IT IS THE RESULT OF A NEW UNDERSTANDING OF THE IMPACT OF HUMAN ACTIVITIES AND A GREATER AWARENESS OF OUR COLLECTIVE ACCOUNTABILITY FOR THAT IMPACT. THIS SENSE OF RESPONSIBILITY FOR ENDANGERED SPECIES HAS COMPLEX ORIGINS; IT HAS DEVELOPED FROM ACADEMIC STUDIES, CONCERN FOR LOST RESOURCES, EVEN THE LOVE OF A SPECIES ENGENDERED THROUGH HUNTING, AND IMPORTANTLY, FROM THE SENSE OF LOSS ALL OF US HAVE EXPERIENCED AS LANDSCAPES HAVE BEEN EMPTIED OF MAJESTIC TREES, BISON OR PASSENGER PIGEONS.

There is an urgent need to continue stimulating broad discussion on species conservation and biodiversity, and to better integrate individual environmental initiatives addressing issues such as biodiversity loss, climate change, habitat destruction and unsustainable development.

The conservation community has tended to promote one environmental cause at the expense of others – a practice that must end if we are to ensure the collective survival our planet’s diverse organisms. Just like the species of a complex ecosystem, our individual conservation efforts are more interdependent than we tend to appreciate and are only as strong as their weakest link.

Recognising the crisis facing species conservation, His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces,

established this dedicated fund for the provision of support to individual and coordinated species conservation initiatives worldwide. To preserve the creatures and habitats we treasure – and indeed depend on – the Mohamed bin Zayed Species Conservation Fund seeks to support on-the-ground champions of species conservation; the individuals in villages, field stations, laboratories and homes who are dedicated to conserving their local (and the world’s global) threatened species.

The Fund assists their work through focused financial support, nurturing the next generation of conservationists by making the best practices available to them using innovative communication methods.

Through additional events and activities, the Fund also seeks to recognise individual leaders in the field of species conservation whose passion and commitment often goes unnoticed, and in doing so, to inspire others with an interest in the field.



This contribution is consistent with a long-standing tradition of philanthropy and conservation in the Emirate of Abu Dhabi, where significant programmes have been introduced to protect species as diverse as Arabian oryx, gazelle, Houbara bustard, dugong and marine turtles, amongst others.

Hence, the people of Abu Dhabi have witnessed first-hand the tangible benefits of targeted and well-resourced species conservation initiatives; the population of the Arabian oryx, hunted to near extinction in the early 1970s, is currently on the rise and the emirate is leading efforts to reintroduce the species to its traditional desert habitat.

Through the Mohamed bin Zayed Species Conservation Fund this tradition continues in the form of an innovative and genuinely international approach to philanthropy and species conservation.



Brandegee Oak © A. Denvir



# DISBURSEMENT OF FUNDS 2017

**THE FUND IS COMMITTED TO PROVIDING GRANTS TO HIGH QUALITY PROJECTS TARGETING ANY SPECIES IN NEED OF URGENT CONSERVATION AND DOES SO WITHOUT GEOGRAPHIC BIAS.**

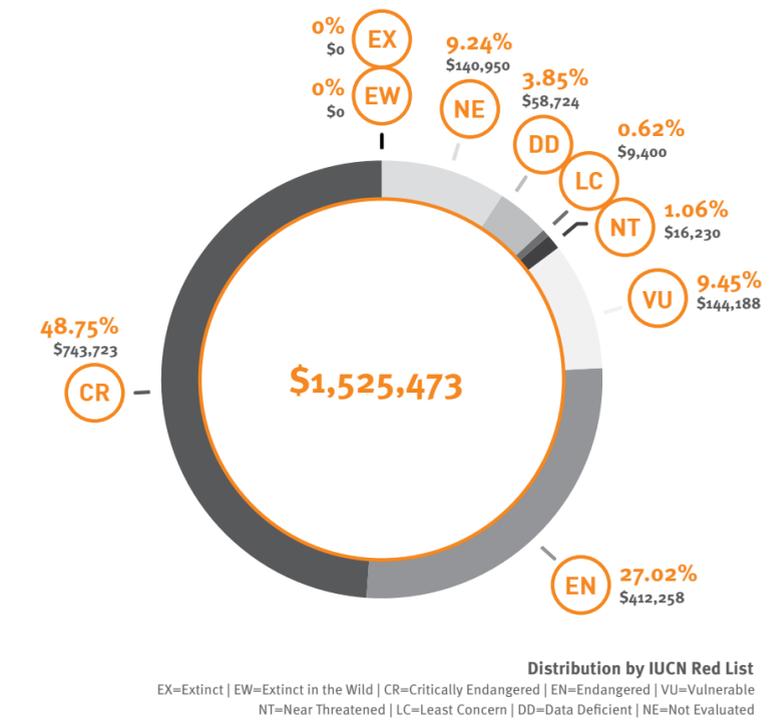
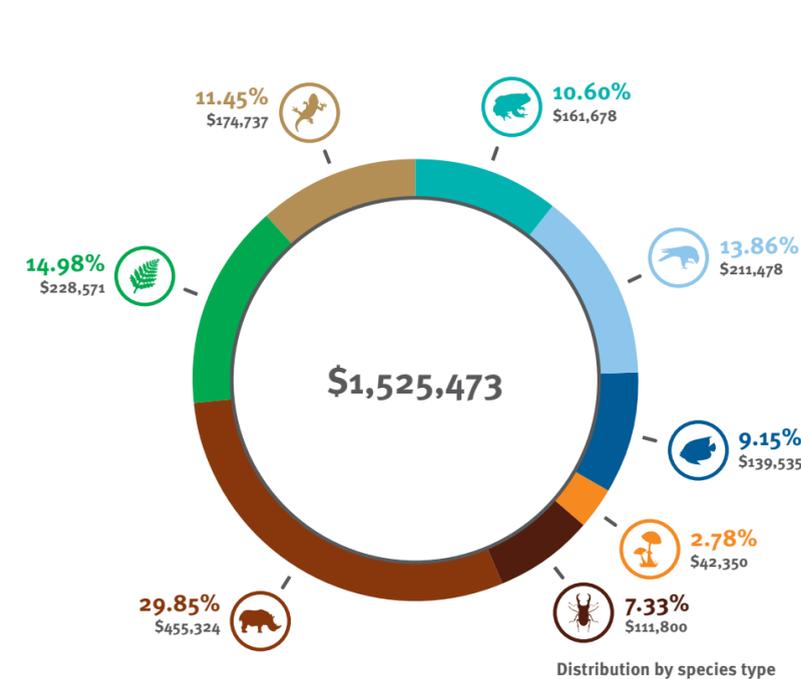
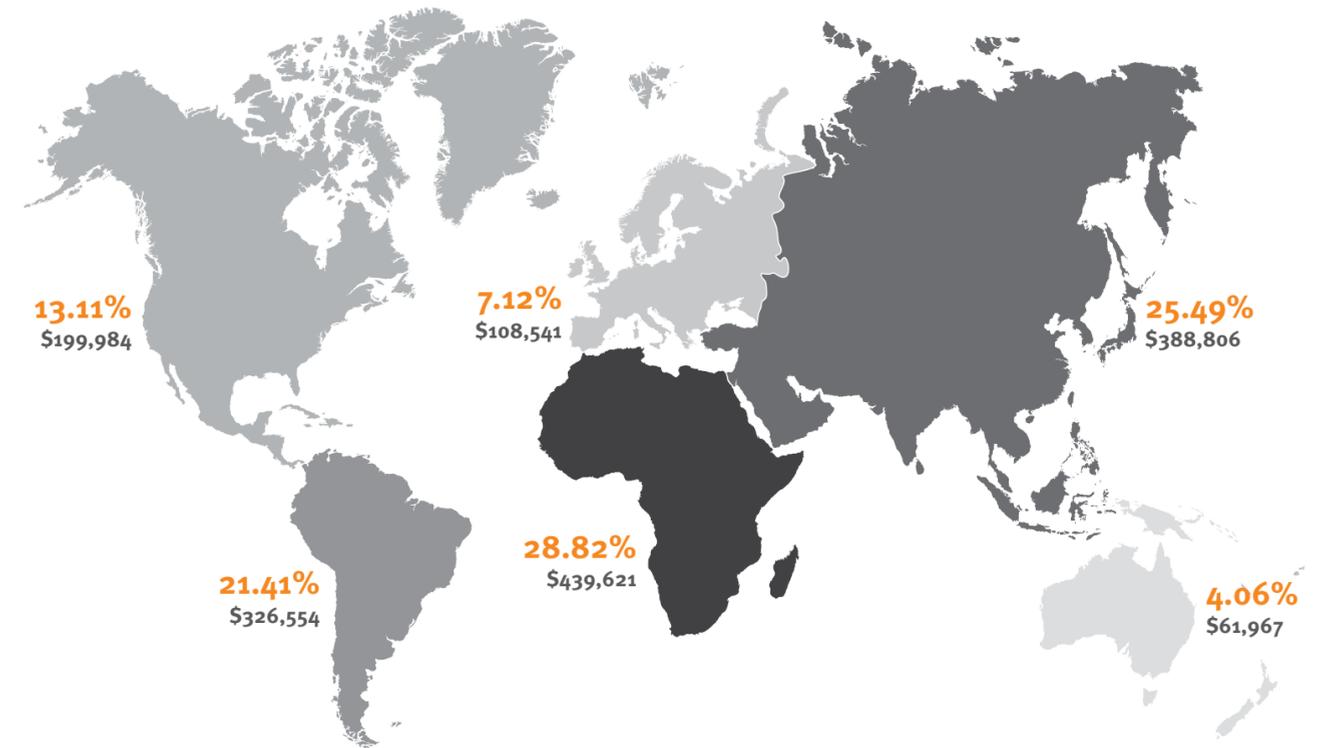
In 2017 the Fund supported 182 projects selected from 1,609 grant applications. The selected projects, located in 76 countries across five continents, shared \$1,525,473 in funding.

These 182 projects covered 173 different species, 106 of which had not previously been supported by the Fund. For 117 of the grant recipients, too, this was the first time they had received support from the Fund.

The majority of the 2017 disbursement was awarded to projects working to protect species classified either as Endangered or Critically Endangered in the IUCN Red List of Threatened Species. However, the Fund also continued to support projects for species listed as Data Deficient or Not Evaluated.

The Fund has been particularly interested in supporting projects in regions of high biodiversity, such as East Africa, Southeast Asia and the tropical Americas, as well as in countries where limited funding can go a long way. In many cases these areas are one and the same –representing high conservation value.

Since its inception in 2008, the Fund has contributed a total of \$16,494,529 to 1,738 projects worldwide, helping to conserve over 1,061 species and sub-species, and hopes to continue providing financial support to conservation initiatives well into the future.



Variable harlequin frogs © B. Gratwicke

# THE FUND'S MISSION, OBJECTIVES & STRUCTURE

**THE MOHAMED BIN ZAYED SPECIES CONSERVATION FUND IS A PHILANTHROPIC ENTITY ESTABLISHED IN OCTOBER 2008 AT THE WORLD CONSERVATION CONGRESS IN BARCELONA WITH AN INITIAL ENDOWMENT OF €25M. ITS AIM IS TO PROVIDE TARGETED GRANTS TO INDIVIDUAL SPECIES CONSERVATION PROJECTS AND RECOGNISE BOTH SPECIES CONSERVATION LEADERS AND THE IMPORTANCE OF SPECIES-LEVEL INITIATIVES IN THE BROADER CONSERVATION DEBATE.**

The Fund's reach is truly global, and its species interest is non-discriminatory. Conservationists worldwide can apply for funding for projects focused on any, and all, kinds of species — amphibians, birds, fish, fungi, invertebrates, mammals, plants or reptiles. Applications are subject to review by an independent advisory board.

By recognising leaders in species conservation and scientific research, the Fund hopes to ensure both their important work and the role of species in global conservation discourse receive the attention they deserve. The Fund hopes to contribute to the growth of a thriving global community of well-resourced species conservationists and to stimulate

additional, third party donations to ensure increasing annual contributions to direct species conservation projects.

The Fund's mission is to elevate the importance of species in the conservation debate by: providing timely support for grass-roots initiatives which make a genuine difference to species survival; supporting those whose passion, dedication and knowledge is key to saving species; assisting the conservation of species in their natural habitat; heightening awareness of species conservation; stimulating renewed interest among young people in the natural sciences; and attracting further contributions to species conservation from across the globe.

The Fund is a private philanthropic interest whose donor is His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces – a committed conservationist who holds a wide range of policy, legislative and economic responsibilities in Abu Dhabi and the UAE.

H.H. Sheikh Mohamed also chairs the Abu Dhabi Executive Council which oversees the emirate's development and implementation of all government policy and legislation under the guidance of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE and Ruler of Abu Dhabi.

The environment is one of Sheikh Mohamed's highest priorities, both from a policy and a personal perspective. He was instrumental in establishing the Environment Agency – Abu Dhabi, and has led significant conservation efforts to protect falcons, the Houbara Bustard and Arabian oryx within the UAE and internationally.

The Fund is managed by an independent board of directors, comprising local and international experts in environmental consideration, policy development and species conservation who allocate financial grants on the basis of detailed applications submitted by potential beneficiaries.

The Fund's independent board oversees all aspects of its operation, including the development of policies and procedures, recognition of species conservation leaders, provision of financial grants to successful applicants and the review of project reports submitted.



**The Fund's mission is to elevate the importance of species in the global conservation debate by:**

- Providing timely support for grass-roots initiatives that have a genuine impact on species survival.
- Supporting those whose passion, dedication and knowledge is key to saving threatened and endangered species.
- Assisting species' conservation in their respective habitats.
- Heightening awareness of species conservation.
- Stimulating renewed interest among young people in the natural sciences and attracting further financial contributions to species conservation from across the globe.

# 01 THE LIGHT

Mankind undoubtedly harbours a passion for all things natural, born of the connection to our environment that inspired E.O. Wilson's highly personal exploration of what he called 'biophilia'.

This intrinsic bond represents a singular ray of optimism in the otherwise murky twilight of our relationship with the environment. It drives people to achieve extraordinary things: to catalogue the presence of species in previously unsurveyed lands; to rewrite our understanding of species' lineage and range or rediscover creatures lost to time; and to provide sanctuary for those under pressure.

It also inspires them to push themselves to the outer reaches of human comfort to deliver a positive impact on the pantheon of life our planet supports, and is evident in the uncompromising desire to prevent unnecessary loss – to bring things back from the edge of the precipice.

These impassioned disciples of the vast cathedral of life, with its infinite brickwork of interconnected organisms, are the researchers and conservationists, the amateurs, students and experts who power conservation efforts across the world and seek to preserve the objects of our love for nature.





# PLIGHT OF THE SWAMP GIANTS

IN ONE OF THEIR LAST REMAINING STRONGHOLDS IN THE ANNAMITE MOUNTAINS OF CENTRAL LAOS, CHINESE SWAMP CYPRESS TREES ARE FACING THE TOUGHEST CHALLENGE OF THEIR CONSIDERABLY LONG LIFETIMES, DURING WHICH THEY HAVE BORNE WITNESS NOT ONLY TO THE WARTIME ACTIVITY OF THE INFAMOUS HO CHI MINH TRAIL BUT IN SOME CASES THE BIRTH OF THE LY DYNASTY IN THE 11TH CENTURY.

Like giant, green-fledged arrow shafts driven into the land by some colossal deity, these imposing conifers rise more than 140 feet into the forest canopy, projecting an air of natural confidence that belies their now precarious status.

*Glyptostrobus pensilis* are found in just two small areas in the central highlands of Vietnam and eight locations in central Laos. Previously thought to be limited to 200 individuals in Vietnam, they were discovered for the first time in Laos in 2007 by Dr. Gretchen Coffman of the University of San Francisco – only to face inundation and death two years later with the construction of the nearby Nam Theun 2 hydropower dam, which killed more than 450 trees.

Dr. Coffman went on to uncover a further 500 or so trees in an expedition to Laos in 2017 and has now returned with the



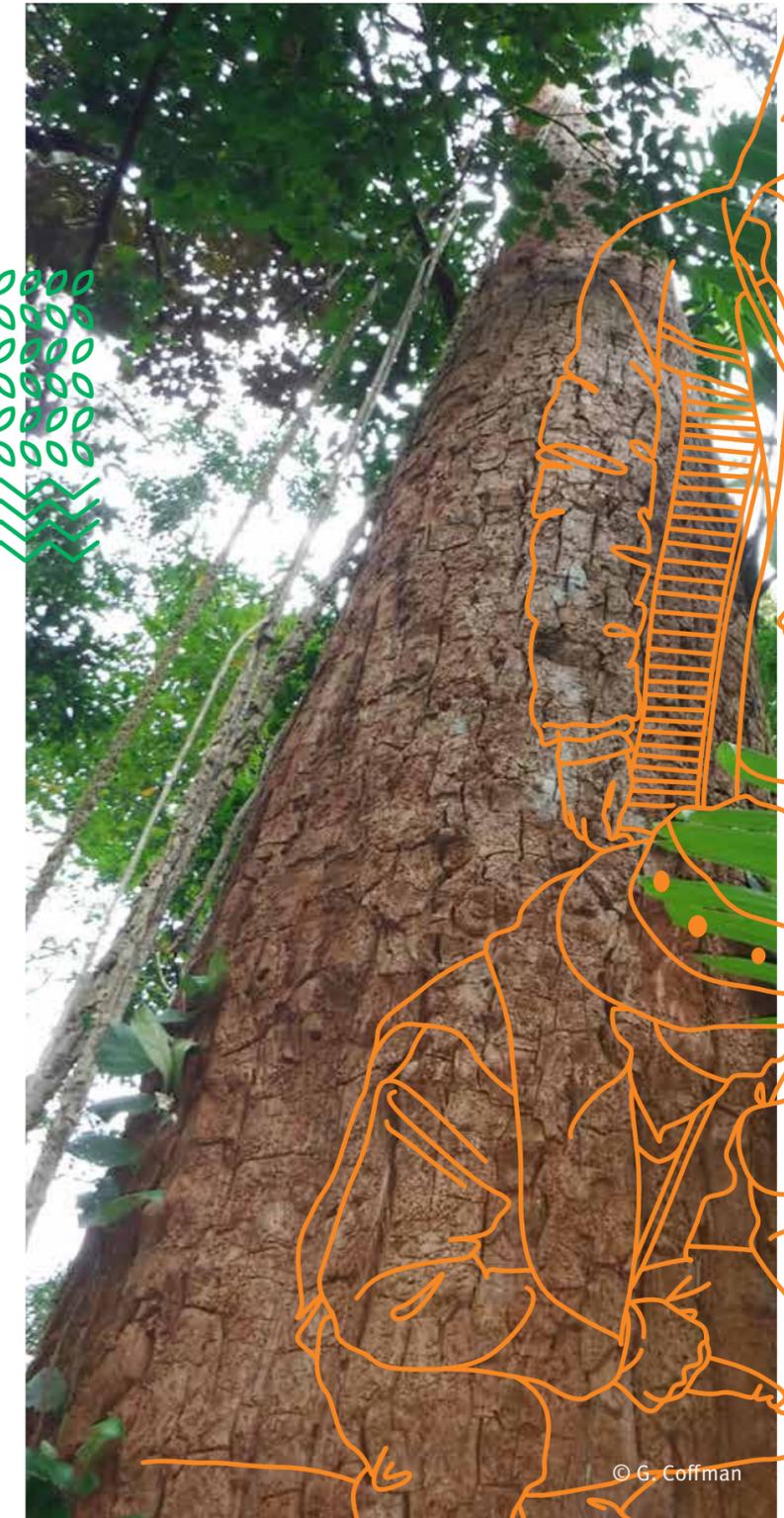
Chinese swamp cypress  
*Glyptostrobus pensilis*  
Critically Endangered  
Laos  
\$12,500



help of the Fund to support community engagement and habitat restoration efforts to save these critically endangered giant evergreens from extinction.

The trees in Laos lie within the 3,445 km<sup>2</sup> Nakai Nam-Theun Natural Protected Area, which represents one of the most extensive areas of undeveloped land in mainland Southeast Asia. Despite being in a reserve, the Chinese swamp cypress faces multiple threats including cutting for local house-building and for the luxury timber trade. The wood is highly weather resistant, making it an excellent timber for construction, whilst its pleasant scent makes it a highly-prized material for ornamental carving.

It is estimated that as many as 200 trees were felled in 2016 by Laotian villagers in exchange for large amounts of money offered by Vietnamese traders.



© G. Coffman

© G. Coffman



© G. Coffman

As the tree becomes increasingly scarce its wood rises in value, pushing the search ever deeper into the Protected Area.

The project involved a sizeable expedition comprising 36 local villagers, rangers, government officials, scientists, police, army and border patrol officials, some armed with the ubiquitous Kalashnikov rifles favoured by poachers and rangers alike throughout Southeast Asia.

Setting out from the Laotian capital, Vientiane, they journeyed for three days, navigating across a reservoir, travelling by river and taking on a mountain range using motorbikes and tok-toks – odd-looking hand-guided tractors – before enduring a gruelling four-hour hike to reach the ancient growth stand at Khoun Houay Heyow.

Once at the site, they spent seven days collecting core samples and cross-sections before beginning the long return voyage.

To the relief of all involved, the extraordinary and exhausting journey proved highly productive. So far the project has propagated 800 seedlings collected from the wild, representing a major step toward rescuing the species and an important ‘proof of concept’ for the strategy. The majority of these young plants have survived and are now over 30cm high, making this the only successful example of wild swamp cypress propagation in the world.

They collected 30 cross-sections of fallen trees as well as cores from living trees, the analysis of which has led to a definitive confirmation that trees of one metre diameter are older than 500 years and that their oldest relatives – such as the ‘mother’

tree at Khoun Houay Heyow – have been standing for more than 1,000 years. This represents another world first, as no other documentation of their age exists.

Despite all these achievements, however, Dr. Coffman is most proud of the conservation outreach activities involving villagers living near the swamp cypress trees. Without this human engagement, many of the trees would now have been harvested for building materials and the luxury timber market.

Villagers have been collecting wild seedlings and growing them in plastic bottles, and will be heavily involved in site selection, planting and the ongoing maintenance of restoration sites, providing much-needed hope that these ancient giants will live to see many more dynasties rise and fall in the coming centuries.

**THE PROJECT HAS PROPAGATED 800 SEEDLINGS COLLECTED FROM THE WILD, REPRESENTING A MAJOR STEP TOWARD RESCUING THE SPECIES AND AN IMPORTANT ‘PROOF OF CONCEPT’ FOR THE STRATEGY**



© G. Coffman



# A GREAT COMEBACK

ALONG THE MUDDY FOREST STREAMS OF PANAMA'S COLÓN PROVINCE, THE FLAGBEARERS OF AN EXTRAORDINARY COMEBACK ARE ATTEMPTING TO HOP THEIR WAY BACK TO HEALTH; DAZZLING VARIABLE HARLEQUIN FROGS (ATELOPUS VARIUS), THEIR TINY WAISTS ADORNED WITH TRANSMITTERS AND AERIALS, ARE PAVING THE WAY FOR A MAJOR AMPHIBIAN REINTRODUCTION.

Also known as the Clown frog, *A. varius* comes in an outlandish variety of black and neon ensembles worthy of a 1990s dance club – an ostentatious and unmistakable warning to would-be predators of the deadly neuro-toxin it excretes from its skin.

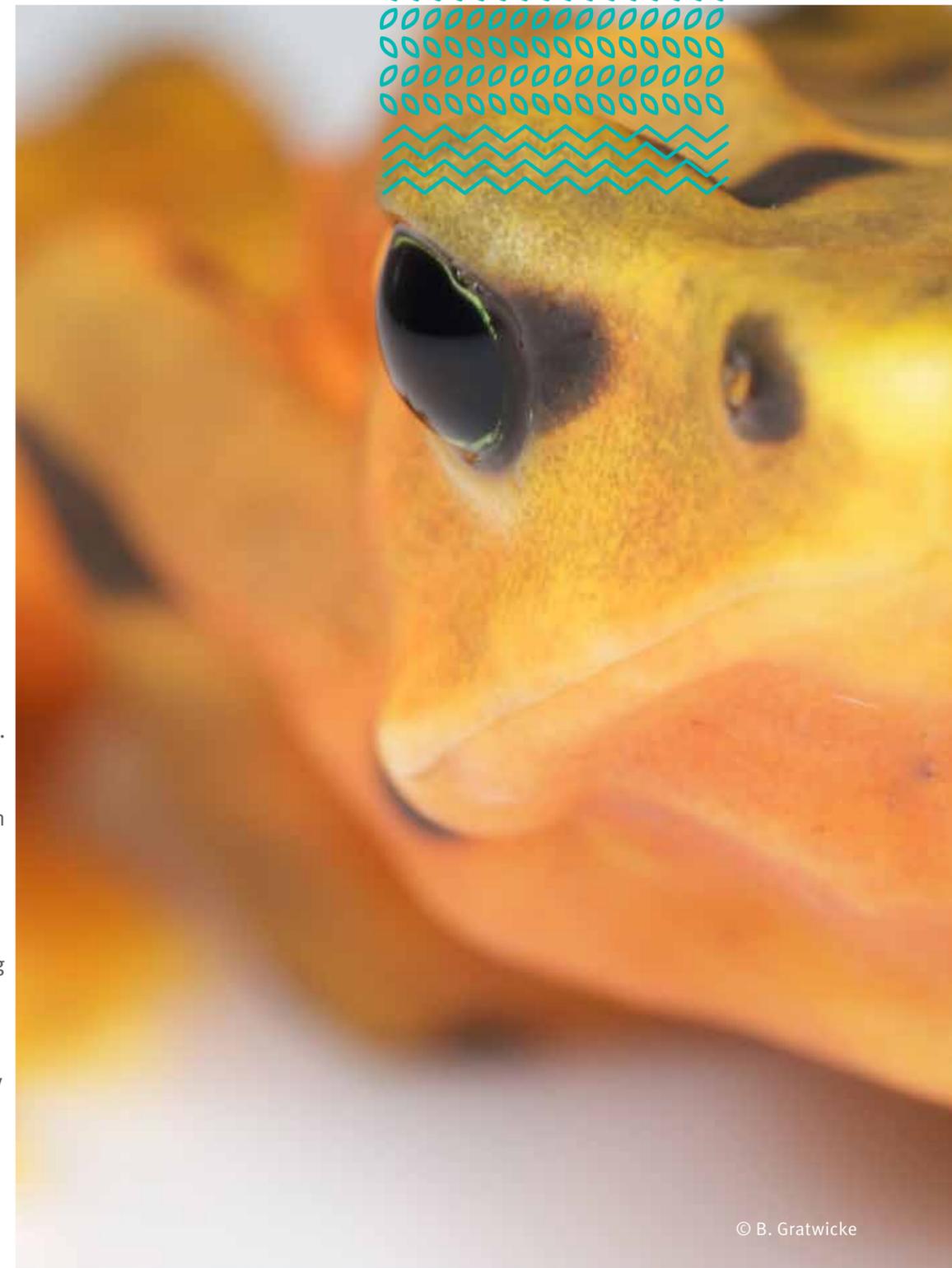
Once common in its stronghold stretching from Costa Rica to western Panama, *A. varius* has been decimated by chytridiomycosis – a devastating amphibian disease that has ravaged frog and salamander populations across Central America for three decades, eradicating as many as 100 species.

For eight years variable harlequin frogs were thought to have been completely wiped out in Costa Rica, until two sub-populations were discovered in 2013. Their ranks in Panama have also been drastically reduced, and they are now found in extremely low numbers in only six locations.

 Variable harlequin frog  
*Atelopus varius*  
Critically Endangered  
Panama  
\$12,500

Between 2013 and 2016, as the pathogen continued to ravage the wild population, individuals were collected and brought to a breeding centre by the Panama Amphibian Rescue and Conservation project (PARC) at the Smithsonian Conservation Biology Institute. It took several years to successfully breed the frogs in captivity, but eventually enough were produced to allow an initial re-introduction of the species for study in the wild.

Supported by a grant from the Fund to be spent on personnel and equipment costs, a team from the Smithsonian is now monitoring a group of these captive-bred frogs released in January 2018 in the coastal district of Donoso. Armed with fairground-prize plastic bags of amphibians and clad in high-visibility jackets to match the colourful brilliance of their tiny occupants, the field team braved forest downpours to release 500 frogs along a 150-metre long stream in the district.





Each frog carried a dab of special rubbery polymer on one toe that glows under UV light, allowing released individuals to be distinguished from any wild frogs that may be collected as part of the ongoing bi-monthly, mark-recapture monitoring study.

The researchers hope to use the study to assess the frogs' survival and disease prevalence, but also to track their whereabouts and movements based on a group of 30 individuals carrying tiny electronic chips and whip-like aerials.

Reminiscent of the field radios of yesteryear, these miniature 0.3g transmitters have allowed the researchers to track the frogs to estimate dispersal, sex-specific habitat selection and non-disease related mortality.

Their formidable nemesis – chytridiomycosis caused by the *Batrachochytrium dendrobatidis* fungus – does not survive above 28C, and population declines have been less pronounced in warmer areas, leading to a 'climate refuge' hypothesis that the researchers hope to gather evidence for by collating distribution and survival data. To this end they have also monitored the body temperature of released frogs and set up data loggers to measure ambient conditions.

This preliminary release therefore represents the first step in developing a comprehensive map of suitable habitat for the species in Panama to support a full-scale reintroduction of *A. varius* in areas where they are less vulnerable to the fungal pathogen, hopefully creating a bastion against the further spread of this most virulent disease.

... THE FIELD TEAM BRAVED FOREST DOWNPOURS TO RELEASE 500 FROGS ALONG A 150-METRE LONG STREAM IN THE DISTRICT





# RESCUING THE 'RED GIRL'

MADAGASCAR'S NETWORK OF FRESHWATER RIVERS AND TRIBUTARIES, SUSTAINED BY RUN-OFF FROM THE ISLAND'S RUGGED VOLCANIC RELIEF, IS HOME TO FRESHWATER FAUNA BRIMMING WITH UNIQUE SPECIES THAT ARE ENDEMIC TO THE ISLAND, AND THE NORTH WEST ALONE IS HOME TO AT LEAST 26 FISH SPECIES THAT ARE FOUND NOWHERE ELSE ON EARTH.

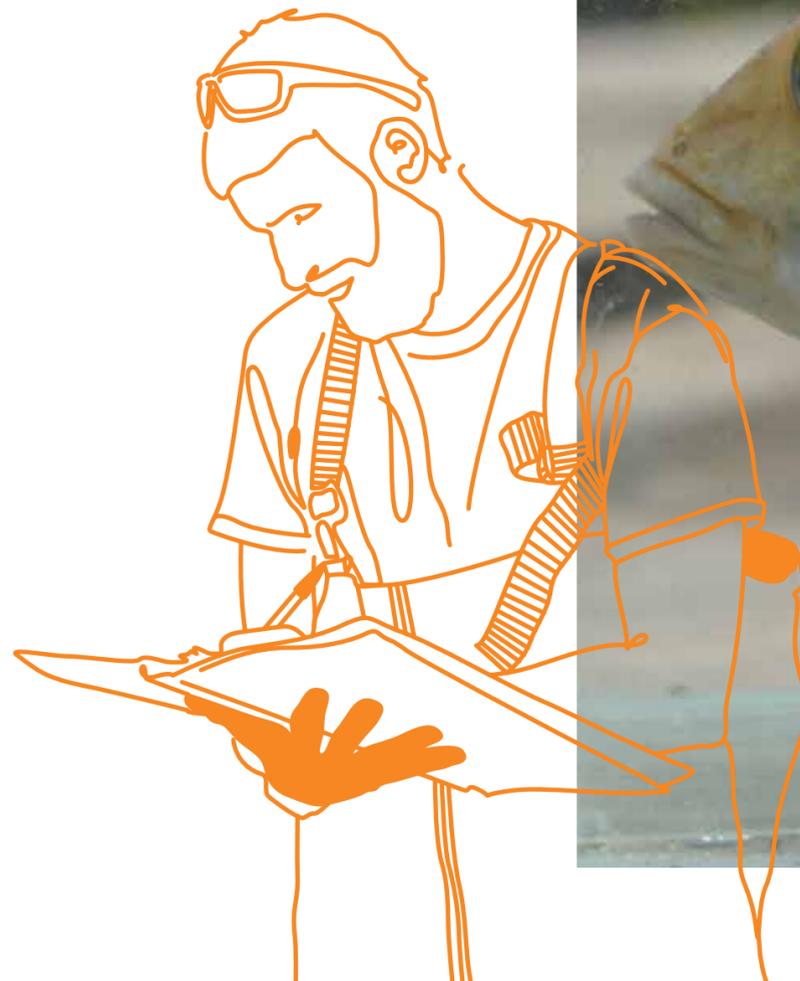
Freshwater fish from the family Cichlidae, known as cichlids, are particularly abundant here, and one member of the family has recently made a remarkable reappearance in the wild.

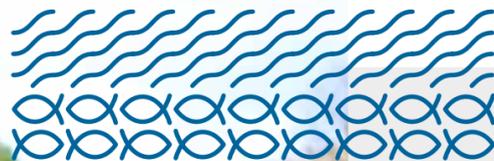
The Joba mena cichlid (*Ptychochromis insolitus*), thought to have been extinct from its native habitat, has been saved from the brink but now requires urgent conservation measures to ensure its continued survival.

A team from the Zoological Society of London aquarium has launched a project to protect the remaining threatened freshwater fish endemic to the Amboabo River of Madagascar, including the Joba mena and Melimsiska (*Paretroplus gymonpreopercularis*) – both of which are listed as Critically Endangered by the IUCN – the Lamena (*Paretroplus nourissati*) – listed as Endangered – and the Zono (*Pachypanchax sp. Sofia*), which is Data Deficient.

 Joba mena  
*Ptychochromis insolitus*  
Critically Endangered  
Madagascar  
\$5,000

THE REMARKABLE REDISCOVERY OF THE JOBA MENA, AND THIS SUBSEQUENT PROJECT, HAVE PROVIDED A NEW START FOR THIS CHARMING FISH AND ITS CLOSE RELATIVES.





With the assistance of the Fund in the form of a grant to cover travel and field work costs, the ZSL team aims to conduct survey work along the river, creating a map of its species and their potential for translocation to other suitable sites.

It is a continuation of the original project initiated in 2013 to find the Joba mena – meaning ‘red girl’ in Malagasy, on account of its striking orange-red fin edges – which was launched after a survey conducted by Zurich Zoo determined that only three males and no females of the species existed in captivity.

A public plea was made to aquarium owners and fish collectors around the world to identify males that could be used for breeding. One of those who responded recalled seeing the fish in a remote town in northern Madagascar.

Against all odds, a resultant expedition succeeded in locating the Joba mena, along with three other sympatric species (sharing the same ancestry). It took days of searching, but 18 individuals were ultimately discovered in a former tributary of the Mangarahara River, now disconnected from its source.

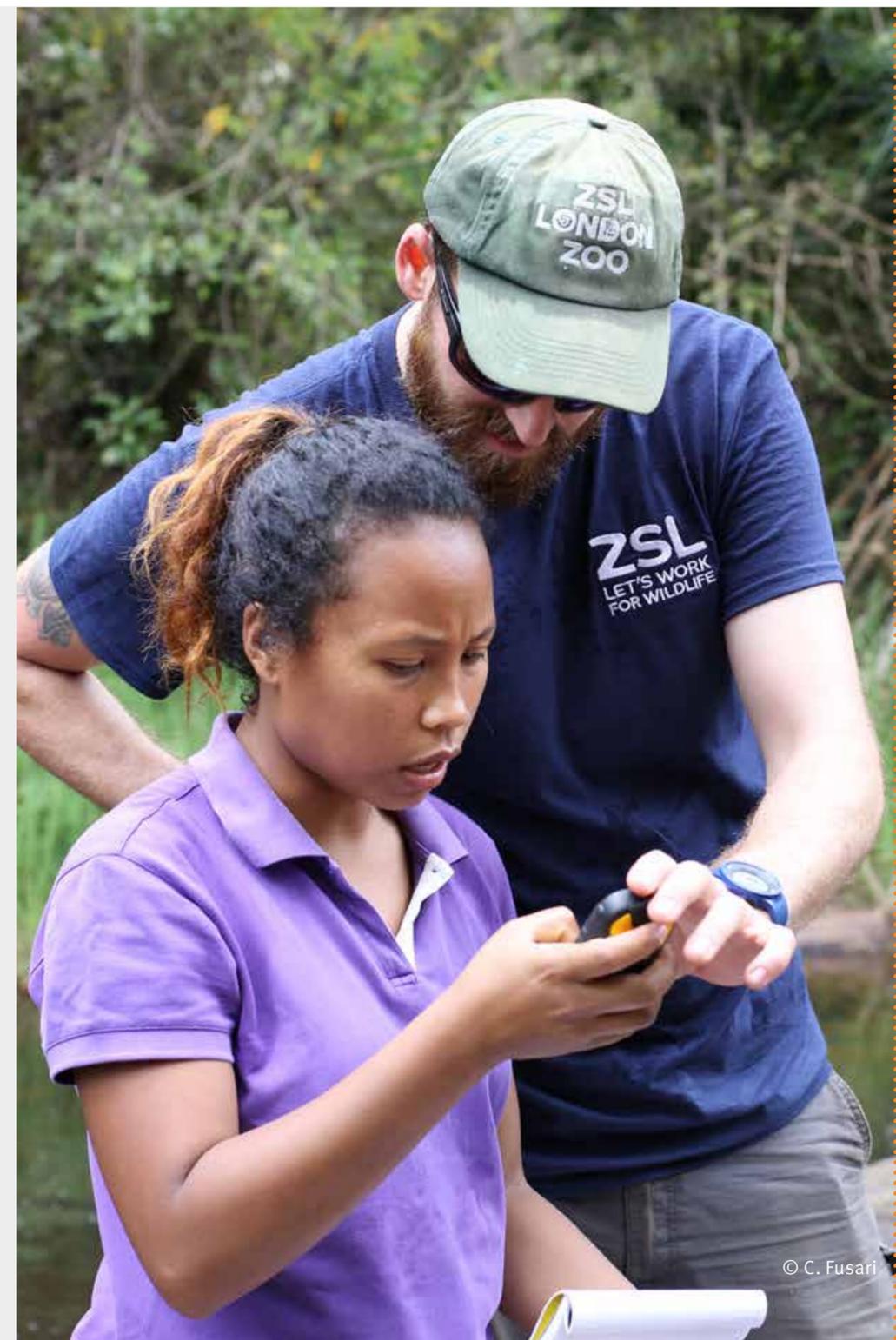
It was miraculous that this tiny group had survived, cut off from the water flow of the river in a habitat that was far from ideal, and so the cichlids were subsequently transported to an aquaculture facility in Andapa to be bred in captivity in a last-ditch attempt to save the species from extinction.

Their habitat is under considerable pressure stemming from deforestation, drought, dam construction and subsistence fishing, and the Amboaboa and Mangarahara rivers in which these cichlids are found have all but dried up owing to their waters being diverted to feed local rice fields.

Many creatures across the island are also threatened by the introduction of invasive species to their habitats. The Amboaboa River is particularly important for its endemic fish. It is one of the few rivers yet to be ravaged by the aggressive predatory ‘snakeheads’ which have been introduced to the island, and therefore retains its native fauna.

The project team intend to walk, plot and photograph the full course of the Amboaboa River from its source in the Marotandrano Special Reserve to the Mangarahara River, assessing all four species’ areas of occupancy using a combination of sampling and information-gathering from local fishermen. They hope to determine the feasibility of translocation to a community pond in the Reserve as a means of securing these species, and will establish remote monitoring equipment to keep an eye on habitat conditions throughout the year.

The remarkable rediscovery of the Joba mena, and this subsequent project, have provided a new start for this charming fish and its close relatives, giving rise to hopes that the red girl may one day return to grace the north-western waterways of its natural home.





# HOLED UP IN THE HAJARS

AS FAR AS SEARCH AREAS GO, THE IMPOSING HAJAR MOUNTAIN RANGE PRESENTS A FORMIDABLE CHALLENGE, PARTICULARLY WHEN YOUR QUARRY IS SECRETIVE, NOCTURNAL AND USUALLY ONLY IDENTIFIABLE BY EAR. THIS RUGGED, UNFORGIVING CRESCENT RISES FROM THE SHORES OF THE GULF OF OMAN AND STRADDLES THE UAE EMIRATE OF FUJAIRAH, FORMING AN ANCIENT BRIDGE BETWEEN THE BATINAH REGION OF OMAN AND ITS MUSANDAM PENINSULA.

The range hosts a unique biodiversity and serves as a refuge for a rag-tag rabble of endemic and relict species; the discovery of one such resident of Jebel Akhdar in 2013 – the Omani Owl, *Strix butleri* – led to all previously known populations from Egypt and western Arabia being re-named *Strix hadorami*.

First described in 1878, the species holotype for *S. butleri* was of unknown origin; today, it is only known from less than ten locations in Oman, two in Iran, and just one in the UAE – Wadi Wurayah National Park in Fujairah, where it was spotted in 2015.

Following on the heels of this taxonomic shakeup, Dr. Jacky Judas of the Emirates Wildlife Society, the UAE affiliate of the Worldwide Fund for Nature (EWS-WWF), sought the assistance of the Fund to

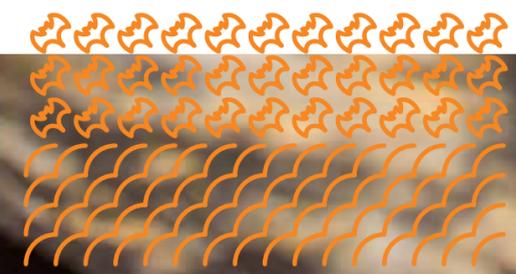
Pallid Scops-Owl, Wadi Wurayah National Park © Jacky Judas



Omani Owl  
*Strix butleri*  
Data Deficient  
United Arab Emirates  
\$12,500



Arabian pipistrelle  
*Hypsugo arabicus*  
Data Deficient  
United Arab Emirates  
\$12,500



Muscat Mouse-tailed Bat, Wadi Mistal, Jebel Akhdar © Jacky Judas



© Jacky Judas

assess the status of the newly-discovered population by gathering distribution, abundance and ecology data from Wadi Wurayah National Park in the UAE and Jebel Akhdar in Oman, with a view to compiling a conservation plan for the species.

Surveys employing recordings of owl song to encourage an inquisitive response from the target species were carried out in the UAE in 2017 and early 2018, but the project has yet to receive official authorisation in Oman. Although the survey was unable to provide official confirmation, it has led the team to suspect that the Omani Owl is present in several additional sites besides Wadi Wurayah.

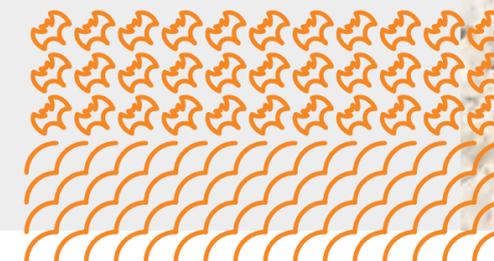
The survey also provided an opportunity to collect important distribution data on more common species, including the Little Owl (*Athene noctua*) and Pallid Scops Owl (*Otus brucei*) in the UAE.

An unexpected result of the survey was the first official record of the Arabian Spotted Eagle Owl in the UAE (*Bubo africanus milesi*), known from the Dhofar region of Southern Oman and only a handful of sightings in the Omani Hajars. The owl's presence had been suspected since 2004, when what was thought to have been a Desert Eagle Owl chick (*Bubo ascalaphus*, rescued from Dibba) moulted, revealing the adult plumage of its rare relative.

However, the confirmation was ultimately made by the researchers whilst using the 'playback' technique near Khorfakkan in Sharjah at around midnight on Halloween. Rather than providing an answer, the owl decided to investigate the source of the calls in person, providing a rare opportunity for the team to confirm their sighting by photographing an individual. Remarkably, a second Arabian Spotted Eagle Owl was spotted soon after just a few kilometres from the first.

Variations in the physical attributes and vocalisations of the Arabian Spotted Eagle Owls add to a growing body of evidence to suggest that the Arabian population might be a distinct species of its own, rather than a sub species of the African Spotted Eagle Owl. To crack this taxonomic mystery once and for all, Dr. Judas is now collaborating with a team of researchers who aim to catch the Arabian Spotted Eagle Owl in the UAE Hajars to take blood for a genetic analysis.

**THE BAT SURVEY SEEKS TO GATHER DISTRIBUTION DATA TO DETERMINE THE PRESENCE AND STATUS OF A VARIETY OF SPECIES, INCLUDING THE ARABIAN PIPISTRELLE (HYPSTUGO ARABICUS), WITH A VIEW TO DEVELOPING FUTURE MONITORING TECHNIQUES AND CONSERVATION RECOMMENDATIONS.**



© Jacky Judas



The Omani Owl project is being conducted in parallel with a survey to develop echolocation call references for bats in the northern Hajars.

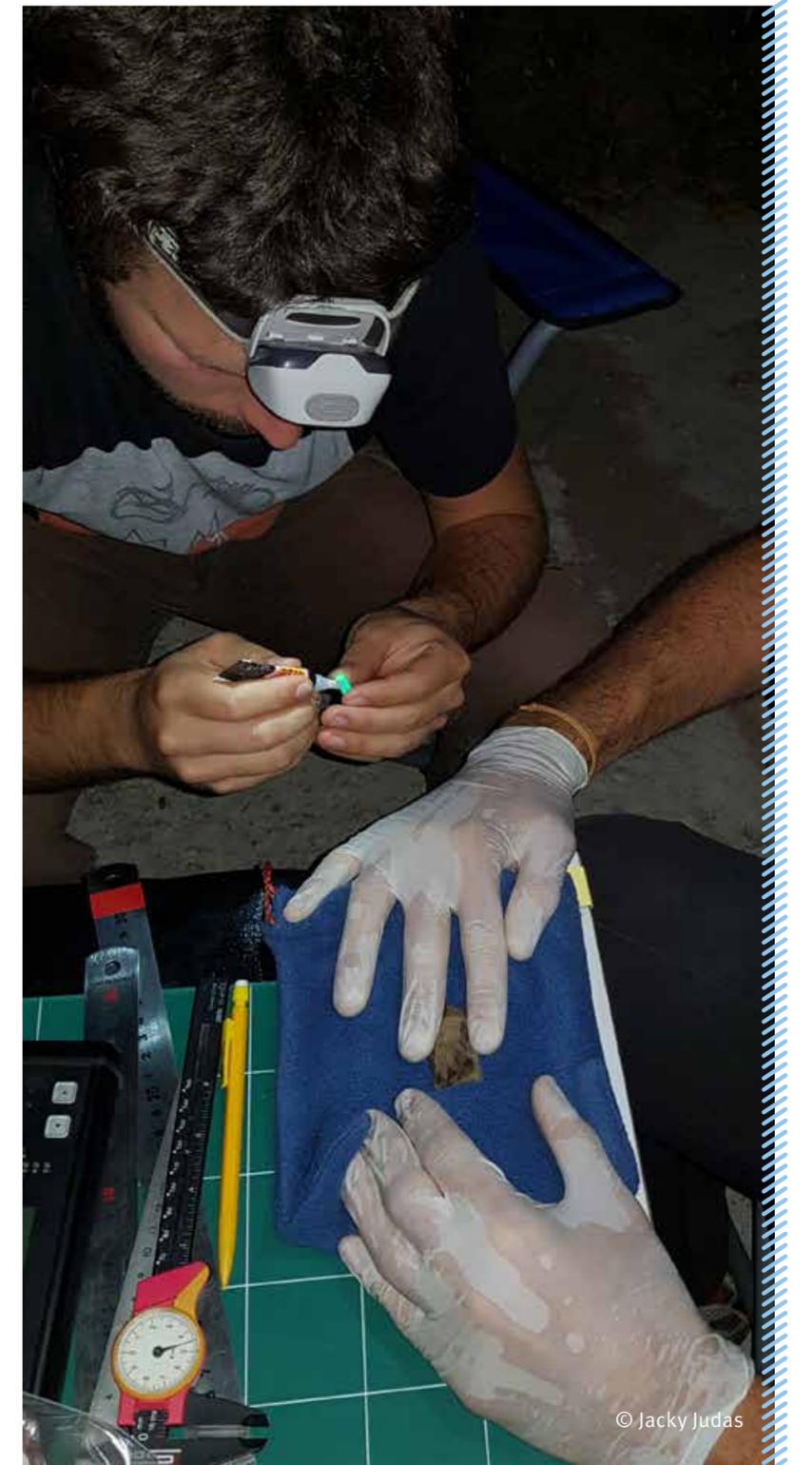
As with the hunt for the elusive nocturnal birds of prey, the bat survey seeks to gather distribution data to determine the presence and status of a variety of species, including the Arabian pipistrelle (*Hypsugo arabicus*), with a view to developing future monitoring techniques and conservation recommendations.

The bat surveys sought to target locations in Oman in which historical species records and sightings have occurred. These include Wadi Sahtan and Rustaq (Arabian pipistrelle) and Hazm Fort to the north, where five species were recorded in 1955, two of which represent the only records in the UAE or Oman.

Unfortunately, the project was unable to obtain the necessary permits to conduct surveys in Oman, so was limited to the UAE part of the Hajar range. A 15-day survey was conducted in the UAE in March 2017, followed by a second in early 2018. The surveys have been highly successful in expanding the existing knowledge of the bat fauna of the UAE, revealing the presence of three species previously unrecorded in the country – the Geoffroy's bat (*Myotis emarginatus*), Botta's Serotine (*Eptesicus bottae*) and the Egyptian Tomb Bat (*Taphozous perforatus*) – and identifying a new colony of Egyptian Fruit Bat.

There is much more to discover, however, as the researchers have recorded several distinctive echolocation calls belonging to species they are yet to identify in-hand, providing the tantalising prospect of expanding the list of species found in the UAE still further in the future.

THE RESEARCHERS USED THE 'PLAYBACK' TECHNIQUE NEAR KHORFAKKAN IN SHARJAH AT AROUND MIDNIGHT ON HALLOWEEN. RATHER THAN PROVIDING AN ANSWER, THE OWL DECIDED TO INVESTIGATE THE SOURCE OF THE CALLS IN PERSON, PROVIDING A RARE OPPORTUNITY FOR THE TEAM TO CONFIRM THEIR SIGHTING BY PHOTOGRAPHING AN INDIVIDUAL.





# HIDDEN HINGE-BACKS AND FURTIVE FLAPSHELLS

THE SWAMPY WETLANDS THAT FLANK THE WHITE NILE IN SOUTH SUDAN REPRESENT ONE OF THOSE RELATIVELY RARE LOCATIONS WHERE SIGNIFICANT GAPS EXIST IN OUR KNOWLEDGE OF LOCAL FAUNA. IN PARTICULAR, WE KNOW ALMOST NOTHING ABOUT THE FASCINATING VARIETY OF TORTOISES AND FRESHWATER TURTLES OF THE AREA – THAT IS, UNTIL NOW.

From the familiar-shaped Forest hinge-back tortoise to the various strange-looking freshwater turtles of the area, with their tubular snouts and smooth leathery shells, these reptiles are disappearing from their native environments across the African continent.

Lured by the prospect of uncovering much-needed information on a number of species of which little has been recorded from this region, a team led by Dr. Luca Luiselli of the Institute for Development, Ecology, Conservation & Cooperation (IDECC) sought the assistance of the Fund to conduct field research in South Sudan.

The project seeks to gather information on the distribution of highly-threatened chelonian (turtle, terrapin or tortoise) species in South Sudan, where their



Forest hinge-back tortoise  
*Kinixys erosa*  
Critically Endangered  
South Sudan  
\$18,250

status is completely unknown, and to establish a network of field researchers across the country to lead subsequent conservation efforts.

Given the general lack of information on all varieties of tortoise and freshwater turtle in the region, the project also seeks to determine the distribution, ecology and conservation status of all the other chelonian species of the country.

As with so many other endangered species, tortoises and turtles are hunted for their flesh, which is believed to have medicinal properties. This is but one of several threats to these species that has increased as the human population of Juba has risen owing to the ongoing instability of other areas of the country. The mass movement of internally displaced persons has also led to intensified human activities including fishing, deforestation, animal grazing and agriculture, all of which negatively affect turtle and tortoise habitat.

Field surveys and interviews with local people took place between July and October 2017, producing an extensive,

geo-referenced dataset on the turtles and tortoises occurring in South Sudan, including the Nubian flapshell turtle (*Cyclanorbis elegans*).

Very few of these turtles have been captured in the wild in the past 50 or so years, and not a single individual exists in captivity today. Nor has there been any record of an individual in the wild in East Africa for the past 15 years, despite extensive chelonian field surveys over the past two decades.

However, in August 2017 the survey observed an individual that had been captured by fishermen. Although the meat had been removed from the carcass of the animal, it was positively identified by its shell and its sheer size (measuring 62cm in diameter). This discovery has spurred the team on to intensify their surveys in the hope of finding a live – or at least intact – specimen.

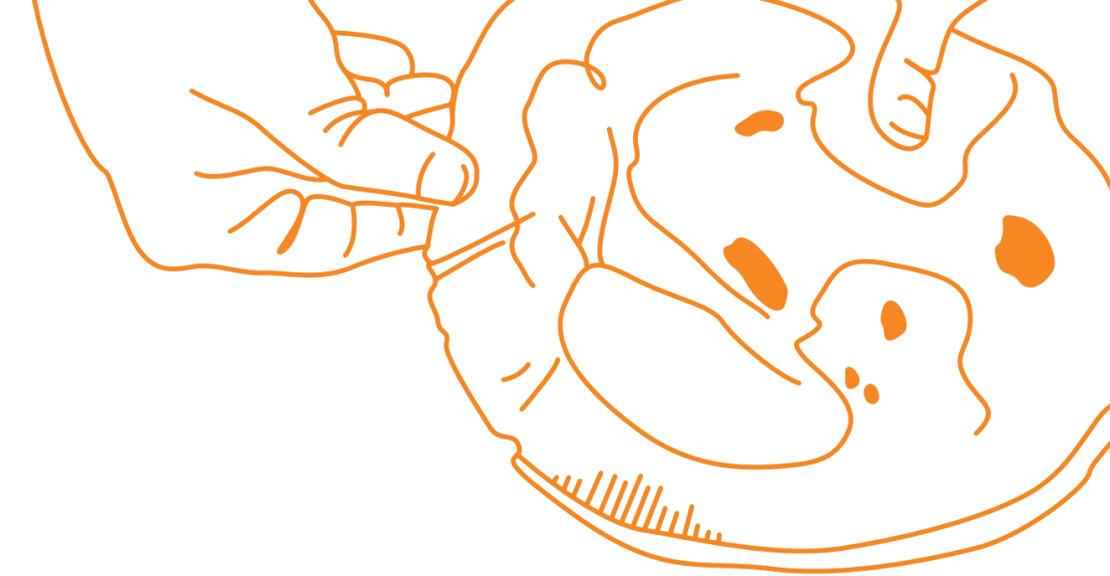
Other species encountered during the surveys included *Pelusios adansonii*, *Pelomedusa (subrufa) schweinfurthi* and *Cyclanorbis senegalensis*. Also, *Trionyx*

*triunguis* was found to be common and well-known to fisherman owing to the popularity of its meat among local residents and its tendency to inflict serious damage on anyone brave enough to catch it.

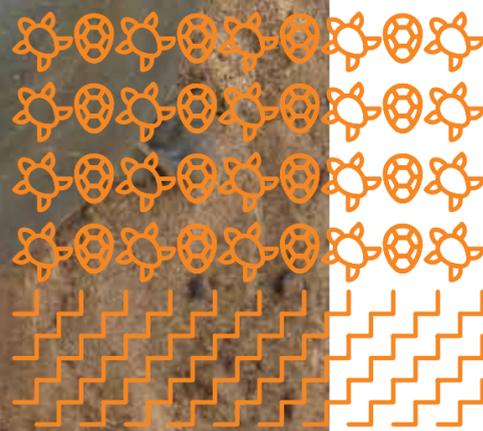
Unfortunately, however, the survey did not record any instances of the endangered Forest hinge-back turtle (*Kinixys erosa*), despite initial indications that it might have been present in the survey area.

Not only have the surveys been a success, since receiving the grant the project has attracted a further \$5,000 from the Turtle Conservation Fund of the IUCN Species Survival Commission's Tortoise and Freshwater Turtle Specialist Group.

Armed with all the new data the project has gathered, Dr. Luiselli aims to produce a detailed action plan for the conservation of each species, which he hopes will be approved by the government of South Sudan. His ultimate vision is to establish a network of scientists across the entire continent to implement a global conservation strategy to preserve Africa's chelonians.



Senegal flapshell turtle © Luca Luiselli



# GRANT RECIPIENTS 2017



Samuel Ojelel



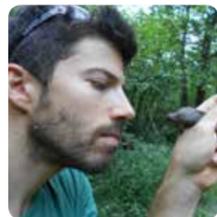
Seana Walsh



Seidu Issah



Sheila Rodriguez Machado



Stefano Canessa



Tashi Dhendup



Thanh Van Nguyen



Thomas Ghestemme



Tim Bray



Tomas M. Rodriguez Cabrera



Najoua Trigui El Menif



Tshering Nidup



Tiasa Adhya



Umer Ayyaz



Vesna Milankov



Victor Hugo Jimenez Arcos



Vishal Ahuja



Uğur Kaya



Abebe Getahun



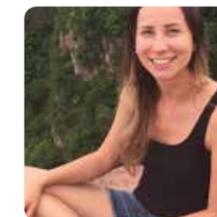
Alain Delon



Ali Jalali



An Nguyen



Ana Paula Motta



Anders Dahlberg



Angie Appel



Anna Soler Membrives



Arturo Cruz



Atuo Fidel



Balakrishnan Peroth



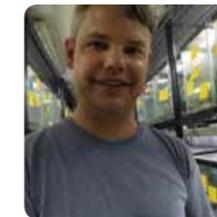
Silvana Campello



Biraj Shrestha



Brad Lock



Brian Gratwicke



Camille Coudrat



Carla Sousa Santos



Carlos Andres Delgado Velez



Carly Waterman



Charles-Edouard Fusari



Craig Dahlgren



Daya Ram Bhusal



Debbie Bower



Dmitry Dorofeev



Janmejay Sethy



John McEvoy



Vinayaka K.S.



Dustin Wolkis



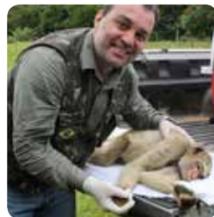
Emily Beech



Enrique La Marca



Fabio Maffei



Fabiano R. Melo



Francisca Romero Inostroza



G. Francesco Ficetola



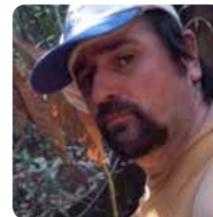
Gerald Kuchling



Lotanna Micah Nneji



Louise Baldwin



Luca Luiselli



Luiz Gustavo M. Silva



Maarten De Brauer



Gojkovic Nemanja



Wagner R. Lacerda



Greg Muller



Gretchen Christina Coffman



Gustavo Pisso



Mariana Altrichter



Marrino Rakotoarisoa



Matthew Young



Mauro Tammone and Noelia Barrios



Meri Arzumanyan



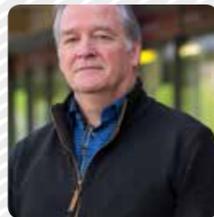
Hai Ngo



Hannah Nevins



Hector Gutierrez Guzman and Kirsten Moy



Hugh Pritchard



Ian Singleton



Michael Pointer



Mikhail Rusin



Mukhlisin



Natalia Alejandra Alvis Rojas



Nik Cole



Inao Vas



Iyan Robiansyah



Jamestone Kamwendo



Jeffrey Drummond



Jesse B. Borden



Noelia Barrios and Mauro Tammone



Paddy Saunders



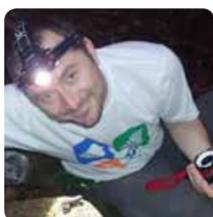
Paulo Marinho



Ramvilas Ghosh



Randi Syafutra



Jim Labisko



Joachim Gratzfeld



Karolina Araya



Katey Lesneskit



Kennedy Wolfe



Ray Pierce



Reiko M. Goodwin



Richard Lansdown



Richard Olwa



Oleksandr Bapra



Khima Nand Balodi



Kinley Tenzin



Konrad Mebert



Alice Reisfeld, Karlla Barbosa and Thiago Costa



Letro



Robert Byamungu



Rodrigo W. Soria Auza



Kevin Rowe



Sagar Dahal



Salvador Carranza

# 02 THE DARKNESS

It is perhaps ironic, although far from illogical, that biophilia – that amorphous, innate connection between man and nature – is also the root cause of much misery in the natural world and a major challenge to conservation.

The uncomfortable truth is that it is the human love of all things natural and exotic drives some to collect and catalogue beautiful species, not as biologists seeking to further humanity's understanding of the natural world, but as hoarders of creatures, transfixed in a manner akin to the maddening human lust for precious metals and minerals.

Many also revere nature to the extent that endows its components with supernatural restorative qualities – an often urgent, emotional belief that is exploited by the shadowy, macabre purveyors of animal body parts to both legal and illegal markets across the world.

The insatiable appetite for knowledge that drives the scientist, therefore, is equally evident in the passion of the illicit collector and the desperation of the believer; whilst not unnatural, these latter fascinations are hugely detrimental to the fate of all manner of endangered creatures on our planet.



# AVIAN RESCUE

FOR SOME TIME, THE ODDS HAVE BEEN STACKED AGAINST THE SANTA CRUZ GROUND-DOVE (ALOPECOENAS SANCTAECRUCIS).

Once found in healthy numbers on the uninhabited 8 km<sup>2</sup> volcanic island of Tinakula in the Solomon Islands, these plodding, endangered birds have fallen foul of a shocking run of bad fortune. Vulnerable to invasive species of ants and rats, and trapped for the exotic pet trade, they have been listed as Endangered by the IUCN since 2000, but very few would have foreseen the tragic circumstances they face today.

On October 20, 2017, the volcano beneath them erupted, blanketing their entire island habitat in a thick layer of ash.

One can see why these beautiful birds, with their iridescent purple plumage and pale pink-coloured breasts, would be irresistible to unscrupulous dealers and collectors. In an ironic twist of fate, it was quite possibly these impressive attributes that saved them from being wiped out completely. At the time of the eruption on Tinakula, the only Ground-doves known to have survived were caged birds that had been intercepted just before they were about to be shipped abroad to private collectors.

A group of trappers had apparently visited the island a few months earlier and collected what was initially believed



Santa Cruz Ground-dove  
*Alopecoenas sanctaecrucis*  
Endangered  
Solomon Islands  
\$6,600/\$12,500

to be the entire Santa Cruz Ground-dove population on Tinakula.

Early reports indicated that the birds were being held in the city of Honiara, on nearby island of Guadalcanal. Therefore, in late October the Fund issued an emergency grant to BirdLife International to cover the immediate costs of sending a research student to the Solomon Islands to immediately assess the captive doves' health and the conditions in which they were being held.

If these conditions were not up to scratch, veterinary care would be delivered and new aviaries constructed, providing perches, shade and water, and segregating the birds to stop them harming each other.

It transpired that around 50 pairs of caged birds had survived after having been kept for several weeks, if not months, in small boxes in Honiara and Nendo – a testament to their hardiness as a species.

Their saviour – Joe Wood – flew to the islands and collected both batches of survivors, transporting them to a very basic facility outside Honiara Airport, comprising little more than a hut in an overgrown field. Once there he provided the birds with



© J. Wood



© J. Wood



© J. Wood

antibiotics and proper food, and built an aviary to house them; they have all since made a full recovery.

While the habitat on their native island is expected to recover, this will take time, and the birds will need to be held captive in the intervening time if no other suitable location can be found for their release.

This is the focus of an ongoing project made possible by a second grant issued by the Fund, which aims to maintain and care for the captured birds while continuing to assess the conditions on Tinakula and neighbouring islands.

In December 2017, researchers received the much-welcome news that 15 wild doves had been spotted on Tinakula, and ongoing monitoring will seek to ascertain whether any more have survived the eruption.

Finding a new island home for the captive doves is complicated. As their name implies, these laid-back islanders are reluctant flyers who have always been free to forage at ground level in woodland areas owing to the lack of indigenous predators.

However, the neighbouring islands have been colonised by invasive species, including black rats, cats and ants, all of which would pose a direct threat to the ground-dwelling doves.

Local bureaucratic processes have held up the full implementation of the project, but the surveys of Tinakula will hopefully begin in the summer of 2018. So, for now, the unfortunate doves remain in their aviaries, awaiting the revival of their native ecosystem or the preparation of a suitable new home.

It is likely that 25 pairs will be sent to a breeding programme at Singapore Zoo when the correct permissions have been obtained, while the remaining birds are housed in upgraded facilities at the airport awaiting the results of the surveys.

The irony of the fact that trappers most probably saved them from extinction will clearly be lost on the doves themselves; but it serves as a perfect example of the often imperfect but nonetheless fortuitous circumstances that can lead to conservation. Thanks both to chance and the dedication of their rescuers, the remaining Santa Cruz Ground-doves now have a genuine chance to repopulate their island home.

ONE CAN SEE WHY THESE BEAUTIFUL BIRDS, WITH THEIR IRIDESCENT PURPLE PLUMAGE AND PALE PINK-COLOURED BREASTS, WOULD BE IRRESISTIBLE TO UNSCRUPULOUS DEALERS AND COLLECTORS.



© J. Wood

# MACABRE MARKETS

IN THE CLAUSTROPHOBIC BUSHMEAT MARKETS OF CAMEROON, LAID OUT ON WOODEN PALLETS AND STRIPS OF STAINED CARDBOARD, A GRIM SMORGASBORD OF FOREST CREATURES MAY BE FOUND, FEATURING HEADLESS ANTELOPE, SCALY PANGOLINS AND LIFELESS RODENTS. THE MOST EXPENSIVE MEAT ON OFFER, HOWEVER, IS THAT OF SNAKES.

While West African snakes face increasing pressure from deforestation, hunting and unregulated harvesting for the international pet trade, they are also increasingly being targeted for food. As human populations expand across Africa, so does the unsustainable hunting of species for bushmeat; the Congo Basin, in particular, is a major source of snake meat that is most heavily exploited by Cameroon and Nigeria.

Two popular species of snake sold are the Gabon viper (*Bitis gabonica*) and the African rock python (*Python sebae*), neither of which have been officially assessed by the IUCN for inclusion in its Red List of Threatened Species.

Therefore, with a grant from the Fund for travel, transport and accommodation, Timm Juul Jensen sought to gain an insight into the true extent of the African reptile trade and investigate associated threats to vulnerable snake species by surveying bushmeat markets in Yaoundé, Cameroon.

An M.Sc. student at Aalborg University in Denmark, Jensen set out to scour the



African rock python  
*Python sebae*  
Not listed  
Cameroon  
\$5,200

markets for the carcasses of large snakes in particular, beginning with a survey of Nkoldongo – the biggest of the bushmeat markets in Yaoundé – where he discovered that snakes accounted for around ten percent of the creatures on sale.

All manner of wild creatures feature on the menu here, including small Duiker antelope, a variety of monkeys and piles of curled up pangolins, some still showing signs of life as they await their grizzly fate nearby in rudimentary oil drum barbeques.

Jensen witnessed full-size Gabon vipers being gutted and blow-torched, and was told that snake meat is becoming increasingly popular owing to its “sweet” flavour – an alarming trend seemingly confirmed by the quantities on offer elsewhere at dedicated bushmeat restaurants on the outskirts of the city.

Although the precise origin of the snakes is difficult to ascertain, fresh bushmeat appears to be delivered to the market from the south and east of the country – areas that feature several nature reserves and



African rock python

African rock python



African rock python

protected areas, including the Dja Faunal reserve, which is recognised as a UNESCO world heritage site.

Some of the largest species found in mainland Africa feature in these markets, but the most common snakes seen on the tables alongside the other unfortunate forest wildlife remain *P. sebae* and *B. gabonica*, the latter of which accounted for the majority of individuals and is thought to be consumed throughout its West and Central African range.

Jensen was met with a similar scene at the Elig-Edzoa market in the north-eastern part of Yaoundé, where he discovered a rock python for sale that was almost 10 feet in length – the biggest he had seen in any of the markets.

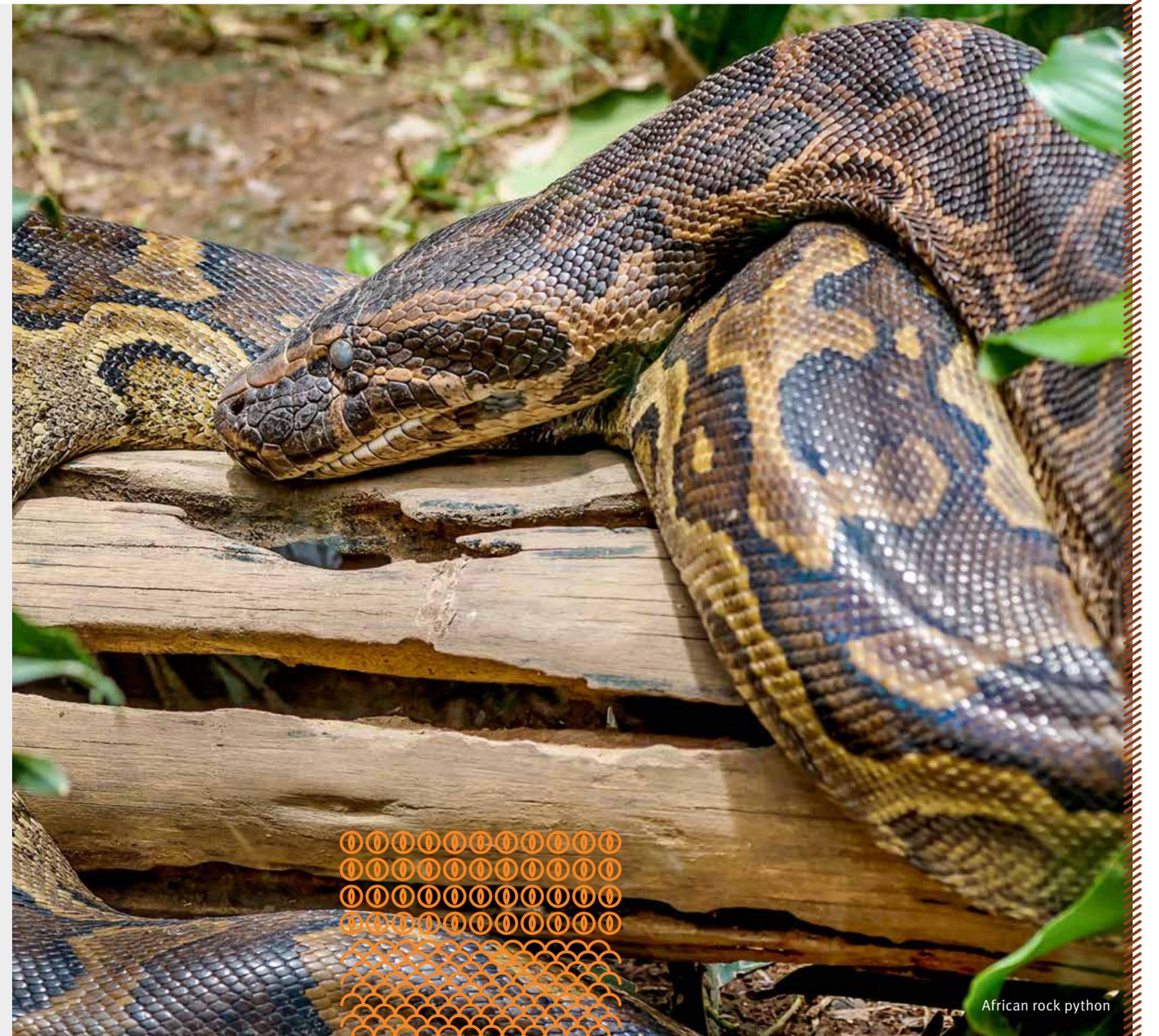
**WITH A GRANT FROM THE FUND...TIMM JUUL JENSEN SOUGHT TO GAIN AN INSIGHT INTO THE TRUE EXTENT OF THE AFRICAN REPTILE TRADE AND INVESTIGATE ASSOCIATED THREATS TO VULNERABLE SNAKE SPECIES BY SURVEYING BUSHMEAT MARKETS IN YAOUNDÉ, CAMEROON.**

Despite it being against Cameroonian law to kill or sell pythons, it appears that such activities are conducted with impunity. The African rock python is listed in international trade regulations, which means that exporting live snakes or their skin requires official documentation. However, the number of python skins traded legally over the last decade is thought to be in the millions and the quantity traded illicitly around the world has yet to be determined.

The Gabon viper, on the other hand, enjoys no such protection. Its conservation status remains unknown but when quizzed on its abundance, bushmeat traders told Jensen that suppliers now had to travel ever greater distances to catch the snakes.

Jensen also found familiar creatures on offer at the third of the major bushmeat centres, Mfoundi market, mostly comprising monkeys and antelope, but with the addition of a disturbing array of animal parts used in traditional medicine and magic, including tortoise shells, python skin, eagle talons and even an elephant's tail.

His thesis complete, Jensen aims to continue his work studying and quantifying the exploitation of African snakes and the destruction of their habitat, whilst also investigating practical alternatives for local people that may relieve the pressure on these over-exploited forest creatures.



African rock python



# PRIMATE PIONEERS

IN THE BUKIT BAKA BUKIT RAYA NATIONAL PARK OF CENTRAL KALIMANTAN IN INDONESIA, RESEARCHERS ARE SCOURING THE FOREST FOR GLIMPSES OF SOME IMPORTANT NEW RESIDENTS, MANY OF WHOM HAVE BEEN RECENTLY RELEASED FROM THE CLUTCHES OF THE ILLEGAL PET TRADE. SEARCHING FOR A GLIMPSE OF DEEP ORANGE HAIR, THEY ARE ATTEMPTING TO TRACK AND STUDY THE HABITS OF ONCE-CAPTIVE ORANGUTANS THAT ARE RE-EMBRACING THEIR WILD SIDE.

Once found in abundance throughout South East Asia, orangutan populations are now dwindling, confined to patches of the fragmented forests of Borneo and Sumatra, to such an extent that the IUCN Red List reclassified the Bornean Orangutan as Critically Endangered in early 2016.

A triangle of threats comprising illegal deforestation, hunting and poaching, and abduction for the illicit exotic pet trade have severely undermined the wild population. A recent estimate concluded that as many as 100,000 orangutans were killed by a combination of habitat loss, conflict with humans and harvesting for the pet trade in Borneo alone between 1999 and 2015, with deforestation being blamed for at least half of this figure.

Young orangutans are highly prized by the pet trade, and rescue missions occur almost weekly to confiscate orphaned youngsters from local villages. However, following rehabilitation there are few



Orangutan  
*Pongo pygmaeus*  
Critically Endangered  
Indonesia  
\$4,400

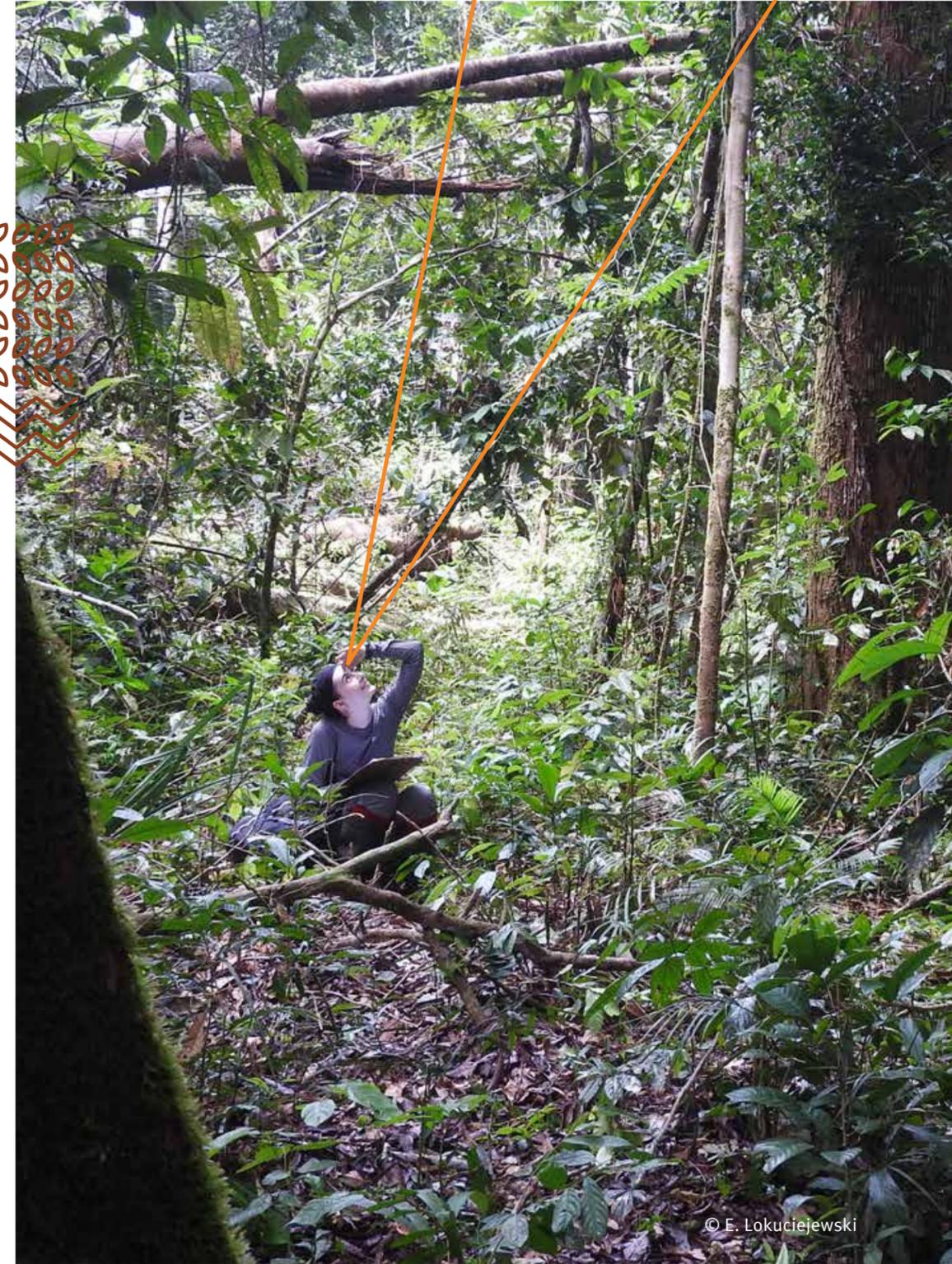


secure areas of rainforest in which they may be safely released, as highly-destructive illegal logging ravages the region's resources and areas of lush forest are cleared for seemingly endless tracts of palm oil plantation.

**100,000 ORANGUTANS WERE KILLED BY A COMBINATION OF HABITAT LOSS, CONFLICT WITH HUMANS AND HARVESTING FOR THE PET TRADE**

Emma Lokuciejewski, a student at the University of Exeter, sought the help of the Fund to conduct a study of rescued orangutans released into the wild by the Borneo Orangutan Survival Foundation.

The rehabilitation and release programme is still in its infancy, having run for only four years. Therefore, little information exists to assess the way in which





the orangutans have adapted to wild conditions following their reintroduction, and how their behaviour may differ to that of their wild counterparts.

With a grant to cover park fees, camping, food, field equipment and transport, the project aimed to investigate whether the newly-released orangutans would remain in the area of their release, explore the wider forest before choosing a home, or even wander like nomads without establishing a fixed range.

The project also sought to observe their behaviour to determine whether they would remain on the forest floor, where they are vulnerable, or join their wild relatives in the safety of the forest canopy, and if they would regain their instinctive fear of humans once released. This information will allow for an assessment of their long-term chances of survival and will be used to determine what skills are most important for orangutans to learn throughout the rehabilitation process.

Despite being equipped with tracking devices, the orangutans in the forest proved more difficult to find than expected, as many had travelled beyond the research area or had broken their radio transmitters. Efforts to locate them were frustrated further by extreme weather and floods, which also disrupted the flow of supplies to the site.

Nonetheless, the data collected indicated that the reintroduced orangutans are adapting well to their wild home. They are beginning to broaden their diet – suggesting that they are learning to eat new things

as they adapt to the location – and spend less time resting, bringing their habits more closely in line with those of their wild relations, albeit they are still more sociable having spent time in rehabilitation centres.

Lokuciejewski will continue to analyse the data collected in order to create maps of the home ranges of each individual orangutan studied; these will ultimately be compared to the ranges of wild orangutans to assess whether they use the forest in the same way.

A total of 59 orangutans have been released so far into Bukit Baka Bukit Raya National Park, which has a carrying capacity of 200; therefore, it is hoped that further successful releases will contribute to creating new self-sustaining wild orangutan populations, safe from the threats they face elsewhere in the region.





# IN THE LAP OF THE GODDESS

WITH THIN SNOOTS, SNAKE-LIKE TAILS AND COURSE HAIRS PROTRUDING FROM BENEATH THEIR LARGE FISH-SCALED ARMOUR, PANGOLINS CERTAINLY APPEAR TO WARRANT THEIR POSITION AS THE ONLY GENUS IN AN EXCLUSIVE MAMMALIAN ORDER – PHOLIDOTA.

Often referred to as ‘scaly ant-eaters’ owing to their preference for slurping up insects with their long, whip-like tongues, these primitive mammals are in fact more closely related to cats, dogs and bears than to armadillos and their ant-eating counterparts.

Life is tough if you are a pangolin; they are the most illegally traded species in the world, with hundreds of thousands of individuals thought to have been poached from the wild in the last decade alone. Their meat is prized across Asia and their scales are employed in traditional medicine to cure all manner of ills from colic, deafness and malaria to demonic possession.

Given the high demand for all things pangolin, it is perhaps not surprising that they are extremely elusive and consequently very difficult to study. Information on their population size, habitat preferences and elevation is scarce but vital to their conservation.



Chinese pangolin  
*Manis pentadactyla*  
Critically Endangered  
Vietnam  
\$12,000

A handful of studies have been used to determine the origins of illegally traded pangolins based on genetic data from seized meat and scales, but there is a distinct lack of information tying genetic information to geographic locations.

With a grant from the Fund, Dr. Samuel Wasser and student Hyeon Jeong Kim sought to fill in some of the gaps in our knowledge of two species in particular – the Chinese pangolin (*Manis pentadactyla*) and the Sunda pangolin (*Manis javanica*) – by conducting population, distribution and habitat research in Myanmar with a view to creating a geo-referenced DNA map to match up seized pangolin parts to specific areas.

Unfortunately, political instability and impenetrable local bureaucracy forced the project to relocate to Vietnam, which is also home to both species. Together with the Save Vietnam’s Wildlife group and Cat Tien National Park, the necessary permits were acquired and the project was able to proceed with the same objectives as in Myanmar.

Pangolins are solitary and nocturnal, so rather than spend all their time and money tracking them down the researchers chose to use the evidence they leave behind to source DNA samples and build a clearer picture of their numbers and range. To this end, they sought the help of a dog





© Hyeon Jeong Kim

named Athena – a three-year-old Border Collie mix. Whilst not equipped with the many useful attributes of the goddess of Greek lore, Athena possesses a no less miraculous ability to trace pangolin scat, thanks to some intensive training in Nepal. She is one of a growing number of ‘conservation canines’ being used to track down a variety of creatures and their excrement – from grasshoppers in Germany to orcas in North America.

Once discovered, DNA samples would be taken from the geo-referenced pangolin scat to provide critical data on the distribution and abundance of these two pangolin species, inspired by previous work conducted by Dr. Wasser and others to identify elephant poaching hotspots in Africa and Asia using genetic material extracted from seized ivory.

Together with her canine partner Skye, an Australian Kelpie mix, Athena proved extremely adept at locating the unsavoury offerings of wild pangolins in Nepal, but despite successful tests in Vietnam was unable to locate wild pangolin scat. Given their consistent success locating scat from both species in a wide range of habitats, the researchers surmised that there simply were too few pangolins left to find. This conclusion was supported by signs of poaching and hunting found during the surveys, including snares, traps and camps, and even an encounter with poachers themselves.

Nonetheless, the use of the dogs greatly increased the existing knowledge of pangolin microhabitats and distribution in Nepal and significantly expanded the sample size. The researchers have

therefore succeeded in developing the first viable method for studying the critically endangered Sunda and Chinese pangolins in the wild.

Furthermore, Dr. Wasser was able to leverage the grant from the Fund to apply for additional resources. Having started out with a \$12,000 grant, he went on to successfully apply to the USAID Wildlife Crime Tech Challenge, with the project being awarded \$10,000 and \$240,000, respectively, by being selected as a Prize Winner and then the Grand Prize Winner of the scheme.

Since the end of the project, the team have begun the process of developing a set of nuclear genetic markers which will allow them to identify individuals and gather information about the genetic structure of pangolin populations. They hope to use this genetic information to form the basis of a database to identify the geographic origin of seized pangolins – an extremely important factor in tackling the illicit wildlife trade at its source.

**LIFE IS TOUGH IF YOU ARE A PANGOLIN; THEY ARE THE MOST ILLEGALLY TRADED SPECIES IN THE WORLD, WITH HUNDREDS OF THOUSANDS OF INDIVIDUALS THOUGHT TO HAVE BEEN POACHED FROM THE WILD IN THE LAST DECADE ALONE.**



© Hyeon Jeong Kim

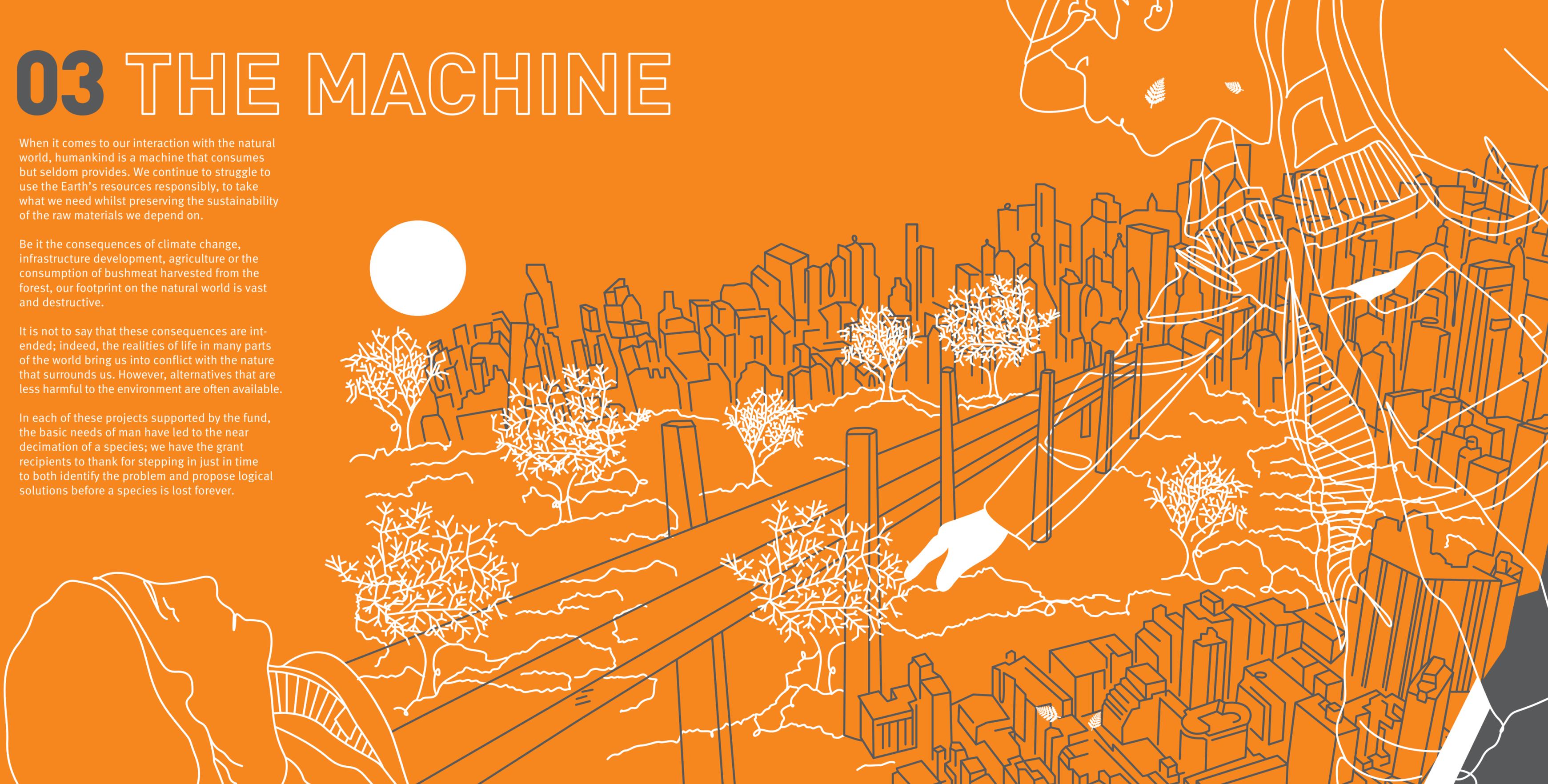
# 03 THE MACHINE

When it comes to our interaction with the natural world, humankind is a machine that consumes but seldom provides. We continue to struggle to use the Earth's resources responsibly, to take what we need whilst preserving the sustainability of the raw materials we depend on.

Be it the consequences of climate change, infrastructure development, agriculture or the consumption of bushmeat harvested from the forest, our footprint on the natural world is vast and destructive.

It is not to say that these consequences are intended; indeed, the realities of life in many parts of the world bring us into conflict with the nature that surrounds us. However, alternatives that are less harmful to the environment are often available.

In each of these projects supported by the fund, the basic needs of man have led to the near decimation of a species; we have the grant recipients to thank for stepping in just in time to both identify the problem and propose logical solutions before a species is lost forever.





# WONDERS OF NATURE

IN THE FEW REMAINING UNDISTURBED STRIPS OF GENTLY UNDULATING DUNE THAT OCCUR ALONG THE ARABIAN GULF COASTLINE BETWEEN ABU DHABI AND DUBAI, A SMALL SCALY INHABITANT IS FACING OFF AGAINST THE SEEMINGLY UNSTOPPABLE MARCH OF MODERNISATION.



With its stocky gait and wry smile, the Keyserling's wonder gecko is both confident and endearing, but is becoming increasingly scarce as coastal development continues apace in its desirable homesteads.

They are uncompromising little reptiles; males are ready and willing to fight to the death over territory and are known to shake their tail in the manner of a rattlesnake when cornered. Despite its robust appearance and temperament, however, the gecko's UAE population is in much need of the superhero-like abilities its name implies.

Found in areas of Iran, Afghanistan and Pakistan, the only confirmed record of the gecko in the Arabian Peninsula is in the UAE, where the population has been severely undermined by rapid infrastructure development in recent years. Its limited, fragmented range in the north west of the country, unrecognisable compared to 30 years ago, has all but disappeared and *T. keyserlingii* is now considered critically endangered in the region.



Keyserling's wonder gecko  
*Teratoscincus keyserlingii*  
Not assessed  
United Arab Emirates  
\$12,500

The gecko's preferred habitat comprises low shallow dunes and sandy plains with periodic vegetation; these are areas which are vital to many other vertebrates and invertebrates but which are also favoured by developers, including those concerned with infrastructure modernisation, meaning the pace of habitat destruction has increased since the last assessment of the species in 2012. Part of the gecko's range is also unfortunately placed between the two main city-hubs of Abu Dhabi and Dubai, where a new section of highway was recently constructed. Whilst the project's plans were adjusted to accommodate some of this vital habitat, such ventures have a significant impact on the local environment.

With the support of the Fund, Dr. Salvador Carranza of the Institute of Evolutionary Biology (CSIC-UPF) in Barcelona led a project to collect the necessary ecological, distribution and molecular data to outline a conservation plan for the threatened Arabian gecko populations and their habitats.

With help from the Breeding Centre for Endangered Arabian Wildlife in Sharjah (BCEAW), the Environmental Agency





© S. Carranza

Abu Dhabi (EAD), Dubai Municipality, Al Ain Zoo and the Institute of Evolutionary Biology, Spain, the team launched a series of surveys to locate the secretive reptiles.

Field work was not easy, however. Wonder geckos are fond of their privacy and are quite picky about when to venture out of their deep burrows at the base of vegetated dunes. Daylight is a no-go, as is a full moon, so expeditions were limited to moonless nights. Not only that, the sampling was conducted during spring and summer when the geckos are most active, but when night-time temperatures of 38°C are common. The only consolation of working in these dark, sticky conditions was the fact that Wonder gecko eyes reflect bright red in torchlight, making them relatively easy to locate in the inky blackness of the desert night.

The team collected valuable information concerning the current distribution of *T. keyserlingii* in the UAE, as well as a good variety of samples for genetic testing, and determined the area of occupancy (AOO) of the species to be 100 km<sup>2</sup>.

They also collected GPS-based distribution data to produce a detailed distribution map for the species and obtained non-invasive tissue samples from specimens for DNA analysis to determine the level of genetic diversity between the UAE population and those found elsewhere.

Although the geckos were found in many of the locations surveyed in 2012, they are increasingly fragmented, particularly where rapid coastal development is occurring; they have also regressed in several areas and in some cases have become extinct.

This is all the more worrying given the results of the genetic analyses, which revealed that the UAE gecko population is monophyletic (of a single origin) and is genetically distinct from all other species and populations of the genus analysed so far, although there is not yet enough data to class them as a species of their own.

Following the fieldwork and analysis, a workshop was held at Jebel Hafeet in Al Ain to review the results, revise the conservation status of the species and draft a Wonder Gecko Conservation Action Plan to protect the species.

The success of the project has given Dr. Carranza new hope for the future of the species in the Emirates; the collaboration it has achieved may yet save this enigmatic UAE resident from the development juggernaut that continues to steam through the sandy swell of its habitat.

**DESPITE ITS ROBUST APPEARANCE AND TEMPERAMENT, HOWEVER, THE GECKO'S UAE POPULATION IS IN MUCH NEED OF THE SUPERHERO-LIKE ABILITIES ITS NAME IMPLIES**



© S. Carranza

# FLATWORM FLATLINE

DEEP WITHIN THE KARST LANDSCAPE OF NORTHERN ITALY LIE A HANDFUL OF CAVES AND SUBTERRANEAN GROUNDWATER SYSTEMS THAT HOST A RARE AND UNDER-STUDIED AQUATIC INVERTEBRATE. THE SMALL SCRATCHES OF WHITE THAT STAND OUT AGAINST THE BEIGE CARPET OF LIFE THAT COVERS THEIR UNDERWATER TOPOGRAPHY ARE CAVE-DWELLING FLATWORMS – ALSO KNOWN BY THE SOMEWHAT LESS CATCHY TITLE, TROGLOBIONT PLANARIANS.

They are far from the attractive stars of conservation posters – which may go some way toward explaining why they are completely overlooked in national protection efforts and legislation – but these humble creatures provide vital clues as to the health of the groundwater resources of the regions they inhabit.

Ten species have now been described from Italian caves – seven on the Italian peninsula and three on the island of Sardinia. All but one of these flatworms are endemic to small single karst areas, and often just one cave, leaving them highly vulnerable to water pollution and other forms of habitat degradation.

With a grant from the Fund, Dr. Raoul Manenti of the University of Milan's Department of Bioscience set out to fill the

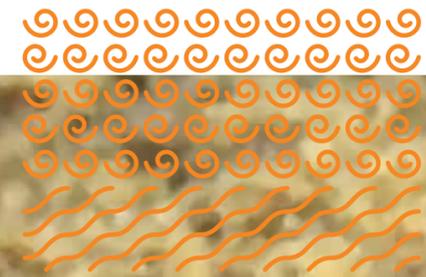


Italian cave-dwelling flatworm  
*Dendrocoelum italicum*  
Not Listed  
Italy  
\$20,000

many gaps in our knowledge of *Dendrocoelum italicum* – the first cave-dwelling endemic planarian species described in Italy – and its nine relatives found across the mainland and the island of Sardinia.

Assessment surveys were made in caves in Liguria, Lombardy, Friuli Abruzzo and Sardinia in which each species was described or last reported – up to 70 years ago in some cases.

Water catching devices were seen in several caves, modifying their structure and water flow for agricultural use. In the case of *D. italicum*, which is found in a single cave in the Regional Protected Area Altopiano di Cariadeghe, one such device was discovered that had eradicated the pool from which the type specimen had been retrieved by an 18-year old Mario





© R. Manenti

Pavan – who would later become an etymologist of international renown – and the flatworms had been forced to survive in a single, small rivulet.

Access to the cave for the restoration presented an unexpected hurdle for Dr. Manenti and his team. The Altopiano di Cariadeghe is an area characterised by deep inter-family rivalries and it transpired that ownership of the cave is the subject of an ongoing feud between two local families – it being a prized natural refrigerator used by their forefathers for cheese-making.

After convincing the suspicious contenders that the flatworms did, in fact, exist and were endemic to that cave, an accommodation was reached and a sense of some pride even developed on both sides, resulting in access being grated for the restoration. In coordination with the Regional Protected Area and a local caving group, the structure was removed and the cave returned to its natural condition, representing the first ever case of a cave-dwelling habitat restoration involving a planarian species.

The relationship with the caving group – Gruppo Grotte Brescia – has since flourished, with cavers looking out for planarians and alerting the researchers to previously unknown populations.

One of the other species targeted by the project, Abruzzo's cave-dwelling flatworm (*Dendrocoelum benazzii*) known from a single cave in Abruzzo, was not found and may be considered extinct – at least in its original location.

Pollution is the main suspect in the disappearance of another planarian, the Briganti cave flatworm (*Dugesia brigantii*), from its only known locality – the Grotta di Bocca Lupara in the city of La Spezia – and the survey concluded the species should be considered extinct.

The work completed by the team and its partners in the Grotta Nuiva di Villanova will give the Italian cave-dwelling flatworm a fighting chance at survival, and Dr. Manenti's study concludes that the population appears to be relatively stable. Furthermore, surveys conducted since the restoration have revealed that the flatworms are changing colour, some becoming black or pink based on the type of prey they consume, indicating greater diversity in their diet.

However, the species remains highly localised, and any change to the conditions in this single subterranean cave may still prove insurmountable for this understudied community of invertebrates.

THESE HUMBLE CREATURES PROVIDE VITAL CLUES AS TO THE HEALTH OF THE GROUNDWATER RESOURCES OF THE REGIONS THEY INHABIT



© R. Manenti



# ANOLE PATROL

THE SMALL ISLAND OF UTILA, WHICH RISES FROM THE TURQUOISE CARIBBEAN OFF THE COAST OF HONDURAS, IS HOME TO AN IMPRESSIVE ARRAY OF UNIQUE REPTILES, BUT ONE IN PARTICULAR HAS A HABIT OF STANDING OUT AGAINST THE LEAFY BACKGROUND OF ITS FOREST HABITAT.

On first inspection the Bica anole blends in well with its surroundings, as is the case for many of its reptilian relatives in the dappled forest environment, but despite its drab grey-green camouflage this agile little lizard has an unmistakable physical feature that makes it one of nature’s true exhibitionists.

When defending their territory, Bica anoles are known to extend the saggy flap of skin below their neck – known as a dewlap – to reveal a striking combination of colour and texture reminiscent of an exotic poisonous fungus.

Whilst one might be forgiven for overlooking a more modestly coloured Utila resident, given its penchant for showing off it is perhaps surprising that the Bica anole has not caught the eye of more herpetologists over the years.

The species has never been documented in any substantial detail – an oversight that must now be rectified with some urgency given that *N. bicaorum* is endemic to a shrinking habitat.



Bica anole  
*Norops bicaorum*  
Not Listed  
Honduras  
\$6,000

Concerned that the Bica anole had not made it into the IUCN’s Red List of threatened and endangered species, Tom Brown, in conjunction with the Kanahau Utila Research and Conservation Facility, set out to fill in the blanks in our knowledge of the species and to include the species in the list for the first time, supported by a \$6,000 grant from the Fund for travel, food and equipment expenses.

Rainfall through the summer of 2017 was unusually heavy; consequently, by the time the researchers arrived on Utila their repellents and head-nets were no match for the sheer number of mosquitoes roaming the island. They stayed for eight weeks in the forest conducting mark–recapture and home range surveys, spending hours each day attempting to suture 2-millimetre wide identifying beads to 200 wriggly anoles in the forest, 15 in a sitting, whilst being hazed by intense clouds of ravenous blood-suckers.





© T. Brown

With the help of a local Honduran research assistant – who was able to take a salary thanks to the grant provided by the Fund – as well as volunteers and students from the Kanahau facility, intense extended surveys were conducted daily. Loved and begrudged in equal measure, these full-day ‘anole patrols’ involved endlessly plodding along transects to identify the anoles visually.

So familiar had some of the anoles become that they even named a few of the more charismatic individuals – ‘Lemondrop’ sported a single yellow bead; ‘Sunnyday’ a combination of blue and yellow – which provided added motivation when searching for them each day.

The researchers gathered a variety of new information on the species. For example, they observed that some of the female anoles, which were previously only known to have white dewlaps, boasted red or pink varieties, which they theorize may provide a competitive advantage over their peers when repelling rivals and attracting potential mates.

Previously only recorded from the eastern side of Utila, the surveys also showed the Bica anole to be more widespread throughout the forest; although this was perhaps not surprising given the lack of data on the species. However, this does not make its inclusion in the IUCN Red List any less urgent.

The Bica anoles face a double threat on Utila: the presence of a notorious invasive member of the family, the Cuban brown anole (*Norops sagrei*), and the ongoing loss of the broad-leaf and palm forest ecosystems it calls home.

So far, this unwanted Cuban–Bahamian relative has restricted itself to a more urban lifestyle, preferring the streets and gardens of Utila Town to the forest. Should it choose to explore inland, the researchers believe it would likely out-compete the locals, especially as it is known to prey on the young of its competitors.

As for the forest habitat, this is small enough as it is without being stripped away for development. Like other conservation projects on the island, it is thought that the only way to ensure the safety and longevity of Utila’s fascinating endemics is to purchase tracts of land in which they may find sanctuary from deforestation and other forms of habitat destruction.

For now, however, Tom Brown and his fellow researchers hope that this charismatic extravert receives the recognition they all believe it deserves as a species that is increasingly threatened in its island home.

**TOM BROWN, IN CONJUNCTION WITH THE KANAHAU UTILA RESEARCH AND CONSERVATION FACILITY, SET OUT TO FILL IN THE BLANKS IN OUR KNOWLEDGE OF THE SPECIES AND INCLUDE IT IN THE IUCN RED LIST FOR THE FIRST TIME, SUPPORTED BY A \$6,000 GRANT FROM THE FUND**



© T. Brown

# A FAMILY DIVIDED

AMONG THE SHAGGY REED BEDS OF SOUTHERN SPAIN'S ALBUFERAS DE ADRA WETLANDS, A MERE STONE'S THROW FROM THE MEDITERRANEAN, A SMALL STUBBY-TAILED FRESHWATER FISH IS STRUGGLING TO MAINTAIN A DWINDLING COMMUNITY IN AN INCREASINGLY HOSTILE AND SHRINKING HABITAT.

Surrounded by a sea of white-tented plant nurseries, this coastal ecosystem in Spain's Almería province is host to a population of small freshwater fish called Iberian toothcarp (*Aphanius iberus*) that have been cut off from the main population a short distance to the north-west. Both ecosystems have been degraded by human use and activities, as man-made irrigation structures gradually override those carefully carved out by nature.

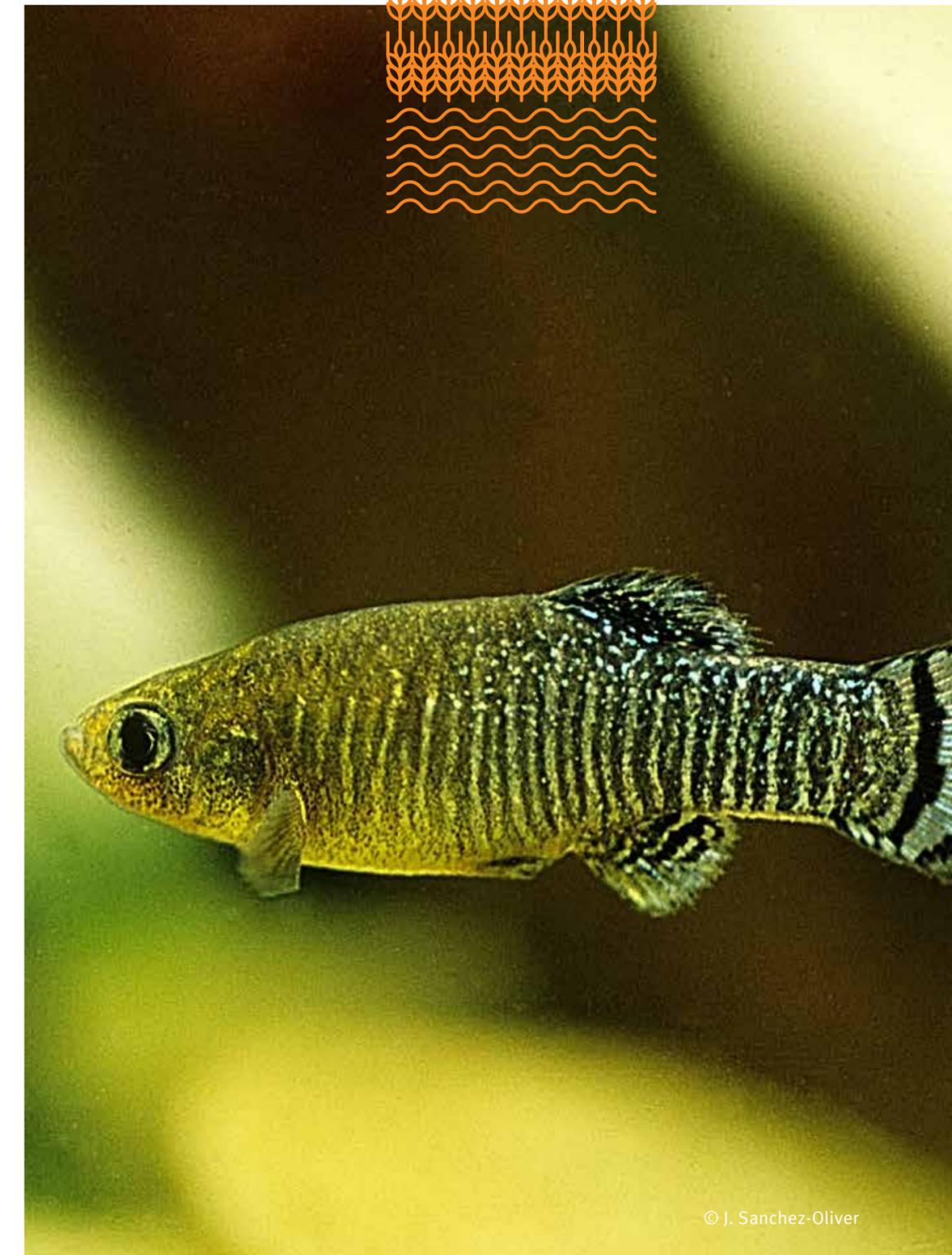


Iberian toothcarp  
*Aphanius iberus*  
Endangered  
Spain  
\$15,000

The introduction of raised pools and piped waterways which have replaced many of the natural ponds and channels connected to the Adra River have served to eliminate the species' ability to recolonise distant pools such as those in the wetlands.

Furthermore, the wetland lagoons, which feature in the Ramsar Convention list of Protected Areas, have been reduced in size by agricultural expansion and undermined by invaders such as the European carp (*Cyprinus carpio*) – an infamous and highly successful species known for degrading aquatic habitats across the world.

Dr. Juan Sanchez-Oliver and his team are the recipients of the only financial support to evaluate the Iberian toothcarp's conservation status in Andalusia. Following his successful application in 2015, a grant provided by the Fund was used to sample water and soil quality in each location, including by using minnow traps baited with tinned cat food (which, it turns out, appeals to fish as well as felines). It also





© J. Sanchez-Oliver

funded the removal of sand and silt from the river to create a natural pool connected to the main river to maintain water flow, which was successfully colonised by fishes and subaquatic plants in only a few months.

The grant also covered support staff costs, materials and travel, and allowed the assessment of the isolation effects of the drying up of irrigation canals, which, worryingly, revealed individuals in only half of the locations where populations previously existed eight years previously.

Other activities made possible by the grant included an assessment of the success of translocation of Iberian toothcarp from the river to wetland conducted by the environment agency of the Andalusian Government; an ongoing investigation into the environmental effects of, and possible depredation by, invasive carp species; and several volunteer recruitment and awareness campaigns.

In collaboration with two local NGOs – SERBAL and El Arbol de las Piruletas – outreach sessions were organised involving schoolchildren, farmers and the public, featuring presentations and guided visits to both habitats. The campaign also produced videos illustrating the work of the project, which are featured on the Fartet Adra YouTube channel and have since been shown at a number of conservation meetings and conferences.

Finally, two meetings were organised between local government officials, political parties, NGOs, farmers, agricultural landowners, water-user communities and researchers to discuss barriers to species and habitat conservation. These meetings

elicited general agreement on the need for a common strategy to preserve these ecosystems, given their economic and environmental importance.

However, the conservation status of the Iberian toothcarp remains worrying; despite their best efforts Dr. Sanchez-Oliver and his team were unable to achieve the necessary cooperation of private landholders and the Andalusian environmental authorities to create a viable connection between the two divided populations in Almería.

Whilst the fate of these populations remains uncertain, the project has nonetheless demonstrated that simple, economical actions can generate new, stable habitats that exhibit highly promising results. The pool connected to the main river by the project team saw spontaneous colonisation by individual Iberian toothcarp and breeding adults, leading to high population density and increasing species diversity, providing a much-needed ray of hope for the future of this unassuming wetland resident.

**THESE MEETINGS ELICITED GENERAL AGREEMENT ON THE NEED FOR A COMMON STRATEGY TO PRESERVE THESE ECOSYSTEMS, GIVEN THEIR ECONOMIC AND ENVIRONMENTAL IMPORTANCE.**



© J. Sanchez-Oliver



# A MEXICAN MYSTERY

ON THE TIP OF THE BAJA CALIFORNIA PENINSULA THAT PIERCES THE EASTERN SIDE OF THE PACIFIC, A RESIDENT OF THE FOOTHILLS OF THE LA LAGUNA MOUNTAINS IS DISAPPEARING FROM ITS NATIVE LANDSCAPE; THE BRANDEGEE OAK (*QUERCUS BRANDEGEEI*) IS SOLEMNLY AWAITING EXTINCTION, SEEMINGLY RESIGNED TO THE DEMISE OF ITS OWN KIND.

Like some benign Medusa, this magnificent tree can boast upwards of 20 trunks – a phenomenon known as ‘clonal sprouting’, for which it shows a propensity – and is believed to live for around 800 years.

Once relatively widespread on the peninsula, it is thought that no Brandegee oak seedlings have been naturally propagated for at least 100 years and that less than 1,000 wild individuals remain. The bigger problem, however, is that until now we have had no clear idea why.

In most cases, conservation comes down to the preservation of suitable habitat, so it is therefore somewhat baffling when this approach fails to halt the decline of a species. One third of the oak’s 3,000 km<sup>2</sup> range lies within La Reserva Biosfera Sierra la Laguna, yet this has apparently done nothing to assuage the underlying ecological threat that is behind its slow demise.

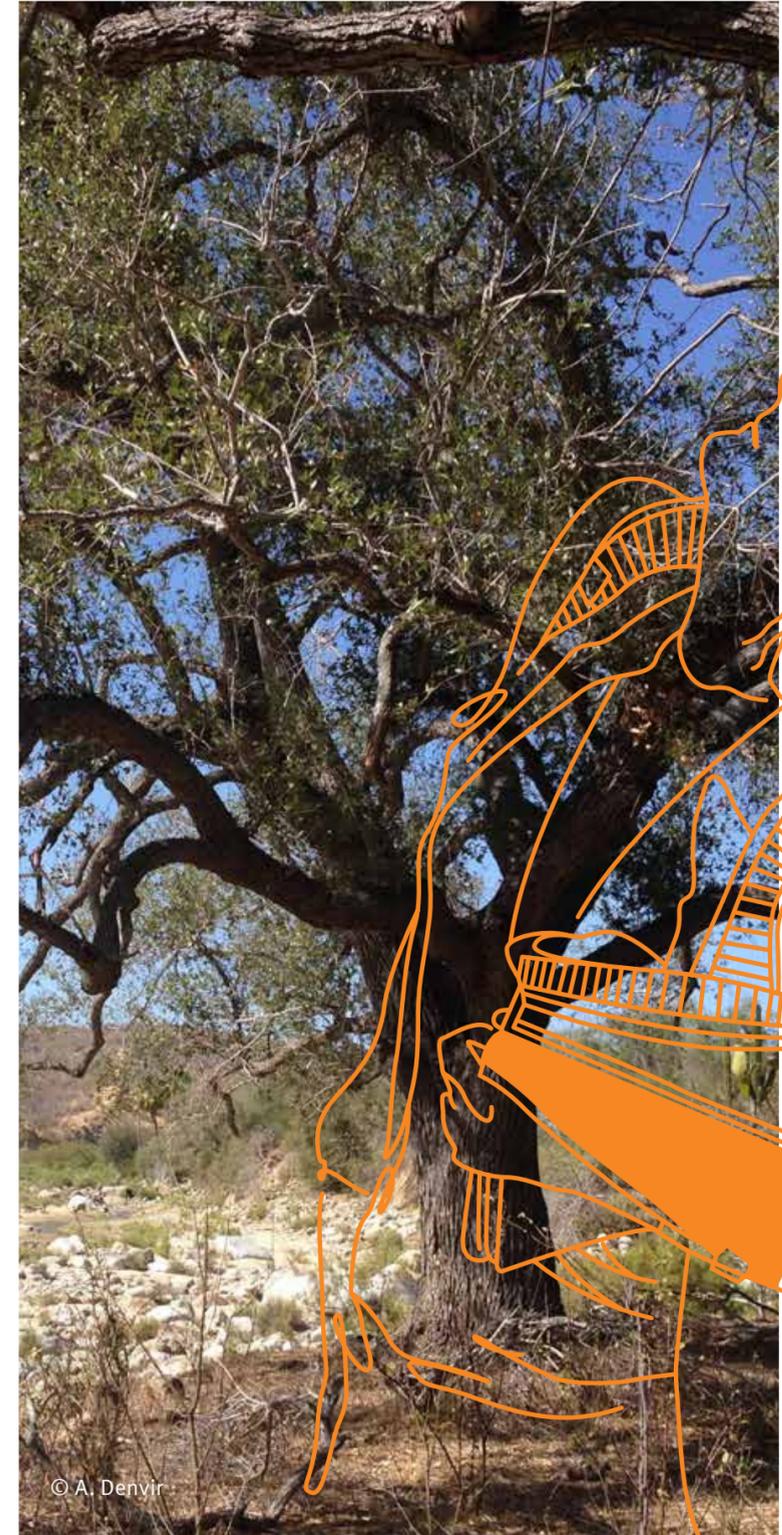
Some of the threats to the species are already clear. Climate change has caused extensive droughts in the

 Brandegee oak  
*Quercus brandegeei*  
Endangered  
Mexico  
\$15,000

area, and the rainfall which feeds the stream beds *Q brandegeei* relies on is becoming increasingly infrequent. Timber extraction and overgrazing are also believed to be undermining the oak population, but this still does not provide any definitive explanation for the trees’ lack of regeneration.

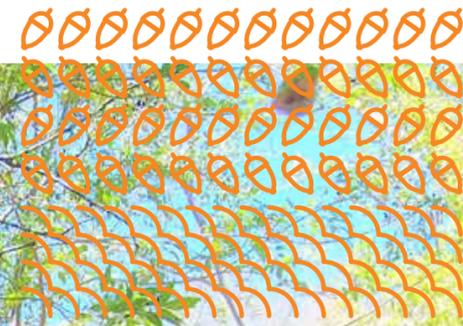
With a grant from the Fund, Audrey Denvir of the Morton Arboretum sought to finally get to the bottom of this mysterious crisis, and to establish vital ex situ ‘reserve’ collections of wild Brandegee oaks. Only three known ex situ collections of the species currently exist, none of which are in Mexico, so a key aspect of the project was the collection and propagation of acorns for cultivation in botanical gardens throughout its native country.

This in itself presented quite a challenge, as little work has been done to confirm the exact timing of the small, 2-week window in which the oaks flower. Through collaboration with local ranchers and researchers the team was able to narrow



© A. Denvir

© A. Denvir



© A. Denvir

this down and visit the trees just as most individuals were flowering. Consequently, they were able to collect many more of the trees' slender flame-shaped acorns than they had originally hoped.

This important field work also revealed that the Brandegeee oak is successfully reproducing and has high fruiting and germination rates, eliminating this as the cause of its decline and pointing the finger at poor seedling survival. It is becoming clear that intensive grazing by cattle, sheep goats and pigs is having a major effect on some populations, as those areas not used for grazing had much denser vegetation in general. As these animals have only been introduced in the past few hundred years, this could explain the phenomenon.

Audrey Denvir and her team gained first-hand experience of the grazing problem when a long line of leaf samples they had carefully cut, labelled and placed by each tree throughout the day were found to have been diligently hoovered up by an eager herd of hungry cows.

An additional threat to the species identified during the project is posed by the expansion of residential development and agriculture in the region, which hosts a growing tourism industry.

The project's acorn collection efforts were extremely successful, and around 1,000 were distributed to twelve botanic gardens across Mexico, ensuring a healthy number of individuals in their home nation and representing a vital step in the conservation of the species. A further 1,000 acorns were given to the National University of Mexico in Morelia for

greenhouse propagation experiments. Thanks to the work of the researchers, the survival of the Brandegeee oak is assured in its new comfortable residences dotted across Mexico and the key threats to the wild populations are now much clearer.

Audrey Denvir and her collaborators will therefore continue to raise funds to maintain the momentum of the project through 2019. With further support from partners and endowments such as the Fund, they still hope to save the wild populations of this beautiful rare oak by finally cracking the case of its seemingly inexorable decline.

**THIS IMPORTANT FIELD WORK ALSO REVEALED THAT THE BRANDEGEE OAK IS SUCCESSFULLY REPRODUCING AND HAS HIGH FRUITING AND GERMINATION RATES, ELIMINATING THIS AS THE CAUSE OF ITS DECLINE AND POINTING THE FINGER AT POOR SEEDLING SURVIVAL**



© A. Denvir

# OF MEADOWS AND MERMAIDS

AS FAR AS MARINE MAMMALS GO, THE DUGONG MAY BE ONE OF THE MOST BENIGN AND GENTLE OF ALL. FOUND GRAZING ON SEAGRASS BEDS IN A HANDFUL OF LOCATIONS BETWEEN EAST AFRICA AND SOUTH-EAST ASIA, THESE LUMBERING, WHISKERED HERBIVORES ARE BECOMING INCREASINGLY RARE IN THE WARM SHALLOW WATERS THAT BORDER THE INDO-PACIFIC.



 Dugong  
*Dugong dugon*  
Vulnerable

*Dugong dugon* is the only species in the last genus of the family Dugongidae, the other 19 having become extinct over the centuries. Their order is named after the Sirens of Greek mythology, and it is said that they inspired the myth of the mermaid, appearing like maidens of the sea to 15th century sailors visiting the tropics, dehydrated and riven by scurvy.

But their undoubted charm is no match for the many threats they face as a species throughout their range, including boat-strikes and incidental by-catch owing to indiscriminate netting, as well as destructive fishing practices such as blast and cyanide fishing or the use of gill-nets.

Dugongs are also directly hunted almost throughout their entire range for their hides and tusks. Their meat is highly prized and is sometimes sold disguised as pork, while oil from their blubber is used as a waterproofing agent in the manufacture of traditional boat hulls. In parts of Indonesia they are even sought for their tears, which are considered to have magical properties.

Meanwhile, the seagrass meadows they depend on are often undermined by coastal development, trawling, logging, river run-off, pollution and other forms of largely unintended human damage.



© Fergus Kennedy



© Fergus Kennedy

The Dugong and Seagrass Conservation Project is the first coordinated global effort to conserve dugongs and their seagrass habitats. Supporting 38 individual conservation initiatives in key countries across the globe that host dugong populations, the mission of the Project is to stop the loss of dugongs and their seagrass habitats throughout the Indian and Pacific Ocean basins.

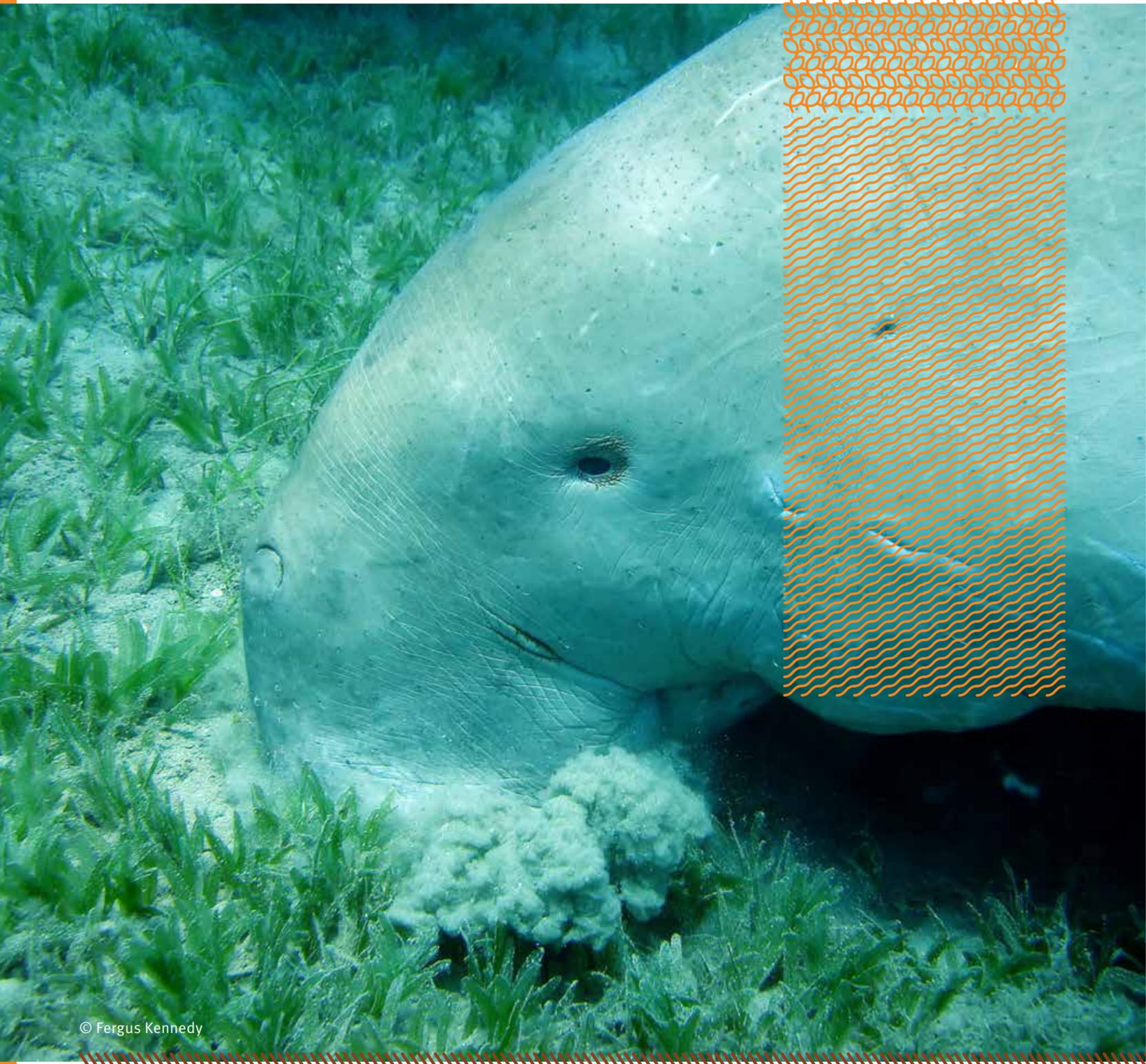
Established through a partnership between the United Nations Environment Program, The Mohamed Bin Zayed Species Conservation Fund, the Global Environment Facility, and the Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range, the Project is active in Indonesia, Madagascar, Malaysia, Mozambique, the Solomon Islands, Sri Lanka, Timor-Leste, Vanuatu and Abu Dhabi.

**THE SEAGRASS MEADOWS THEY DEPEND ON ARE OFTEN UNDERMINED BY COASTAL DEVELOPMENT, TRAWLING, LOGGING, RIVER RUN-OFF, POLLUTION AND OTHER FORMS OF LARGELY UNINTENDED HUMAN DAMAGE.**

By promoting community-based stewardship at these locations, as well as encouraging sustainable fishing practices and offering alternative income opportunities such as ecotourism, the project hopes to relieve the pressure on dugongs and their habitats and integrate them into local economies in ways that protect, rather than undermine their populations.



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**THESE MEETINGS ELICITED GENERAL AGREEMENT ON THE NEED FOR A COMMON STRATEGY TO PRESERVE THESE ECOSYSTEMS, GIVEN THEIR ECONOMIC AND ENVIRONMENTAL IMPORTANCE.**

The Project is also gathering data to increase the availability of critical knowledge to inform species research and conservation strategies, with a view to integrating dugong - and seagrass - specific considerations into national and regional planning priorities.

The 38 conservation initiatives are divided by theme into the four essential focus areas of the Project: Incentives, Research, Policy, and Education & Awareness. These initiatives rely on the assistance of a network of more than 26 partner conservation organisations around the globe.



As the Executing Agency of the Project, the Mohamed Bin Zayed Species Conservation Fund hosts the dugong Project Coordination Team, which oversees the global activities of the project. Based in Abu Dhabi, the Team maintains the legal, financial and operational framework that governs the project, and delivers strategic communications activities that promote the work and achievements of the 26 project partners.

# SUPPORTED PROJECTS 2017

Projects listed alphabetically by vernacular species name

## AMPHIBIAN

EX=Extinct | EW=Extinct in the Wild | CR=Critically Endangered | EN=Endangered | VU=Vulnerable  
NT=Near Threatened | LC=Least Concern | DD=Data Deficient | NE=Not Evaluated

Vernacular Species Name	Scientific Species Name	Name	Name of Organisation	Country, Continent	Funding
Apennine yellow-bellied toad (EN)	<i>Bombina pachypus</i>	Stefano Canessa	Center for BioNaturalistic Studies	Italy, Europe	\$8,000
Barrio's frog (CR)	<i>Insuetophrynus acarpicus</i>	Inao Vásquez	Universidad Austral de Chile	Chile, South America	\$4,600
Billae's Lycian salamander (CR)	<i>Lyciasalamandra billae</i>	Ugur Kaya	Ege University	Turkey, Asia	\$6,500
Botucatu Escuerzo (CR)	<i>Proceratophrys moratoi</i>	Fábio Maffei	NA	Brazil, South America	\$2,425
Caceres robber frog (DD)	<i>Oreobates heterodactylus</i>	Ana Paula Motta Vieira	UNESP	Brazil, South America	\$2,450
Esalle (CR)	<i>Cardioglossa manengouba</i>	Njumbe Peter Salle	Association For Biodiversity Research and Sustainable Development	Cameroon, Africa	\$2,500
Golden poison frog (EN)	<i>Phyllobates terribilis</i>	Gustavo Adolfo Pisso Florez	Fundación Biotellus	Colombia, South America	\$7,500
Guajira ttubfoot toad (EN)	<i>Atelopus carrikeri</i>	Nicolette Roach	Texas A&M University	Colombia, South America	\$5,000
Helena's stump-toad frog (CR)	<i>Rhombophryne helenae</i>	Jeff Dawson	Durrell Wildlife Conservation Trust	Madagascar, Africa	\$3,800
Lemur leaf frog (CR)	<i>Agalychnis lemur</i>	Timothy Bray	Bristol Zoological Society	Costa Rica, North America	\$10,000
Leora's stream siredon (CR)	<i>Ambystoma leorae</i>	Felipe Osuna	Institute of Ecology A.C.	Mexico, North America	\$11,000
Narayanghat whipping frog (DD)	<i>Polypedates zed</i>	Shyam Pun	Nepal Biodiversity Research and Conservation Centre	Nepal, Asia	\$1,500
Pandi's mushroom	<i>Bolitoglossa pandi</i>	Teddy Angarita-Sierra	Yoluka ONG Fundación de investigación en Biodiversidad y Conservación	Colombia, South America	\$12,400
Perret's toad (CR)	<i>Sclerophrys perreti</i>	Lotanna Micah Nnej	Kunming Institute of Zoology	Nigeria, Africa	\$8,493
Rara Lake frog (DD)	<i>Nanorana rarica</i>	Biraj Shrestha	Resources Himalaya Foundation	Nepal, Asia	\$2,500
Ridge marsupial frog (EN)	<i>Gastrotheca psychrophila</i>	Paul Székely	Asociación Chelonia	Ecuador, South America	\$12,450
Schneider's shrub frog (NE)	<i>Pseudophilautus schneideri</i>	Dinal Samarasinghe	NA	Sri Lanka, Asia	\$2,050
Teleferico rubber frog (DD)	<i>Pristimantis telefericus</i>	Enrique La Marca	University of Los Andes at Mérida	Venezuela, South America	\$5,000
Thomasset's rock frog (EN)	<i>Sooglossus thomasseti</i>	Jim Labisko	University of Kent	Seychelles, Africa	\$24,510
Tree frogs (NE)	<i>Litoria spp.</i>	Deborah Bower	James Cook University	Papua New Guinea, Oceania	\$4,000
Variable harlequin frog (CR)	<i>Atelopus varius</i>	Brian Gratwicke	Smithsonian Institution	Panama, North America	\$25,000

Projects listed alphabetically by vernacular species name

## PLANT

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Vernacular Species Name	Scientific Species Name	Name	Name of Organisation	Country, Continent	Funding
Bwa koulev silwet (CR)	<i>Psychotria silhouettae</i>	Emily Beech	Botanic Gardens Conservation International	Seychelles, Africa	\$10,000
Centello (CR)	<i>Magnolia jardinensis</i>	Marcela Serna	Tecnologico de Antioquia - Institucion Universitaria	Colombia, South America	\$11,000
Chinese swamp cypress (CR)	<i>Glyptostrobus pensilis</i>	Gretchen Coffman	University of San Francisco	Laos, Asia	\$12,500
Cinnamodendron corticosum (VU)	<i>Cinnamodendron corticosum</i>	Ina Vandebroek	New York Botanical Garden	Jamaica, North America	\$11,000
Colombian walnut (EN)	<i>Juglans neotropica</i>	Germán Romero	Fundación Oiga Vea Colombia Verde	Colombia, South America	\$5,000
Creeper sunflower (NE)	<i>Harnackia bisecta</i>	Luis Roberto Gonzalez Torres	Planta! - Plantlife Conservation Society	Cuba, North America	\$5,000
<i>Cycas annaikalensis</i> (CR)	<i>Cycas annaikalensis</i>	Peroth Balakrishnan	Jawaharlal Nehru Tropical Botanic Garden & Research Institute	India, Asia	\$4,400
<i>Encephalartos macrostrobilus</i> (EN)	<i>Encephalartos macrostrobilus</i>	Samuel Ojelel	Makerere University	Uganda, Africa	\$5,000
Equator cycad (CR)	<i>Encephalartos equatorialis</i>	Hugh Pritchard	Royal Botanic Gardens, Kew	Uganda, Africa	\$11,400
<i>Euphorbia baleensis</i> (CR)	<i>Euphorbia baleensis</i>	Kirsty Shaw	Botanic Gardens Conservation International	Ethiopia, Africa	\$10,000
False 'ohe (CR)	<i>Polyscias racemosa</i>	Dustin Wolkis	National Tropical Botanical Garden	United States, North America	\$9,500
Heba basin (EN)	<i>Ammannia pauciramosa</i>	Marrino Falitiana Rakotoarisoa	NA	Madagascar, Africa	\$7,000
Kokoleceran (EN)	<i>Vatica bantamensis</i>	Iyan Robiansyah	Bogor Botanic Gardens, Indonesian Institute of Sciences	Indonesia, Asia	\$3,750
<i>Magnolia domingensis</i> (CR)	<i>Magnolia domingensis</i>	Joachim Gratzfeld	Botanic Gardens Conservation International	Dominican Republic, North America	\$10,400
Malabar river lily (CR)	<i>Crinum malabaricum</i>	Richard Lansdown	IUCN SSC Freshwater Plant Specialist Group	India, Asia	\$7,000
Malamavozona (CR)	<i>Dyopsis oropedionis</i>	Andon'ny A. Andriantsalohimisantatra	Missouri Botanical Garden	Madagascar, Africa	\$4,835
Mulanje cedar (CR)	<i>Widdringtonia whytei</i>	Jamestone Kamwendo	National Herbarium and Botanic Gardens	Malawi, Africa	\$20,995
Nehe kuhuwa (CR)	<i>Phyllostegia electra</i>	Seana Walsh	National Tropical Botanical Garden	United States, North America	\$16,000
Nubian dragon's blood tree (EN)	<i>Dracaena ombet</i>	Stephen Johnson	Conserve the Cal Madow	Somaliland, Africa	\$4,340
Pemba aloe (CR)	<i>Aloe pembana</i>	Michael Burkart	University of Potsdam	Tanzania, Africa	\$5,000
Pepperbark tree (EN)	<i>Warburgia salutaris</i>	Yvette Harvey-Brown	Botanic Gardens Conservation International	Zimbabwe, Africa	\$10,000
<i>Rhododendron magniflorum</i> (NE)	<i>Rhododendron magniflorum</i>	Xiaoling Tian	NA	China, Asia	\$5,000
Vepris fadenii (NE)	<i>Vepris fadenii</i>	Kirsty Shaw	Botanic Gardens Conservation International	Kenya, Africa	\$15,400
White ebony (CR)	<i>Diospyros egrettarum</i>	Nik Cole	Durrell Wildlife Conservation Trust	Mauritius, Africa	\$24,051

# MAMMAL

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Vernacular Species Name	Scientific Species Name	Name	Name of Organisation	Country, Continent	Funding
African wild dogs (EN)	<i>Lycaon pictus</i>	Rudie van Vuuren	N/a'an ku sê Foundation	Namibia, Africa	\$10,000
Annamite striped rabbit (DD)	<i>Nesolagus timminsi</i>	Thanh Nguyen Van	Leibniz Institute for Zoo and Wildlife Research	Vietnam, Asia	\$8,400
Araguaia river dolphin (NE)	<i>Inia araguaiensis</i>	Silvana Campello	Instituto Araguaia	Brazil, South America	\$11,000
Asian elephant (EN)	<i>Elephas maximus</i>	Marc Eimers	Smithsonian Conservation Biology Institute	Myanmar (Burma), Asia	\$11,200
Baer's Wood Mouse (EN)	<i>Hylomyscus baeri</i>	Abena Adjapong	Kwame Nkrumah University of Science and Technology	Ghana, Africa	\$9,000
Bangka slow loris (NE)	<i>Nycticebus bancanus</i>	Randi Syafutra	Flora Fauna Bangka	Indonesia, Asia	\$5,000
Bay cat (EN)	<i>Catopuma badia</i>	Susan Cheyne	Borneo Nature Foundation	Indonesia, Asia	\$5,000
Bengal tiger (EN)	<i>Panthera tigris tigris</i>	Letro	University of Greifswald	Bhutan, Asia	\$7,100
Bioko Red colobus (CR)	<i>Procolobus pennantii</i>	David Fernández	University of the West of England	Equatorial Guinea, Africa	\$11,500
Black-footed cat (VU)	<i>Felis nigripes</i>	Angie Appel	Wild Cat Network	France, Europe	\$17,500
Brown Spider Monkey (CR)	<i>Ateles hybridus</i>	Natalia Alejandra Alvis Rojas	Universidad de Los Andes	Colombia, South America	\$4,990
Chacoan peccary (EN)	<i>Catagonus wagneri</i>	Mariana Altrichter	Prescott College	Argentina, South America	\$10,500
Chamba sacred langur (EN)	<i>Semnopithecus ajax</i>	Vishal Ahuja	Wildlife Information Liaison Development Society	India, Asia	\$12,000
Chinese pangolin (CR)	<i>Manis pentadactyla</i>	Tshering Nidup	Phibsoo Wildlife Sanctuary	Bhutan, Asia	\$4,400
Chinese pangolin (CR)	<i>Manis pentadactyla</i>	Janmejay Sethy	Amity University	India, Asia	\$11,000
Colonial Tuco-Tuco (CR)	<i>Ctenomys sociabilis</i>	Gustavo Iglesias	The Nature Conservancy Argentina	Argentina, South America	\$8,000
Fishing cat (VU)	<i>Prionailurus viverrinus</i>	Sagar Dahal	Small Mammals Conservation and Research Foundation	Nepal, Asia	\$6,063
Fishing cat (VU)	<i>Prionailurus viverrinus</i>	Giridhar Malla	Wildlife Institute of India	India, Asia	\$9,925
Fishing cat (VU)	<i>Prionailurus viverrinus</i>	Tiasa Adhya	NA	India, Asia	\$11,481
Fishing cat (VU)	<i>Prionailurus viverrinus</i>	Murthy Kantimahanti	Eastern Ghats Wildlife Society	India, Asia	\$7,500
Flat-headed cat (EN)	<i>Prionailurus planiceps</i>	Ang Bee Biaw	The Mesozoic Explorers Sdn. Bhd.	Brunei, Asia	\$8,000
Giant ground pangolin (VU)	<i>Smutsia gigantea</i>	Alain delon Mouafo takoune	University of Dschang	Cameroon, Africa	\$4,845
Giant thicket rat (EN)	<i>Grammomys gigas</i>	Emily Kiplagat	National Museums of Kenya	Kenya, Africa	\$6,000
Güiña (VU)	<i>Leopardus guigna</i>	Francisca Romero	NA	Chile, South America	\$13,654
Heavenly Hill rat (CR)	<i>Bunomys coelestis</i>	Kevin Rowe	Museum Victoria	Indonesia, Asia	\$12,700
Javan slow loris (CR)	<i>Nycticebus javanicus</i>	Suzanne Attree	Oxford Brookes University	Indonesia, Asia	\$10,000
Large-antlered muntjac (CR)	<i>Muntiacus vuquangensis</i>	Camille Coudrat	Project Anoulak	Laos, Asia	\$12,000
Lesser blind mole rat (DD)	<i>Nannospalax leucodon</i>	Mikhail Rusin	Schmalhausen Institute of Zoology	Ukraine, Europe	\$1,600
Mauritian free-tailed bat (VU)	<i>Mormopterus acetabulosus</i>	Ryszard Oleksy	Ecosystem Restoration Alliance Indian Ocean	Mauritius, Africa	\$8,200
Mountain tapir (EN)	<i>Tapirus pinchaque</i>	Luis Lasso	Fundación El Quinde	Colombia, South America	\$11,000
Niger Delta red colobus (CR)	<i>Ptilocolobus epieni</i>	Rachel Ikemeh	SW/Niger Delta Forest Project	Nigeria, Africa	\$12,400
Northern muriqui (CR)	<i>Brachyteles hypoxanthus</i>	Fabiano Rodrigues de Melo	Muriqui Institute for Biodiversity	Brazil, South America	\$10,000
Northern tiger cat (VU)	<i>Leopardus tigrinus</i>	Paulo Marinho	Federal University of Rio Grande do Norte	Brazil, South America	\$9,532
Onager (EN)	<i>Equus hemionus onager</i>	Jacqueline Ballantyne	NA	Iran, Asia	\$10,500
Oncilla (VU)	<i>Leopardus tigrinus</i>	Carlos A. Delgado-Vélez	Universidad CES	Colombia, South America	\$4,918
Ontong Java flying fox (DD)	<i>Pteropus howensis</i>	Diana Fisher	University of Queensland	Solomon Islands, Oceania	\$5,000
Pallas's cat (NT)	<i>Otocolobus manul</i>	Anna Barashkova	NA	Kyrgyzstan, Asia	\$6,830
Pallas's cat (NT)	<i>Otocolobus manul</i>	Ganga Ram Regmi	Global Primate Network Nepal	Nepal, Asia	\$2,000
Pallas's cat (NT)	<i>Otocolobus manul</i>	Tashi Dhendup	Ugyen Wangchuck Institute for Conservation and Environment Research	Bhutan, Asia	\$3,800

Projects listed alphabetically by vernacular species name

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Vernacular Species Name	Scientific Species Name	Name	Name of Organisation	Country, Continent	Funding
Philippine pangolin (EN)	<i>Manis culionensis</i>	Carly Waterman	IUCN SSC Pangolin Specialist Group	Philippines, Asia	\$12,000
Podolian blind mole rat (VU)	<i>Spalax zemni</i>	Mikhail Rusin	Schmalhausen Institute of Zoology	Ukraine, Europe	\$3,690
Sand cat (LC)	<i>Felis margarita</i>	Hamed Abolghasemi	NA	Iran, Asia	\$9,400
Silver-backed chevrotain (DD)	<i>Tragulus versicolor</i>	An Nguyen	Global Wildlife Conservation	Vietnam, Asia	\$6,700
Sir David's Long-beaked echidna (CR)	<i>Zaglossus attenboroughi</i>	Sanjay Molur	Zoo Outreach Organization	India, Asia	\$25,000
Sumatran orangutan (CR)	<i>Pongo abelii</i>	Ian Singleton	PanEco Foundation	Indonesia, Asia	\$12,500
Tana River red colobus (EN)	<i>Ptilocolobus rufomitratus</i>	Juliet King	Northern Rangelands Trust	Kenya, Africa	\$12,500
Uta Hick's bearded saki monkey (VU)	<i>Chiropotes utahicki</i>	Jacqueline Ballantyne	NA	India, Asia	\$9,000
Western chimpanzee (CR)	<i>Pan troglodytes verus</i>	Itai Roffman	Haifa University	Mali, Africa	\$12,500
Western chimpanzee (CR)	<i>Pan troglodytes verus</i>	Christophe Boesch	Wild Chimpanzee Foundation	Guinea, Africa	\$12,500
White-thighed colobus (CR)	<i>Colobus vellerosus</i>	Reiko Matsuda Goodwin	Conservation Association of Benin Fauna and Flora	Benin, Africa	\$4,996

Projects listed alphabetically by vernacular species name

# FISH

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Vernacular Species Name	Scientific Species Name	Name	Name of Organisation	Country, Continent	Funding
Barred topminnow (CR)	<i>Quintana atrizona</i>	Sheila Rodríguez Machado	Instituto de Oceanología	Cuba, North America	\$4,100
Blind Iran cave barb (VU)	<i>Garra typhlops</i>	Iraj Hashemzadeh Segherloo	Shahr-e-Kord University	Iran, Asia	\$12,380
Cascudo (EN)	<i>Pareiorhaphis mutuca</i>	Luiz Silva	Universidade Federal de São João del-Rei	Brazil, South America	\$11,000
Cat fish (EN)	<i>Chrysichthys walkeri</i>	Seidu Issah	Kwame Nkrumah University of Science and Technology	Ghana, Africa	\$8,400
Dalmatian barbelgudgeon (EN)	<i>Aulopyge huegelii</i>	Vesna Milankov	University of Novi Sad	Bosnia and Herzegovina, Europe	\$4,101
Flapper skate (CR)	<i>Dipturus intermedia</i>	Patrick Collins	Queen's University Belfast	United Kingdom, Europe	\$7,500
Joba mena (CR)	<i>Ptychochromis insolitus</i>	Charles Fusari	Zoological Society of London	Madagascar, Africa	\$5,000
Knysna seahorse (EN)	<i>Hippocampus capensis</i>	Maarten De Brauer	Curtin University - TrEnD lab	South Africa, Africa	\$11,000
Large barbs (EN)	<i>Labeobarbus macrophthalmus</i>	Abebe Getahun	Addis Ababa University	Ethiopia, Africa	\$12,500
Madagascar blind fish (EN)	<i>Typhleotris mararybe</i>	Sama Zefania	University of Toliara	Madagascar, Africa	\$5,000
River pipefish (CR)	<i>Syngnathus watermeyeri</i>	Peter Teske	University of Johannesburg	South Africa, Africa	\$10,704
Salinas chub (CR)	<i>Gila modesta</i>	Arturo Cruz-Anaya	Protección de la Fauna Mexicana A.C.	Mexico, North America	\$6,650
Stellate sturgeon (CR)	<i>Acipenser Stellatus</i>	Ali Jalali	Gorgan University of Agricultural Sciences and Natural Resources	Iran, Asia	\$6,500
Victoria tilapia (CR)	<i>Oreochromis variabilis</i>	Richard Olwa	NA	Uganda, Africa	\$8,500
Watercress darter (EN)	<i>Etheostoma nuchale</i>	Jeffrey Drummond	Freshwater Land Trust	United States, North America	\$10,600
Western ruivaco (EN)	<i>Achondrostoma occidentale</i>	Carla Sousa-Santos	MARE-ISPA	Portugal, Europe	\$15,600

# REPTILE

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Vernacular Species Name	Scientific Species Name	Name	Name of Organisation	Country, Continent	Funding
Bica anole (NE)	<i>Norops bicaorum</i>	Tom Brown	Kanahau Utila Research and Conservation Facility	Honduras, North America	\$6,000
Bolson tortoise (CR)	<i>Gopherus flavomarginatus</i>	Ross Kiester	Turtle Conservancy	Mexico, North America	\$12,500
Cat Ba tiger gecko (EN)	<i>Goniurosaurus catbaensis</i>	Hai Ngoc Ngo	Vietnam Academy of Science	Vietnam, Asia	\$4,000
Forest hinge-back tortoise (CR)	<i>Kinixys erosa</i>	Luca M. Luiselli	IDECC - Institute for Development, Ecology, Conservation & Cooperation	South Sudan, Africa	\$18,250
Geometric tortoise (CR)	<i>Psammobates geometricus</i>	James Juvik	Turtle Conservancy	South Africa, Africa	\$23,900
Guatemalan beaded lizard (CR)	<i>Heloderma charlesbogerti</i>	Brad Lock	International Reptile Conservation Foundation	Guatemala, North America	\$5,250
Hoge's side-necked turtle (CR)	<i>Mesoclemmys hogeii</i>	Gláucia Drummond	Biodiversitas Foundation	Brazil, South America	\$12,500
Keyserling's wonder gecko (EN)	<i>Teratoscincus keyserlingii</i>	Salvador Carranza	Institute of Evolutionary Biology	UAE, Asia	\$12,000
Lesser Antillean iguana (EN)	<i>Iguana delicatissima</i>	Matthijs van den Burg	St. Eustatius National Parks	Netherlands Antilles, North America	\$8,150
Magdalena river turtle (CR)	<i>Podocnemis lewyana</i>	Diego Alexander Alzate Estrada	Universidad de Antioquia, Grupo Herpetologico de Antioquia	Colombia, South America	\$4,785
Phelsuma antanosy (CR)	<i>Phelsuma antanosy</i>	Michael Pointer	University of East Anglia	Madagascar, Africa	\$10,478
Pig-nosed turtle (VU)	<i>Carettochelys insculpta</i>	Matthew Young	Institute for Applied Ecology	Papua New Guinea, Oceania	\$8,500
Ploughshare tortoise (CR)	<i>Astrochelys yniphora</i>	Gerald Kuchling	Turtle Conservancy	Madagascar, Africa	\$12,500
Ricord's rock iguana (CR)	<i>Cyclura ricordii</i>	Christopher Pellecchia	University of Southern Mississippi	Dominican Republic, North America	\$4,000
Sancti Spiritus trope (CR)	<i>Tropidophis spiritus</i>	Tomas Michel Rodríguez Cabrera	Sociedad Cubana de Zoología	Cuba, North America	\$4,000
South and Southeast Asian tortoises and freshwater turtles (CR)	Testudines families: <i>Chelidae, Geoemydidae, Platysternidae, Testudinidae, Trionychidae</i>	Simon Stuart	Synchronicity Earth	Singapore, Asia	\$5,000
Tana River gecko (DD)	<i>Hemidactylus modestus</i>	Jesse Borden	The University of Florida	Kenya, Africa	\$4,940
Tanner's spiny lizard (DD)	<i>Sceloporus tanneri</i>	Víctor Hugo Jiménez Arcos	Naturam Sequi Asociación Civil	Mexico, North America	\$5,834
Tolley's forest chameleon (NE)	<i>Kinyongia tolleyae</i>	Daniel Hughes	University of Texas at El Paso	Uganda, Africa	\$7,950
Wagner's mountain viper (CR)	<i>Montivipera wagneri</i>	Konrad Mebert	NA	Turkey, Asia	\$4,200

# FUNGUS

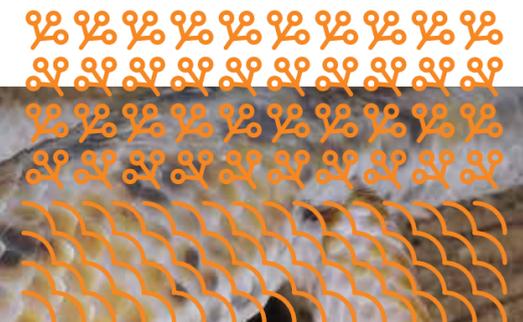
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Vernacular Species Name	Scientific Species Name	Name	Name of Organisation	Country, Continent	Funding
Orange polypore (NE)	<i>Hapalopilus croceus</i>	Anders Dahlberg	Swedish University of Agricultural Sciences	Sweden, Europe	\$22,350
Retiboletus flavoniger (NE)	<i>Retiboletus flavoniger</i>	Gregory Mueller	Chicago Botanic Garden	Costa Rica, North America	\$15,000
Stone flower (NE)	<i>Lichen</i>	Vinayaka Kanivebagilu	Kumadvathi First Grade College	India, Asia	\$5,000

# INVERTEBRATE

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Vernacular Species Name	Scientific Species Name	Name	Name of Organisation	Country, Continent	Funding
<i>Acilius duvergeri</i> (VU)	<i>Acilius duvergeri</i>	David Bilton	Plymouth University	Spain, Europe	\$6,000
Adriatic marmored bush-cricket (EN)	<i>Zeuneriana marmorata</i>	Axel Hochkirch	Grasshopper Specialist Group (IUCN/SSC)	Slovenia, Europe	\$7,500
Alindanaw (EN)	<i>Risioenemis antoniae</i>	Milton Norman Medina	University of Mindanao	Philippines, Asia	\$5,750
Burrowing scorpion (NE)	<i>Didymocentrus sanfelipensis</i>	Tomas Michel Rodríguez Cabrera	N/A	Cuba, North America	\$4,500
<i>Drapanosticta spatulifera</i> (NE)	<i>Drapanosticta spatulifera</i>	Amelia Nugrahaningrum	Indonesia Dragonfly Society	Indonesia, Asia	\$3,300
Elkhorn coral (CR)	<i>Acropora palmata</i>	Hazel Oxenford	University of the West Indies	Barbados, North America	\$5,750
Fungus gnats (NE)	<i>Mycetophilidae</i>	Andrea Carolina Henao Sepulveda	Universidad de Antioquia	Colombia, South America	\$5,545
Golden sand fish (EN)	<i>Holothuria scabra</i>	Priyanka Iyer	Zoo Outreach Organization	India, Asia	\$25,000
Gran Canaria crested grasshopper (CR)	<i>Dericorys minutus</i>	Axel Hochkirch	Grasshopper Specialist Group (IUCN/SSC)	Spain, Europe	\$12,500
Grasshopper (NE)	<i>Paraconophyma kashmiricum</i>	Khalid Mahmood	University of Poonch Rawalakot	Pakistan, Asia	\$2,500
Horseshoe crab (DD)	<i>Tachypleus gigas</i>	Siddhartha Pati	Fakir Mohan University	India, Asia	\$3,900
Italian cave-dwelling flatworm (NE)	<i>Dendrocoelum italicum</i>	Raoul Manenti	Università degli Studi di Milano	Italy, Europe	\$20,000
Odonata (NE)	<i>Acanthagrion franciscoi</i>	Rhainer Ferreira	Federal University of São Carlos	Brazil, South America	\$10,000
Syrandri clubtail (DD)	<i>Davidioides martini</i>	Kumaran Sathasivam	N/A	India, Asia	\$2,500
Talaud black birdwing (VU)	<i>Troides dohertyi</i>	Agustinus Wijayanto	N/A	Indonesia, Asia	\$4,100
White-clawed crayfish (EN)	<i>Austropotamobius pallipes</i>	Jen Nightingale	Bristol Zoological Society	United Kingdom, Europe	\$10,000
White-clawed crayfish (EN)	<i>Austropotamobius pallipes</i>	Raoul Manenti	Università degli Studi di Milano	Italy, Europe	\$7,500
Wide diving beetle (VU)	<i>Dytiscus latissimus</i>	Oleksandr Martynov	National Museum of Natural History at the National Academy of Sciences of Ukraine	Ukraine, Europe	\$2,730



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# BIRD

EX=Extinct | EW=Extinct in the Wild | CR=Critically Endangered | EN=Endangered | VU=Vulnerable  
 NT=Near Threatened | LC=Least Concern | DD=Data Deficient | NE=Not Evaluated

Vernacular Species Name	Scientific Species Name	Name	Name of Organisation	Country, Continent	Funding
Araripe manakin (CR)	<i>Antilophia bokermanni</i>	Weber Silva	Aquasis / Research and Preservation of Aquatic Ecosystems	Brazil, South America	\$12,500
Black-cheeked ant-tanager (EN)	<i>Habia atrimaxillaris</i>	Arllet Quirós-Calvo	Osa Birds: Research and Conservation	Costa Rica, North America	\$5,000
Blue-throated macaw (CR)	<i>Ara glaucogularis</i>	Rodrigo Wilber Soria Auza	Asociación Armonía	Bolivia, South America	\$7,450
Chilean woodstar (CR)	<i>Eulidia yarrellii</i>	Karolina Araya	Picaflor De Arica	Chile, South America	\$5,000
Floreana mockingbird (CR)	<i>Mimus trifasciatus</i>	Luis Ortiz-Catedral	Massey University	Ecuador, South America	\$8,500
Forty-spotted pardalote (EN)	<i>Pardalotus quadragintus</i>	Fernanda Alves de Amorim	NA	Australia, Oceania	\$10,280
Great knot (EN)	<i>Calidris tenuirostris</i>	Dmitry Dorofeev	All-Russian Research Institute for Environmental Protection	Russia, Asia	\$4,950
Himalayan quail (CR)	<i>Ophryia superciliosa</i>	Randeep Singh	Amity University	India, Asia	\$5,900
Hooded grebe (CR)	<i>Podiceps gallardoi</i>	Germán Montero	Ambiente Sur Association	Argentina, South America	\$12,500
Hooded vulture (CR)	<i>Necrosyrtes monachus</i>	Fidelis Atuo	NA	Nigeria, Africa	\$5,000
Juan Fernández firecrown (CR)	<i>Sephanoides fernandensis</i>	Kirsten Moy	Oikonos - Ecosystem Knowledge	Chile, South America	\$7,650
Junín grebe (CR)	<i>Podiceps taczanowskii</i>	Constantino Aucá Chutas	Asociación Ecosistemas Andinos	Peru, South America	\$10,550
Long-whiskered owl (EN)	<i>Xenoglaux loweryi</i>	Holly Robertson	American Bird Conservancy	Peru, South America	\$9,000
Manipur bush quail (EN)	<i>Perdica manipurensis</i>	Janmejay Sethy	Amity University	India, Asia	\$5,680
Markham's storm petrel (DD)	<i>Hydrobates markhami</i>	Hannahrose Nevins	American Bird Conservancy	Chile, South America	\$9,500
Ringed storm petrel (DD)	<i>Hydrobates hornbyi</i>	Colleen McCool	American Bird Conservancy	Peru, South America	\$2,800
Royal cinclodes (CR)	<i>Cinclodes aricomae</i>	Rodrigo Soria Auza	Asociación Armonía	Bolivia, South America	\$3,500
Ruppell's vulture (CR)	<i>Gyps rueppelli</i>	Robert Modest	Sokoine University of Agriculture	Tanzania, Africa	\$11,484
São Paulo marsh antwren (CR)	<i>Formicivora paludicola</i>	Pedro Develey	SAVE Brasil	Brazil, South America	\$4,500
Santa Cruz ground-dove (EN)	<i>Alopecoenas (Gallicolumba) sanctaecrucis</i>	Ray Pierce	Eco Oceania Pty Ltd	Solomon Islands, Oceania	\$12,500
Santa Cruz ground-dove (EN)	<i>Alopecoenas sanctaecrucis</i>	Nigel Collar	BirdLife International	Solomon Islands, Oceania	\$6,600
Sociable lapwing (CR)	<i>Vanellus gregarius</i>	Rob Sheldon	RDS Conservation	Pakistan, Asia	\$4,900
Tahiti monarch (CR)	<i>Pomarea nigra</i>	David BEAUNE	Société d'Ornithologie de Polynésie	French Polynesia, Oceania	\$5,587
White-bellied heron (CR)	<i>Ardea insignis</i>	Kinley Tenzi	NA	Bhutan, Asia	\$7,100
White-rumped vulture (CR)	<i>Gyps bengalensis</i>	Jonathan Eames	BirdLife International	Cambodia, Asia	\$10,000
White-rumped vulture (CR)	<i>Gyps bengalensis</i>	Khima Nand	Doon University	India, Asia	\$5,000
White-rumped vulture (CR)	<i>Gyps Bengalensis</i>	Sain Dino Mansoor Dahrí	Dhartee Development Society	Pakistan, Asia	\$5,000
Yellow-breasted bunting (EN)	<i>Emberiza aureola</i>	Wieland Heim	Amur Bird Project	Russia, Asia	\$4,147
Yellow-eared parrot (CR)	<i>Ognorhynchus icterotis</i>	Luis Felipe Barrera Rodriguez	Fundacion ProAves	Colombia, South America	\$8,900

# 2017 FINANCIAL STATEMENT

## Endowment:

The Fund's endowment started on 30 March 2009 with a value of \$29,202,745

**Analysis Period:** 1 January 2017 to 31 December 2017

**Reporting Currency:** US dollars

## Statement of Assets:

Begin value	30,181,879
Withdrawals for distributions	-2,000,000
End value	30,255,573
Net Portfolio Internal Rate of Return (IRR)	0.0%

**Note:** \*The performance generated by Credit Suisse and then Goldman Sachs on the portion they managed in 2017 was +9.04 %. The performance generated by Banque Pictet over the course of 2017 was +7.50% for the HF bucket and +2.12% for the Microfinance bucket.

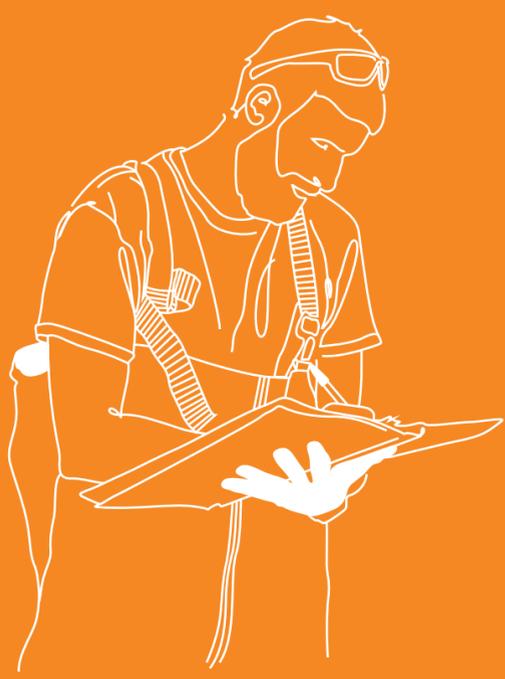
1 USD = 3.6722 AED



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African rock python



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صندوق محمد بن زايد  
للمحافظة على الكائنات الحية  
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