

■ TRANSFORMING CONSERVATION VOLUNTEERING
AND TOMORROW'S CITIZEN SCIENTISTS ■ IMMERSION LEARNING ■
EXPEDITIONS BY THE DOZEN ■ CITIZEN SCIENCE -
DOES IT WORK? ■ THE WAY TO BIOSPHERE ■ & MUCH MORE



CITIZEN SCIENCE



20
15
magazine



Welcome

to the sixth issue of the annual Biosphere Expeditions Magazine. The lead topics this year are citizen science and voluntourism, large and growing issues for us over the last few years. When we started in 1999, there were only a few organisations in the 'voluntourism' market. Then responsible holidays became a big thing and the inevitable happened: profit-driven companies at best, and charlatans at worst, started to come in and make life hard for organisations wanting to do and people looking for the real McCoy. We have been going on about this ever since, most importantly with our 'Top Ten Tips on choosing a wildlife volunteering experience' (see www.biosphere-expeditions.org/toptentips). This issue of our annual Magazine explores this and other topics at the citizen science end of voluntourism.

Other big news is two new marine protected areas in Oman built on our work, a new tiger expedition in Sumatra and a leopard expedition in South Africa, and last but not least, our brand new website.

All this, as well as our usual staple of expeditions and news, is contained in this issue. Enjoy the read.

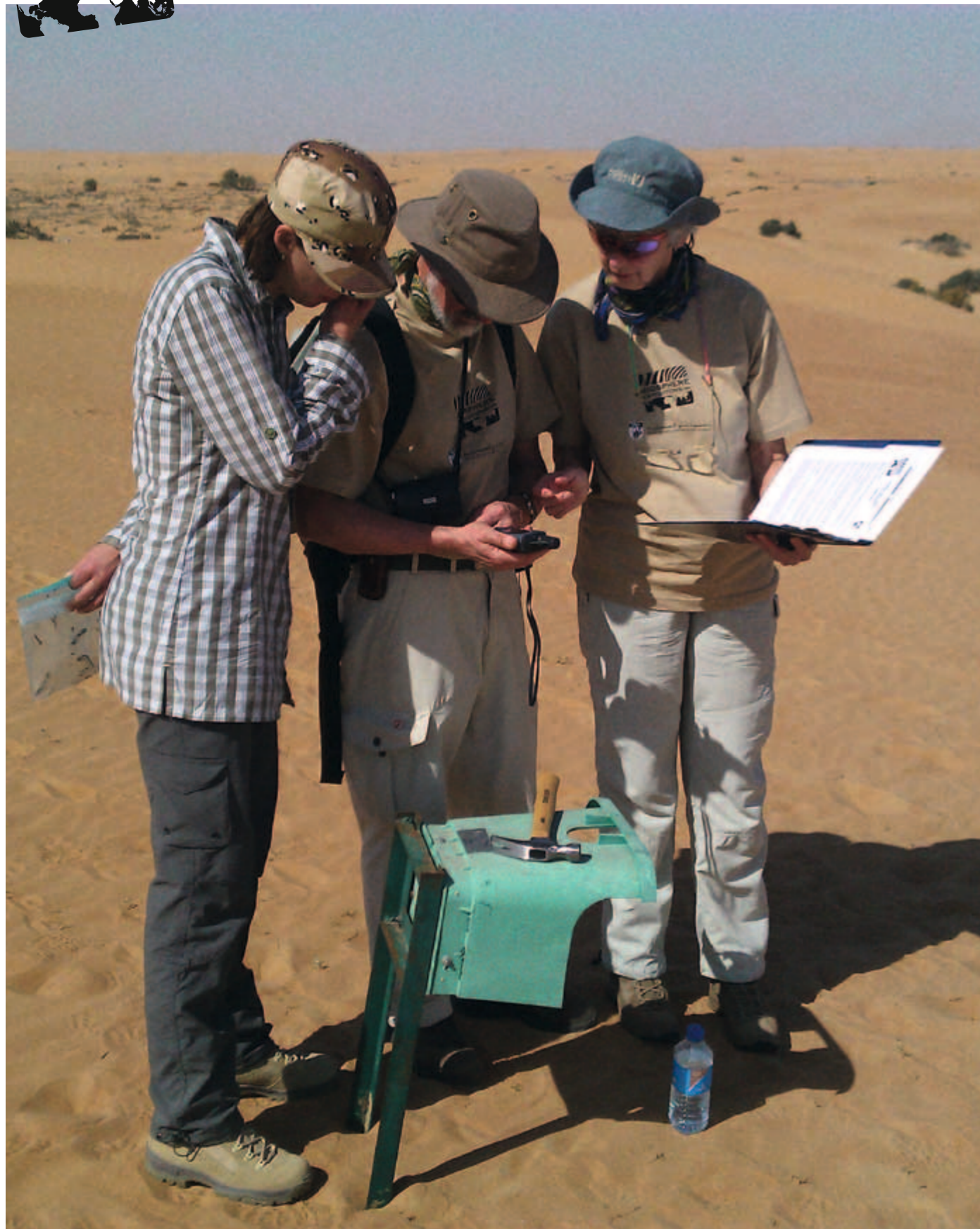


Kathy Gill
Strategy Director

Dr. Matthias Hammer
Founder & Executive Director



about us • über uns • á propos



Advancing wildlife conservation – for nature, not profit

Biosphere Expeditions is an award-winning not-for-profit conservation organisation, and a member of IUCN and the UN's Environment Programme. For us successful conservation is the collective effort of individuals. We invite everyone to join us on our wildlife and wilderness projects all over the world. Whether young or old, become a citizen scientist for one or two weeks, or more.

The foundation of our work is science and local need. We focus on sustainable conservation projects that target clearly defined, critical issues that humankind has the power to change. International volunteers work hand-in-hand with local biologists and communities to drive posi-

tive outcomes for biodiversity – the creation of a protected area for snow leopards in the Altai is just one recent example.

Biosphere Expeditions is a member of the IUCN (International Union for the Conservation of Nature) and of the United Nations Environment Programme's (UNEP) Governing Council & Global Ministerial Environment Forum. Achievements include the implementation of our conservation recommendations and species protection plans by numerous national and regional governments and NGOs, the creation of protected areas on four continents, scientific and lay publications, as well as capacity-building, training and education all over the world.



Artenschutz fördern – damit Natur profitiert

Biosphere Expeditions ist eine gemeinnützige, mehrfach ausgezeichnete Naturschutzorganisation und Mitglied des IUCN und Umweltprogrammes der UN. Wir sind überzeugt, dass erfolgreicher Naturschutz auf Zusammenarbeit basiert. Engagieren auch Sie sich als Teilnehmer in unseren Natur- und Artenschutzprojekten weltweit. Ob jung oder alt, werden sie Laienforscher für ein oder zwei Wochen oder mehr.

Wir arbeiten wissenschaftlich mit Blick auf die lokalen Erfordernisse. Dabei konzentrieren wir uns auf langfristig angelegte Projekte, die klare und vor allem erreichbare Ziele haben. Freiwillige Helfer aus aller Welt arbeiten Hand in Hand mit Feldforschern und den Menschen vor Ort für den Erhalt der Artenvielfalt. Die Schaffung eines

Schutzgebietes für Schneeleoparden im Altai ist nur ein Beispiel aus der jüngsten Vergangenheit.

Biosphere Expeditions ist Mitglied des IUCN (International Union for the Conservation of Nature) und des Umweltprogrammes der Vereinten Nationen (UNEP). Zahlreiche nationale und regionale Regierungen setzen unsere Empfehlungen zu Natur- und Artenschutzstrategien um. So haben wir zur Schaffung von Schutzgebieten auf vier Kontinenten beigetragen. Außerdem fördert Biosphere Expeditions die Ausbildung von Fachkräften und schafft damit lokale Kapazitäten. Forschungsergebnisse werden regelmäßig in Fachzeitschriften und anderen Medien weltweit publiziert.



Promouvoir la conservation de la vie sauvage – pour la nature, pas le profit

Biosphere Expeditions est une organisation à but non lucratif, plusieurs fois primée et membre de l'IUCN et du Programme des Nations Unies pour l'Environnement. Pour nous une conservation réussie de l'environnement est un effort collectif d'individus, donc venez nous rejoindre sur un de nos projets portant sur la faune et l'environnement partout dans le monde. Que vous soyez jeune ou vieux, devenez un citoyen scientifique pour une ou deux semaines, ou plus.

Les bases de notre travail sont la science et les besoins locaux. Nous sommes attachés à des projets de conservation durable avec des buts clairement définis sur des thèmes cruciaux que l'humanité a le pouvoir de changer. Des volontaires du monde entier travaillent main dans la main avec des biologistes et les communautés locales afin d'obtenir

des résultats positifs pour la biodiversité – la création d'une zone protégée pour les léopards des neiges dans l'Altai en est l'un des exemples les plus récents.

Biosphere Expeditions est membre de l'IUCN (Union Internationale pour la Conservation de la Nature) et du Conseil d'administration/Forum ministériel mondial sur l'environnement du Programme des Nations Unies pour l'Environnement (PNUE). Nos réalisations comptent également l'adoption par plusieurs gouvernements nationaux ou locaux et par des ONG de recommandations de plans de conservations et de protection d'espèces ainsi que la création de zones protégées sur quatre continents, des publications (scientifiques et grand public), ou bien le renforcement des capacités, la formation et l'éducation à travers le monde.



Scientists and their citizens - what they can achieve **27**

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New South African leopard project **43**



New Sumatra tiger project **30**

EDITORIAL

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Immersion learning **20**



34 Expeditions by the dozen



Citizen science - does it work? **40**

The backbone of Biosphere Expeditions: meet the staff

Biosphere Expeditions employs a global team of wildlife enthusiasts who all contribute to the success of the organisation: expedition leaders, scientists, field-based and administrative staff. Their roles are as diverse as their backgrounds, but they all share a love of the outdoors and wildlife. Here are just two from our team and more can be found at www.biosphere-expeditions.org/staff.



DR. VOLODYA TYTAR

was born in 1951 and his Master's Degree in Biology is from Kiev State University. At that time he first experienced the Tien Shan mountains, where he is now Biosphere Expeditions' lead scientist on snow leopard research, and wrote a term paper on the ecology of the brown bear. He then pursued a career as an invertebrate zoologist before shifting

towards large mammals and management planning for nature conservation. As well as in Kyrgyzstan, he has worked with Biosphere Expeditions on wolves, vipers and jerboas on the Ukraine Black Sea coast, and on snow leopards in the Altai mountains, and has been involved in surveying and conservation measures all his professional life.



CATHERINE EDSSELL

was born in the UK into a family of mountaineers, skiers and adventurers. With wanderlust in her blood and a BA in Creative Arts under her belt, she left her career as a choreographer and set off to the jungles of Central America and Indonesia, lived in the Himalaya with locals, trekked through the

Namib desert in search of elusive elephants and dived the oceans. Her passion for conservation grew as she sought out and trained with expedition organisations who echoed her ecological beliefs and for seven years straight, her feet barely touched British soil as she lived the expedition life in all sorts of terrains. Catherine joined Biosphere Expeditions in 2012 to realise her ambition to participate in true conservation work.

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CONSERVATION PROJECTS WORLDWIDE



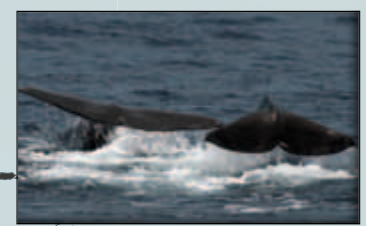
SLOVAKIA

EXPERIENCE DAYS UK

SCHNUPPERTAGE DEUTSCHLAND

EXPERIENCE DAYS USA

AZORES



AMAZONIA

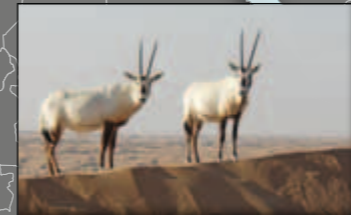


SOUTH AFRICA



MUSANDAM

ARABIA



TIEN SHAN

MALDIVES



MALAYSIA

SUMATRA



WESTERN AUSTRALIA



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Transforming conservation volunteering and tomorrow's citizen scientists

Biosphere Expeditions' strategy director Kathy Gill on the history and challenges of conservation volunteering

There is a strong tradition of amateurs leading the way in conservation all over the world. The modern development of land areas protected for the purposes of conservation came about largely through the determination of people who were not paid to do it. As Gregor Hodgson observes in his article (from page 20 onwards), the same is true for weather forecasting. Volunteers also led the way in setting up societies and clubs to observe and help protect those areas and the fauna and flora within, in the process becoming some of the world's largest and most well-established conservation bodies.



A short history of conservation volunteering in the UK

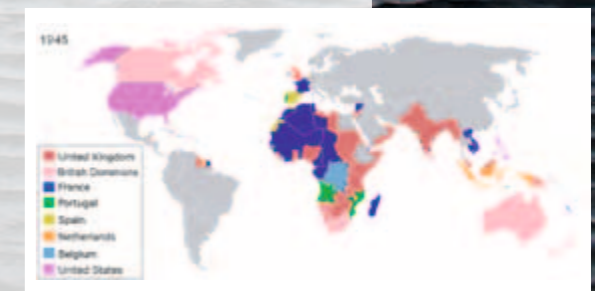
In John Sheail's account of environmental history in the 20th century, he identifies the emergence of a rural economic 'Third Force' in addition to farming and forestry. He talks about how this Third Force provides "conscious stewardship of rural landscapes for their amenity and wildlife".

Following on from this, a 2012 paper by Cook and Inman in the Journal of Environmental Management, gives us a good overview of the development of conservation volunteering: "With its origins in 19th century state concerns over human welfare, the Third Force reflects a philanthropic and voluntary response from those in position of responsibility and influence. This particular drive for conservation furthermore represents a strand other than that from the emerging statutory planning process of the last century. The National Trust in the UK is a good example of an organisation that came about as part of this Third Force. The Trust was formed in 1895 with an Act of Parliament. The Royal Society for the Protection of Birds (RSPB) was also set up in the late 19th century. Later on came other nation-wide organisations such as the Wild Fowl and Wetland Trust, founded in 1946, and the Wildlife Trusts, founded in 1972 [the former being set up in Norfolk where Biosphere Expeditions is based]. During the inter-war period, concern over unplanned urbanisation led to an appeal to the counter-industrial 'English Rural Idyll' followed by the politicisation of countryside conservation forged in the formation of the Campaign to Protect Rural England (CPRE) that dates from 1926. Its founders, the Earl of Crawford and Balcarres (politician and art historian), Sir Guy Dawber (architect) and the pioneer town planner, Sir Patrick Abercrombie, represent not only a cultural elite, but also reflected concern, at the top level of the British establishment, and hostility towards large commercial and urban centres. Later, environmental pressure groups once more became manifest through the activities of Friends of the Earth from the 1970s and went hand-in-hand with a dramatic expansion of the RSPB later in the last century."

So the development of large conservation organisations grew out of the concerns of society over changes that were being seen in the countryside. Movements, although led by a few, actually came about due to the pressure of the many. The present in that sense reflects the past with the volunteering conservation holiday movement also growing due to demand from people to lend their support to conservation abroad via this relatively new pathway.

A short history of holiday volunteering and the 'market' today

Conservation volunteering as we understand it today started in the 1980s with a small group of organisations, such as Operation Raleigh in the UK and Earthwatch in the USA, taking untrained people away for varying periods of time to learn about and undertake conservation work abroad. The early organisations were largely from North American or Western Europe, as were the people that went with them, and they largely went to developing countries, often following the same geographical patterns that colonialism had done before, albeit with very different intentions. The body of organisations swelled from early in the 21st century (Biosphere Expeditions was founded in 1999, see info box on page 19 for a short history) until the current status quo was arrived at – a plethora of organisations of all shapes and sizes with a dazzling array of opportunities for those wanting to what become known as 'volunteer' abroad. Nowadays you can do just that for a day, a week, a month...up to several years. Projects are not confined to just conservation - you can do anything from looking after orphaned animals, to teaching English, building walls and undertaking diving surveys. The market is saturated. Today there are too many opportunities with too few people to fill them, and it is very difficult to decipher the words on the often



There is a remarkable similarity between popular volunteering countries and the colonization map of 1945

Much of today's conservation movement in the UK grew out of concerns to protect the English countryside idyll

Picture © Christopher Dixon

impressive websites to understand what the organisations actually do on the ground.

Some organisations appear to care about the impact that they have and others seem only to care about taking people's money and giving the volunteers an experience (some also do not appear to care about the safety of the volunteers, but that is the very worst end of the scale).

Nature threats and ecosystem services

The need for volunteers is greater than it has ever been before. In all parts of the world, nature is being squeezed (see HIPPO threats to nature on page 16), sometimes all the way out and sometimes just into a tight spot, but everywhere there is an urgent need for people to ensure that protecting the nature that we have is balanced with our need for resources.

One interesting development is the growth in thinking about 'ecosystem services', now no longer a new concept, but still something that is largely only talked about by the people involved with it. This has been the development of ways of putting a monetary value on different things that nature provides for us, and by monetarising it, the idea is that it makes it easier for people to understand its importance and the importance of leaving different natural resources in place. The ecosystem service that a piece of land provides can be things such as what it provides in terms of flood protection, oxygen production or carbon storage, and it can therefore give people a monetary value of having to replicate this service were it to be lost through the removal of the natural asset. People get a direct measurable value to us as a species. There is an interesting development in the UK where one conservation organisation, Buglife, is working on a way that people

can value open spaces such as parks, and can establish an ecosystem services value for their local park or their own gardens, showing what they and their local area are contributing directly to nature and giving some ideas of how they can increase the value of their own land to nature.

"The world is now dependent on people to manage it"

Resources for conservation have been cut in recent years. Part of the fall-out of tight economic times has been the reduction of funds for conservation and fewer people being paid to undertake science and habitat management. This reduction comes at

a time when there is also an emerging acceptance of conservation dependence. Humans have intervened so much in nature, both intentionally and unintentionally, that we cannot just walk away and expect everything to work out in our absence. We have structurally altered landscapes and species assemblages to the point where, if we just left them alone now, the imbalance that we have created would turn them into very different places. The world is now dependent on people to manage it, and our integration and impact on it.

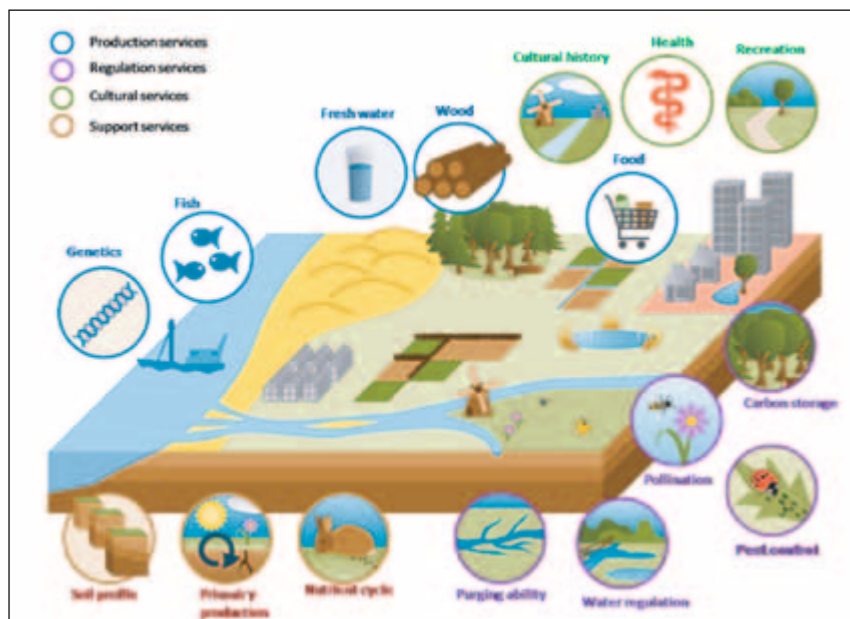
A very sophisticated set of criteria and levels of protection and management that are applied around the globe to protect areas and species have been developed (see info box on page 17). But how are we to protect even these areas without the resources to do so?

The rise of the citizen scientist

Citizen science is a relatively new term, but one that is rising in people's awareness very fast. It is the term applied to people who do not need (and usually do not have) any training in a scientific area to undertake some basic, but important work within it. This usually involves the sort of data collection that can be done with some basic skills and that needs to be done a lot. It is often not flashy or indeed particularly exciting, but it is something that is often highly absorbing, fascinating to undertake and critical if we are to learn more about how the living world functions. People can get involved in many ways from analysing photos whilst sat at their computer screens, to making observations in their gardens, to heading out into the field, at home or abroad, and working alongside scientists on the ground. I believe that this movement is an essential part of the future if we are to make conservation work.

.....

Examples of ecosystem services



Can conservation volunteering help?

A local case study on identifying the issues for transforming conservation volunteering

Can volunteering help more than it already is to plug the resources gap that conservation faces now and into the future? Biosphere Expeditions teamed up with the Cambridge Conservation Forum (CCF) to look at the issue.

CCF's purpose is to strengthen links and develop collaborations across the diverse community of conservation practitioners and researchers based in and around Cambridge in the UK, working at local, national and international levels. Over 50 organisations based in the Cambridge area, whose primary focus is the conservation of biodiversity, are currently members of CCF, including non-governmental conservation organisations, government agencies, university departments and consultancies. Within CCF the range of volunteers and the range of roles that they take on are varied. Many organisations have volunteers who meet once or twice a week and undertake habitat management work, some have thousands of volunteers to take observations weekly throughout the year, some volunteers are working as interns, some do the accounts, whilst others have paying volunteers who work on conservation projects during their holiday time.

A group from CCF met to discuss 'Transforming Conservation Volunteering'. This involved setting out issues that members had identified, both good and bad, and

looking at the barriers and opportunities. There were many questions and comments raised, but the three key issues for conservation volunteer organisers were:

1. Not enough of the 'right people' are volunteering in conservation

This was a debated issue where some felt there were not enough people whilst others felt that there was enough volume of people, but that they were often not the 'right people'.

The background to this in the UK is that the general level of formal volunteering appears to be pretty stable at around 40% of the population (according to the Institute for Volunteering Research), but that of these, the smallest area of volunteering is within the environmental area, with only 20% of those volunteering doing so and conservation being a only one sub-set of this. There has also been a lot of attention recently to the lack of engagement of young people with the natural world. There is concern that a general lack of interest in the young will lead to a generation with even less regard for the environment than the last, and at a time when we need to focus more attentively on the needs of nature and our place within it. There is a general lack of syntony (see page 19) that needs to be addressed at many levels, but particularly with younger people who could, if engaged, be a powerful force for change.

"There is a general lack of syntony"



.....
Are we losing young people to other, virtual pursuits?

AMAZONIA - PERU

Amazonian plethora: biodiversity monitoring of jaguars, pumas, primates and other flagship species of the Peruvian Amazon

This expedition will take you to a remote biodiversity hotspot of the upper Amazon rainforest. As part of a small international team, you will experience living and working in the jungle together with local biologists on an important wildlife survey concentrating on cats, primates and other flagship species of the Amazon to aid community conservation efforts and the development of sustainable management strategies. Based at a comfortable jungle lodge in a remote part of the forest, you will be working on foot in the jungle and in canoes on natural waterways, recording species, setting camera traps, creating databases, etc. All this as an integral part of a conservation project that will preserve an intact landscape of forest for further multidisciplinary research projects.



Expedition contribution
£1240 (ca. €1550 | US\$2050 | AU\$2190)

Dates & meeting point
6 - 12 September 2015
13 - 19 September 2015 (7 days)
The meeting point is in Iquitos (a regional centre in Peru).

More info www.biosphere-expeditions.org/amazonia

2. Could the rise of citizen science within conservation be part of the answer?

Understanding the profile of volunteers is a crucial issue to address so that more volunteers can be engaged in citizen science in the future. This area of volunteering is often less strenuously physical, being more about learning and observation than manual work. Although people often still need to be active, it is more at the level of hiking than digging. It attracts those who have inquisitive minds and, in the holiday approach, it is something that can be done on an episodic basis - there is no regular, long-term commitment required, people can join in for short or long periods whenever they want to. This is the model that Biosphere Expeditions operates and our role is to help people to engage with this type of volunteering more by making it as accessible as we can to as many people as possible. By working more and more with conservation bodies who are already operating on the ground in an area (WWF and NABU as two big examples), we are adding resource to the efforts of others, as well as providing a new angle on some old issues through our approach. By giving people an accessible, worthwhile, safe and fun way of engaging, we are hoping to support the development of citizen science as we move into a period of history where this resource may just tip the balance in our battle to retain biodiversity and slow the depletion of our natural resources.

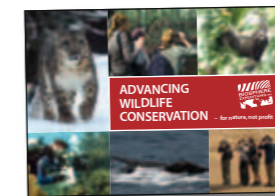
3. How to define and produce quality in both the volunteer experience and the conservation impact

There was general concern over how difficult it is and can be to know which organisations and projects are good ones to go on. This is where 'good' means that the experience for the volunteer will be satisfying and safe, and that the outcomes for conservation will be meaningful. There have been a plethora of opportunities set up for people to volunteer in conservation over recent years, some of which are the result of important projects being able to publicise themselves more, but some of which are more about people seeing an opportunity to make money and setting up projects of no or limited value and then marketing them to the unsuspecting world. Brokering organisations have been established with limited ability to monitor the projects that they advertise and which therefore have little control over the 'quality' of their 'products'. Comments of CCF members highlighted that even when a volunteering experience was a good one, it was often far from being the one that was advertised. A number of people also posed the question of how honest marketing could compete with opportunities that advertised themselves as more than they truly were - offering more excitement through

direct contact with animals, feeding into the expectations that can be created through the consumption of wonderful wildlife documentaries and the general 'disneyfication' of wildlife.

There have been a number of attempts made to clarify things for the consumer: codes of practice have been produced, quality marks have been launched, awards ceremonies established. But the ultimate accredited standard so far eludes an industry that is so diverse as to make tick-box solutions impossible and complex solutions unworkable and unfunded. A number of people at the CCF meeting came up with the same idea as a possible solution - throw the problem over to the consumer and establish something that does what Tripadvisor has done for travel generally. By setting up a website that allows volunteers to write openly and fully about their experiences, people will truly be able to learn what projects are like. But who will establish something like this? We may find that the Cambridge group starts something up in the future that could lead the way for others.

An organisation-level response - what Biosphere Expeditions did



The message from Biosphere Expeditions is clear: Don't get involved in any boondoggles masquerading as conservation volunteering projects (a boondoggle

is a project that is considered a useless waste of both time and money, yet is often continued due to extraneous policy motivations). Today, sadly, too many projects are set up only to get tourists to give the organisers money, rather than to achieve any true conservation aims.

This is why we have produced information in the form of a 'Top Ten Tips' to help people to choose a wildlife volunteering experience that is right for them (see page 31). In this way we are hoping that an increase in quality for conservation and for the volunteer will be driven by good, old market-led consumerism.

Where do we go from here?

The importance of citizen science is only likely to increase as government and other public funding streams are cut. It is crucial, therefore, that ethical standards are set now so that volunteerism and citizen science firmly stay in the philanthropic realm they emerged from. Biosphere Expeditions will continue to play its part by showcasing how it can be done. Do come and join us in this effort. ■



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The disneyfication of nature is unlikely to lead to real conservation

Picture © Alfredo Dosantos

The HIPPO threats to nature

The number of wild animals on earth has halved in the past 40 years, according to a new analysis published in October 2014. Creatures across land, rivers and the seas are being decimated as humans kill them for food in unsustainable numbers, while polluting or destroying their habitats, the research by scientists at WWF and the Zoological Society of London found. In addition, about 40% of the 40,177 species assessed using the IUCN Red List criteria are now listed as threatened with extinction - a total of 16,119.

World-renowned biologist Edward O. Wilson (see next page) has created the acronym HIPPO for the threats to biodiversity and nature, standing for **H**abitat destruction, **I**nvasive species, **P**ollution, **P**opulation pressure and **O**ver-harvesting.

Habitat destruction has played a key role in extinctions, especially related to tropical forest destruction. Factors contributing to habitat loss are overconsumption, overpopulation, land use change, deforestation, pollution (air pollution, water pollution, soil contamination) and global warming or climate change.

“Habitat destruction has played a key role in extinctions”

The number of **species invasions** has been on the rise at least since the beginning of the 1900s. Species are increasingly being moved by humans (on purpose and accidentally). In some cases the invaders are causing drastic changes and damage to their new habitats (e.g. zebra mussels and the emerald ash borer in the Great Lakes region, the lionfish along the North American Atlantic coast and introduced animals such as the fox, rabbit and pig wreaking havoc on Australia’s marsupials).

Pollution is a threat to poisoning all forms of life, both on land and in the water, and contributing to climate change. Any chemical in the wrong place or at the wrong concentration can be considered a pollutant. Transport, industry, construction, extraction, power generation and agroforestry all contribute pollutants to the air, land and water. These chemicals can directly affect biodiversity or lead to chemical imbalances in the environment that ultimately kill individuals, species and habitats.

From 1950 to 2011, the world **population** increased from 2.5 billion to 7 billion and is forecast to reach a plateau of more than 9 billion during the 21st century. According to a 2014 study by WWF, the global human population already exceeds the planet’s biocapacity - it would take the equivalent of 1.5 earths of biocapacity to meet our current demands. The report further points out that if everyone on the planet had the footprint of the average resident of Qatar, we would need 4.8 earths, and if we lived the lifestyle of a typical resident of the USA, we would need 3.9 earths.

Over-harvesting occurs when a resource is consumed at an unsustainable rate. This occurs on land in the form of overhunting, excessive logging, poor soil conservation in agriculture and the illegal wildlife trade. About 25% of world fisheries are now overfished to the point where their current biomass is less than the level that maximises their sustainable yield. The overkill hypothesis, a pattern of large animal extinctions connected with human migration patterns, can be used to explain why megafaunal extinctions have occurred within a relatively short time period, and why the world has lost most of its impressive megafauna on all continents except Africa, where humans evolved and the megafauna had time to evolve avoidance strategies.

Edward O. Wilson
“The loss of biodiversity is a tragedy”

An interview reproduced with the kind permission of UNESCO



Harvard University professor Edward O. Wilson, an entomologist whose specialty is ants, is recognised as one of the first theorists to develop the concept of ‘biodiversity’ Since the publication of his seminal text *The Crisis of Biological Diversity* in 1985, Wilson has never ceased to alert policy-makers and the public to the threat posed by biodiversity loss.

You wrote *The Crisis of Biological Diversity* in 1985. Almost thirty years later, why is it still so difficult to make people aware of the crucial importance of biodiversity?

It is indeed difficult to raise public awareness about the ongoing mass extinction of biodiversity. I and others have been trying for decades with every means available to us. The problem is that most people do not have much understanding of the subject, as opposed to crises in the physical environment, and extinction of species, especially in faraway places elsewhere in the world, seem to them a remote issue. But fortunately, awareness of biodiversity loss has grown a great deal lately, and my hope is that we will reach a ‘tipping point’ in which it will be routine front-page news around the world (like climate change) and something political leaders include in their speeches. We just have to keep pushing.

What are the main consequences of species extinction occurring at unprecedented speed for a few decades?

Loss of many of the biological ‘genetic encyclopedias’ millions of years in the making is one consequence. Loss or erosion of ecosystems due to destabilisation caused by erasure of links in food webs is another. Also, loss of opportunities in medicine, biotechnology and agriculture; and not least, loss of a major part of the greatest national and global natural heritage, permanently. Even just one of the consequences just listed – and all will occur together – is a tragedy.

How are climate change and the threat to biodiversity linked?

The causes of species extinction are, in order of magnitude of impact on biodiversity, summarised in the

acronym HIPPO: Habitat destruction, invasive species, pollution, population pressure and over-harvesting. Climate change is definitely a very big H.

Is it already too late to avert disaster?

It is not too late to stem and then halt the extinction of species and the ecosystems they compose. We are certainly too late to save some of them, but global action now can keep the final loss to a minimum. Science and technology will be a crucial part of the solution. Although vertebrates, corals and plants are reasonably well known, and form the basis of current conservation practice, the great majority of insects and other invertebrates remain unknown to science, as well as almost all bacteria and other microorganisms. These latter ‘little things that run the world’ are crucial to the survival of the larger creatures, including ourselves. We need a major initiative to explore the little-known planet on which we live, in order to preserve its life. We also need to know far more about the life cycles and ecological relationships of both the known and unknown species. The science to achieve this should be fed directly into innovations in conservation as well as to advance technology in many fields. ■

“Global action now can keep the final loss to a minimum”

Threats to biodiversity: habitat destruction, over-harvesting, pollution

Pictures © fazon, © Johan Larson, © sablin - Fotolia.com



IUCN Protected Area Management Categories

Through its World Commission on Protected Areas (WCPA), the IUCN has developed six Protected Area Management Categories that define protected areas according to their management objectives, which are internationally recognised by various national governments and the United Nations. The categories provide international standards for defining protected areas and encourage conservation planning according to their management aims.

IUCN Protected Area Management Categories

- Category Ia — Strict Nature Reserve
- Category Ib — Wilderness Area
- Category II — National Park
- Category III — Natural Monument or Feature
- Category IV — Habitat/Species Management Area
- Category V — Protected Landscape/Seascape
- Category VI — Protected Area with sustainable use of natural resources



ARABIA - UAE

Ways of the desert: conserving Arabian oryx, Gordon's wildcat, sand fox & other species in the iconic sandy desert landscape of Arabia



Picture © Wouter Kingma



This conservation project will take you to the iconic sandy desert landscape of the Arabian Peninsula. Working alongside scientists from the Dubai Desert Conservation Reserve, you will be part of a small international team, monitoring Arabian oryx, Gordon's wildcat, sand fox, mountain and sand gazelles and other flagship desert species. From a comfortable oasis field camp you will venture out in the expedition 4WDs and on foot to study antelope behaviour and social structures, camera- and live-trap Gordon's wildcat and sand fox, and monitor them by radio and GPS telemetry. All this to ensure the survival of important flagship desert species in their beleaguered world.

Expedition contribution
£1190 (ca. €1480 | US\$1970 | AU\$2090)

Dates & meeting point
10 - 17 January 2015 (8 days)
The meeting point is in the centre of Dubai.

More info www.biosphere-expeditions.org/arabia

Picture © Wouter Kingma

Syntony

– the state of being normally responsive to and in harmony with the environment and citizen science as a way forward

The CCF group felt that there is a general need to better understand the 'Volunteer Lifecycle', i.e. the way that people come into and out of both engagement with nature and also engagement with volunteering throughout the different stages of their life. The concern is that although the very young (pre 14 years of age) are being targeted to re-engage with nature, the fact is that even if they are re-engaged at that age, that most teenagers switch off to nature anyway. It has been observed that most only come back later. The teenage naturalist, when it does occur, is still a rarity and is often seen as a geek. This has been true for a long time and is not necessarily a concern. The worry is that even though conservation has always been a minority pursuit for teenagers, that people used to come back to nature in their mid-twenties, but that now this return is being delayed for far longer, often until people are in their forties and beyond. The pace of life and volume of activities that people have the option to do today has increased so much in the last twenty years that to have time to engage with, let alone volunteer in nature is now seen as more of a struggle. Even those who once volunteered in conservation and then got jobs in the field admit that they too no longer have time to continue their volunteering. So whilst there used to be the image of the conservation volunteer being a young, hippyish type, we are increasingly seeing the older end of the age range, retired and semi-retired people coming back into the volunteering arena. These people often have different skill sets, levels of physical

ability and willingness to work on certain types of projects than the previous bands of conservation volunteers, and the challenge for the conservation organisations is how to harness this new wave of workers.

The issue then turns out to be less that there are volunteers of the 'wrong type' and more that the volunteering opportunities and the methods of engaging volunteers may not be the right ones for those currently wishing to volunteer.

Could the rise of citizen science within conservation volunteering be part of the answer? Understanding the profile of volunteers is a crucial issue to address, so that more volunteers can be engaged in citizen science in the future. This area of volunteering is often less strenuously physical, being more about learning and observation, than manual work. Although people often still need to be active, it is more at the level of hiking than digging. It attracts those who have inquisitive minds and, in the holiday approach, it is something that can be done on an episodic basis – there is no regular, long-term commitment required. People can join in for short or long period whenever they want to. This is the model that Biosphere Expeditions operates on and our role is to help people to engage with this type of volunteering more by making it as accessible as we can to as many people as possible. By working more and more with conservation bodies who are already operating on the ground in an area (WWF and NABU as two big examples), we are adding resource to the efforts of others, as well as providing a new angle on some old issues through our approaches. By giving people an accessible, worthwhile, safe and fun way of engaging, we are hoping to support the development of citizen science as we move into a period of history where this resource may just tip the balance in our battle to retain biodiversity and slow the depletion of natural resources. ■

ability and willingness to work on certain types of projects than the previous bands of conservation volunteers, and the challenge for the conservation organisations is how to harness this new wave of workers.

Over the last few years all this was rewarded in style by winning lots of awards such as "Best Volunteering Organisation" (First Choice Responsible Travel Awards), "Top Conservation Holiday" (BBC Wildlife, UK),

>>>> A potted history of Biosphere Expeditions

Biosphere Expeditions started in 1999 as one of those famous 'in the shower' ideas. Our founder, Matthias Hammer, with an military background behind him, some student expeditions under his belt and disillusioned with the ivory tower mentality of academia, was looking for a way to combine his training as a biologist with some real-life, hands-on conservation work. When someone suggested "why don't you take people on expedition with you", the idea for Biosphere Expeditions was born in the shower one day soon after.

It took a year to set up Biosphere Expeditions as a non-profit organisation in the UK and another year to recruit the first expedition team. The first expedition ran in 2001 to Poland, studied wolves of the Carpathian mountains and was instrumental in establishing a wolf hunting ban there. Demand was high and many expeditioners, once bitten by the bug, came back for more, so the expedition portfolio quickly increased to include, for example Peru, an expedition still running today.

More expeditions were added, the Friends of Biosphere Expeditions came into being, corporate partners were found, awards won, and the media took a great interest in Biosphere Expeditions. The German office opened in 2002, followed by France in 2004 and North America in 2006.

In 2007 a new website was created and Biosphere Expeditions diversified to offer 2-week expeditions and 1-week projects across the globe, as well as taster weekends in the UK and Germany. In 2014 a completely redesigned website was launched to reflect and showcase the many areas that Biosphere Expeditions is now active in from conservation to capacity-building to involving local communities.

Over the last few years all this was rewarded in style by winning lots of awards such as "Best Volunteering Organisation" (First Choice Responsible Travel Awards), "Top Conservation Holiday" (BBC Wildlife, UK),

"Best Holiday for Green-Minded Travellers" (Independent on Sunday, UK), "Best New Trip" (National Geographic Adventure, USA), "Top Holiday for Nature" (P.M., Germany), "Environment Award" (from the German government), etc. (see page 45).

This cornucopia of awards was followed by Biosphere Expeditions becoming an officially accredited member of the United Nations Environment Programme's (UNEP) Governing Council / Global Ministerial Environment Forum and the International Union for the Conservation of Nature (IUCN) in 2012.

To date Biosphere Expeditions has sent thousands of people into the field and this number continues to grow as the years go by. We are proud to send people from all over the world on expeditions across the globe, making a small but significant contribution to conserving our biosphere.





.....
 A citizen scientist at work,
 here on the expedition to the
 Musandam peninsula of Oman

Picture © Kelvin Aitken

IMMERSION LEARNING

A scientist's view of citizen science

by Dr. Gregor Hodgson, Executive Director, Reef Check Foundation

Reef Check is both a non-profit environmental group and, as the name suggests, a reef research methodology. It is a dream come true for Biosphere Expeditions, because it is a methodology designed for laypeople to become citizen science divers. No wonder then that Biosphere Expeditions is using and has used Reef Check on all its coral reef expeditions in Honduras, Malaysia, Oman and the Maldives. Reef Check is the brainchild of Dr. Gregor Hodgson, a marine biologist. Here is his story.

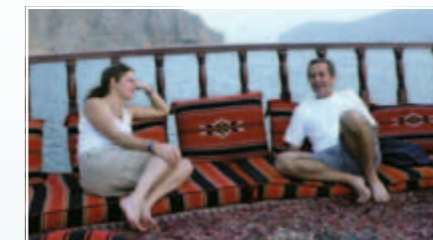
When we all turn on the radio, TV or computer in the morning and expect to get a weather report. What is not well known is that the computer models used to predict weather are partly based on historical observations by a little-known band of volunteers. In the United States, as early as 1849, about 150 volunteers were reporting weather observations from throughout the country to the Smithsonian Institution. By 1890, the 'Cooperative Observer Programme' was formally established by the National Weather Service as America's weather and climate observing network. Today over 11,000 volunteers record temperature, precipitation, wind speed/direction and other observations in cities and rural areas throughout the country. Americans rely on the data collected by volunteers. What if we could train a network of citizen scientists to monitor other natural systems such as forests or coral reefs?

Unfortunately, during the past 20 years, the love affair between humans and coral reefs has taken a dramatic toll on the health of the reefs. By the early 1990s anecdotal reports of anthropogenic impacts on reefs had reached an alarming level. Poison and dynamite fishing, diver damage, pollution, sedimentation and other impacts were widely reported by long-time divers and some marine biologists. But it was unclear how widespread or serious these effects were. A major turning point in coral reef science occurred in 1993 when a University of Miami geologist, Dr. Robert Ginsburg, organised the Colloquium on Global Aspects of

Coral Reefs and invited about 250 scientists to discuss the health of the world's reefs. The meeting successfully highlighted how sparse the available scientific database was on reefs worldwide. There was not enough information available from enough locations to form a picture of the status of the world's reefs. Science 'as usual' was failing to track the rapid changes some scientists believed were taking place on far-flung reefs around the world. The solution would be to design a special scientific survey protocol that could be carried out by non-scientists trained by scientists, and that would produce reliable, highly focused data on coral reef health. If enough volunteer groups could be recruited in this international survey effort, it should be possible to obtain a synoptic survey of the world's reefs.

In 1996, I designed a set of survey methods and, after peer review by many colleagues, these became the basis for a coral reef monitoring programme I named Reef Check. Reef Check has three goals: education, monitoring and management. For Reef Check, stakeholders include any community with an interest in coral reef conservation, not only those communities located near reefs. Therefore the implementation of community-based monitoring and management through Reef Check may involve diverse stakeholders such as

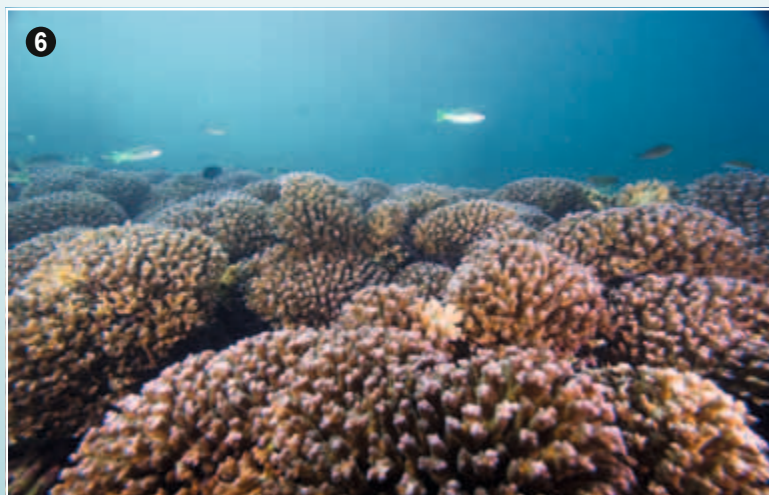
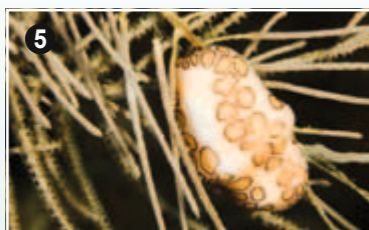
.....
 Dr. Gregor Hodgson (right) in discussion with
 Biosphere Expeditions' strategy director Kathy Gill
 whilst setting up the Reef Check / Biosphere Expeditions
 project to the Musandam peninsula of Oman





Some key indicator species – relatively easy to identify and indicating something interesting.

- 1 **Moray eel:** Presence indicates a healthy reef. *Picture © Kelvin Aitken*
- 2 **Humphead wrasse:** Absence or low numbers indicates overfishing.
- 3 **Lobster:** Absence or low numbers indicates overfishing. *Picture © Dan Clemens*
- 4 **Butterflyfish:** Absence or low numbers indicates overfishing. *Picture © Kelvin Aitken*
- 5 **Flamingo tongue:** Absence or low numbers indicate aquarium trade collection.
- 6 **Hard corals:** Good coverage indicates a healthy reef. *Picture © Kelvin Aitken*



European or American recreational divers who travel to Oman or the Maldives or Malaysia with Biosphere Expeditions or even surfers who enjoy snorkelling on Fijian reefs, and dive resort owners who would like to provide high quality dives for their guests. In summary, the Reef Check network was designed to provide a two-way flow of information - data collected by teams around the world and sent to a central processing facility, and education and interpretation distributed to the teams, governments, managers, other scientists and the general public by Reef Check Headquarters.

How to define 'coral reef health?'

One of the problems with most coral reef monitoring protocols is that they are too complicated to be taught to recreational divers and require a long training period (measured in weeks). This is because they require taxonomic identification to the species level, a requirement that can only be met when teams of specialists collaborate (even most marine biologists can only identify one group of plants or animals such as fish). Secondly, existing reef survey methods were usually designed to measure a large number of parameters that may help to attain a more complete understanding of ecology and relationships among organisms, but that are not particularly helpful for gaining a rapid assessment of coral reef health. Like a thermometer we use to judge if we have a fever, Reef Check methods were designed to collect the minimum information needed to judge coral reef health. The methodology and identification skills can be mastered in a couple of days and reef health is defined by abundance of 'Key Indicator' organisms chosen for ecological roles, sensitivity to human impacts, desirability for human consumption, market value and ease of identification (e.g. distinctive shape and colour, see pictures). An instruction manual is provided along with a set of detailed training materials – Powerpoint presentations and videos. There is also a set of certification standards and tests to ensure that each trainee is truly proficient in the protocol.

Overfishing is the primary problem

In 1997 the first global survey of coral reefs was carried out by teams of recreational divers trained and led by marine scientists during the period between 14 June and 31 August at 315 reef sites in 31 countries and territories spread around the world without any funding. Each team was responsible for funding its own operations. This was the first biological global survey of any kind facilitated by the internet. The survey was repeated during an extended six month survey period in 1998. In 1999 the programme was opened to year-around activity and the number of countries increased to 50 while the survey sites exceeded 500. By 2014, over 90 countries and territories have participated in Reef Check and over 7,000 reefs have been surveyed by 20,000 volunteers and scientists.

The first year's results provided clear evidence that widespread overfishing was the major impact on coral reefs everywhere. Those initial findings were reconfirmed by subsequent surveys and by many other independent scientific investigations. On most reefs, most high value indicator organisms were simply missing: zero lobster, grouper, giant clams, etc. No reefs showed high numbers of most indicator organisms, suggesting that few, if any, reefs had been unaffected by fishing and gathering. None of the reefs could be considered pristine. Even reefs within Marine Protected Areas showed low numbers of indicators, suggesting that many of these were 'paper parks' with little effective management. This was a very controversial new finding in 1997.

1998 was an El Niño year and the hottest since 1860 when records were first kept. Coral bleaching began in the Indian Ocean and the South Pacific in January, and then followed the sun. By 1999, 30% of survey sites reported some bleaching, with high mortality in the Indian Ocean, and parts of Asia. Up to 90% of shallow water corals were killed in parts of the Indian Ocean and high mortalities were recorded down to 40 m. The severity of the event was shown by the death of corals up to 1,000 years old in several parts of the world including Vietnam and the Great Barrier Reef. The 1999 Reef Check survey results showed a 15% global loss of living coral cover as the final tally of destruction from this dramatic forecast of the effects of predicted increasing global warming. This demonstrated that coral reefs are a sensitive indicator of global warming.

In addition to producing useful scientific results, the programme has been successful in achieving its second goal of raising public awareness about coral reefs. In fact, for the minority of scientists who did not accept the fact that trained and tested citizen scientists can reliably survey reefs, this was the most valuable achievement.

Providing tools for coral reef management

There is a fundamental need to give communities a complete set of tools and training so that they can manage their own reefs. Progress towards making Reef Check available through existing coastal management and coral reef programmes has been rapid, but far more work was needed to expand the network and provide the training needed to use the tools.

This process of institutionalisation of Reef Check has occurred with the help of the United Nations Environmental Programme, UN Development Programme, UNESCO, World Bank, US Agency for International Development, US National Oceanographic and Atmospheric Administration and numerous non-governmental organisations such as the Worldwide Fund for Nature, the Coral Reef Alliance, Reefkeeper, CANARI and many others, including of course Biosphere Expeditions.

Shifting baseline syndrome

The scientific results of Reef Check surveys highlighted the importance of the 'shifting baseline syndrome' (see info box on page 24). There are few quantitative data describing what populations of reef organisms were like several hundred years ago, before widespread fishing. In general, changes that occur over a human life span are recognised, and reported at least anecdotally, by fishermen or divers. But when changes have occurred long ago, or slowly over several hundred years, it is difficult to guess what the 'pristine baseline' may have been like. Terrestrial examples of this phenomenon are common and familiar. Studies have documented how overfishing led to diminished fish populations in Jamaica over 100 years ago and suggest that this situation is common. Furthermore, the studies argue that no truly pristine reefs remain because, in addition to widespread fishing, populations of large herbivores such as turtles, dugongs and manatees, which would strongly influence coral reef ecology, were historically much higher than they are today. Many coral reef fish grow and mature slowly. This biological explanation for why it is so easy to 'fish out' coral reefs has led to suggestions by some scientists that no commercial harvesting be allowed on any reefs!



Massive, beautiful coral mounds like this one, many of them a thousand or more years old, were simply killed off during the 1998 bleaching event.

Picture: © Kelvin Aitken

Reef Check results have been provided freely to various organisations involved in documenting and assessing changes to coral reefs. These include the World Fish Center's ReefBase, which is the largest and best developed database on coral reefs. Reef Check results were also used to help build the 'Reefs at Risk' assessment of threats to coral reefs from various sources around the world. This model is now being refined to provide a regional assessment of risk in Southeast Asia.



A Biosphere Expeditions survey team in the Maldives

SHIFTING BASELINES

A shifting baseline is a type of change to how a system is measured, usually against previous reference points (baselines), which themselves may represent significant changes from an even earlier state of the system. A conceptual metaphor for a shifting baseline is the price of coffee. A cup of coffee may have only cost a \$0.05 in the 1950s, but in the 1980s the cost shifted to \$1.00 (ignoring inflation). The current (21st century) coffee prices are based on the 1980s model, rather than the 1950s model. The point of reference moved.

The concept arose in landscape architect Ian McHarg's famous manifesto 'Design With Nature' in which the landscape as we know it is compared to that which ancient humans once lived on. The concept was then considered by the fisheries scientist Daniel Pauly in his paper "Anecdotes and the shifting baseline syndrome of fisheries". Pauly developed the concept in reference to fisheries management where fisheries scientists sometimes fail to identify the correct 'baseline' population size (e.g. how abundant a fish species population was before human exploitation) and thus work with a shifted baseline. He describes the way that radically depleted fisheries were evaluated by experts who used the state of the fishery at the start of their careers as the baseline, rather than the fishery in its untouched state. Areas that swarmed with a particular species hundreds of years ago may have experienced long-term decline, but it is the level of decades previously that is considered the appropriate reference point for current populations. In this way large declines in ecosystems or species over long periods of time were, and are, masked. There is a loss of perception of change that occurs when each generation redefines what is 'natural'.

Text adapted from Wikipedia.



Further Reading

The Unnatural History of the Sea

by Callum Roberts



Humanity can make short work of the oceans' creatures. In 1741 hungry explorers discovered herds of Steller's sea cow in the Bering Strait and in fewer than thirty years, the amiable beast had been harpooned into extinction. It's a classic story, but a key fact is often omitted. Bering Island was the last redoubt of a species that had been decimated by hunting and habitat loss years before the explorers set sail.

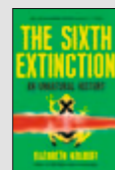
As Callum M. Roberts reveals in "The Unnatural History of the Sea", the oceans' bounty did not disappear overnight. While today's fishing industry is ruthlessly efficient, intense exploitation began not in the modern era, or even with the dawn of industrialisation, but in the eleventh century in medieval Europe. Roberts explores this long and colorful history of commercial fishing, taking readers around the world and through the centuries to witness the transformation of the seas.

Drawing on firsthand accounts of early explorers, pirates, merchants, fishers and travellers, the book recreates the oceans of the past: waters teeming with whales, sea lions, sea otters, turtles and giant fish. The abundance of marine life described by fifteenth century seafarers is almost unimaginable today, but Roberts both brings it alive and artfully traces its depletion. Collapsing fisheries, he shows, are simply the latest chapter in a long history of unfettered commercialisation of the seas.

The story does not end with an empty ocean. Instead, Roberts describes how we might restore the splendour and prosperity of the seas through smarter management of our resources and some simple restraint. From the coasts of Florida to New Zealand, marine reserves have fostered spectacular recovery of plants and animals to levels not seen in a century. They prove that history need not repeat itself: we can leave the oceans richer than we found them.

The Sixth Extinction: An Unnatural History

by Elizabeth Kolbert



Over the last half a billion years, there have been five mass extinctions of life on earth. Scientists around the world are currently monitoring the sixth, predicted to be the most devastating extinction event since the asteroid impact that wiped out the dinosaurs.

Elizabeth Kolbert combines brilliant field reporting, the history of ideas and the work of geologists, botanists and marine biologists to tell the gripping stories of a dozen species – including the Panamanian golden frog and the Sumatran rhino – some already gone, others at the point of vanishing. The sixth extinction is likely to be mankind's most lasting legacy and Elizabeth Kolbert's book urgently compels us to rethink the fundamental question of what it means to be human.

Using volunteers to save coral reefs

There are motivated people who care about coral reefs throughout the world. They are willing to carry out a great deal of difficult volunteer work in fund-raising, organising, training and surveys if they feel it is fun, useful to them and helps coral reefs. Therefore the volunteer aspect of Reef Check appears to have been a key factor in its success. If the programme had been designed to pay people to survey reefs, the surveys would stop when the funds ran out. Participants in the programme become strong supporters of sustainable management of coral reefs. By developing a political constituency, the programme helps to build support for existing and future government management programmes.

As with any new idea, scepticism was initially expressed by some scientists regarding the value of a programme such as Reef Check that uses non-scientists to collect data. As time has passed, increasing numbers of doubters have joined the hundreds of volunteer scientists who have participated and given their time and expertise to support the work. Many scientists have discovered that they have gained a great deal from the experience of acting as team scientists. Through the process of leading the training and surveys, they can directly experience their value to the community just by answering questions on coral reef ecology posed by a diverse audience.

The quality of the data collected by volunteers has been compared formally with that collected by pure scientific teams and the differences are small. The data

have been used for major meta-analyses by independent scientists and published in top scientific journals. Reef Check data have been used to help assess and manage impacts from coral bleaching, a tsunami, and fishing impacts.

Monitoring and management have costs and neither developing, nor developed country governments will ever be willing to commit resources to fund large monitoring networks using detailed methods typically employed in academic ecological research. By using the existing Reef Check network of government and NGO coordinators, huge cost-savings can be achieved because most of the work is carried out by volunteers.

Since 1997 Reef Check has assisted many countries to establish national coral reef monitoring and management programmes. The best monitoring programmes are developed adaptively, in the context of serving management needs that will change with time as new threats arise including global warming and ocean acidification.

Lastly, as with all Reef Check/Biosphere Expeditions programmes, Reef Check provides a local and a global element. Local information and tools for governments to make decisions (such as the recent declaration of two marine protected areas in Oman based on Biosphere Expeditions survey work there), as well as the global component that comes with the gamut of applications that Reef Check has, as described above. Ultimately none of this could happen without the time, commitment and energy of people from all walks of life. People like you reading this Magazine. ■

Biosphere Expeditions' marine scientists on their projects

Alvin Chelliah, Reef Check Malaysia



"Reef Check Malaysia has been conducting coral reef surveys around the country since 2007. However, we have always found it difficult to survey islands that are not inhabited and distant. We lack manpower and funding to survey such areas and hence there were gaps in our data. Working with citizen scientists helps fill in these gaps. The research vessel that Biosphere Expeditions provides allows us to survey the smaller islands off Tioman and the volunteers will provide the added manpower we require. This is vital for scientists and managers that are working hard to protect coral reefs in our country."

Dr. Jean-Luc Solandt, Marine Conservation Society & Reef Check co-ordinator Maldives



"The collaboration between Biosphere Expeditions and the work of Reef Check in the Maldives is invaluable. In the past the Marine Conservation Society has taken part in ad hoc surveys with liveboards, but this collaboration with Biosphere Expeditions has very significantly widened our understanding about the health of Maldivian reefs. We look forward to further successful surveys next year."

Italo Bonilla, Cayos Cochinos Marine Natural Monument, Honduras



"We are always looking for help to do as much research as we can in order to increase our knowledge of our natural resources and how to manage them sustainably. Working with international volunteers gives us a great opportunity to do this on our coral reefs. On top of that there is intense cultural exchange leading to greater cross-cultural understanding, so there are multiple benefits for the archipelago of Cayos Cochinos."

Rita Bento, marine biologist, Emirates Diving Association, UAE



"The work of Biosphere Expeditions on the Musandam coral reefs has had a great impact in the region regarding the collection of scientific data and the creation of a marine protected area in a remote and little touched area of the sea. In addition there has also been a great increase in environmental awareness about this important underwater habitat – both locally through the creation of scholarships and educational programmes and influencing decision-makers, as well as internationally through the involvement of volunteers from all over the world. Biosphere Expeditions unite in an exemplary way in all their projects two important subjects – science and awareness."

Time and money, scientists and their citizens – what they can achieve

Dr. Matthias Hammer, Executive Director, Biosphere Expeditions

This Magazine is about showcasing (citizen) scientists and their projects. What have they achieved? Here is an overview.

Without a doubt the most recent and biggest feather in our cap is the protection of two marine areas in Musandam, Oman. Needless to say we were delighted, because we played a pivotal role. We are still the only organisation conducting reef research in the area and we had been badgering decision-makers in government for years; to have it all come to fruition was a brilliant reward for all the hard work done over many years. Thank you to all who were involved. This is a powerful demonstration of how volunteering expeditions can and should work. The funding and labour our citizen scientists provide enables us to keep chipping away at the block, year after year. This sets us apart from many other research projects, where very often (grant) funding is limited to a few years at best. Yet generally government decision-making takes many years, not just a few, so efforts ebb away, breaking themselves on the big rocks of slow-moving bureaucracies that often have the economy and growth, but not conservation, on their agendas.

Time is often the key ingredient. And we can buy time, because our citizen scientists provide a reliable and steady stream of hard cash and passionate effort. The Maldives are another case in point. There the government is slashing funding available for reef research and conservation. Incredibly, really, for a country whose economy, sustenance and very existence is built on the

bedrock of coral reefs. So we turn to civil society and establish community-based monitoring programmes.

Again, we can only do this because we have time. We may be in the country for only a week or two each year, but we are there year after year, training and empowering locals. Local placement Shaha Hashim has fulfilled her ambition, on page 47 of the 2014 Magazine (page 47), of becoming a Reef Check trainer, alongside her colleague Rafil Mohamed (see page 29). Both will now go on to establish community-based reef monitoring programmes, and Saha has also founded a reef conservation NGO. In the absence of much interest from the government, this bottom up approach is exactly what is needed.

These are just two examples to illustrate that citizen science does work, if done right. Other examples are on the following pages.

Prevention of wildlife and wilderness destruction

Poland

Biosphere Expeditions played an active role in saving 50 wolves from being declared legitimate hunting targets in the Bieszczady mountains in Poland. This was achieved by providing accurate information on the predator numbers and by influencing the local authorities who reversed their decision to cull wolves.

Peru Amazon

Together with our partners in Peru, Biosphere Expeditions was able to halt a dam construction project, which was threatening a biodiversity hotspot in the Peru Amazon region.

MALDIVES

Little and large: surveying and safeguarding coral reefs & whale sharks of the Maldives archipelago

This SCUBA diving expedition will take you to the beautiful 26 coral atolls that make up the Republic of Maldives. There you will help marine biologists study and protect its spectacular coral reefs and resident whale shark population. All this because the Maldives government identified a need for further research and monitoring work as far back as 1997. Biosphere Expeditions is addressing this need with your help and will train you as a Reef Check Eco-Diver. With this qualification you will then gather important reef and whale shark data and you will also be eligible to apply for PADI or NAUI Reef Check Speciality Course certification after the expedition.

Expedition contribution

£1590 (ca. €1980 | US\$2650 | AU\$2840)

Dates & meeting point

12 - 18 September 2015 (7 days)
The meeting point is in Male', the capital of the Maldives.

More info www.biosphere-expeditions.org/maldives



Picture © Volker Lottmann



Picture © Volker Lottmann



Picture © Volker Lottmann

Wildlife and wilderness management & protection

Namibia

Biosphere Expeditions played a pivotal role in establishing the country's largest leopard research project, working with local ranchers and resolving human-wildlife conflict, which led to a significant reduction in big cats killed in the country.

Peru Amazon

Our guidelines for boat behaviour at clay licks in the Tambopata Reserve have been incorporated in local management plans. Guidelines are needed because unsustainable forms of farming, logging and tourism are threatening the natural habitat in the Peruvian Amazon.

Brazilian Atlantic rainforest

Our recommendations for the management and protection of jaguars have been incorporated into national and state-wide jaguar action plans in Brazil's Atlantic rainforest.

Caribbean marine protected area, Honduras

Our recommendations for the management and protection of the coral reefs of the Cayos Cochinos marine protected area in Honduras have been incorporated into the managing authorities' action plan.

Dubai Desert Conservation Reserve, United Arab Emirates

Our recommendations for the management of Arabian oryx and Gordon's wildcat have been incorporated into the action plan of the Dubai Desert Conservation Reserve.

Spanish Pyrenees

Together with our partners in Spain, we helped to reverse EU high altitude carcass removal regulation, which was designed to combat the spread of BSE, but was starving high mountain vultures and bears.



Protected area creation

Southern Africa

Data collected by our expeditions in Namibia have helped our local and international partners make arguments that have led to the declaration of the Kavango Zambezi Transfrontier Conservation Area, or KAZA TFCA. The KAZA TFCA is the world's largest conservation area, spanning five southern African countries; Angola, Botswana, Namibia, Zambia and Zimbabwe, centered around the Caprivi-Chobe-Victoria Falls area. Also in Namibia, fewer lions, leopards and cheetahs have been killed in farmer-predator conflict due to our data collection, awareness-building and educational work.

Oman

Data collected by our expeditions as well as our intensive work to influence decision-makers have led to the protection of two marine areas in the Musandam Peninsula of Oman, where all fishing except local handline fishing has been banned by a new ministerial decree.

Ukraine

Data collected by our expeditions in the Ukraine have helped our local partners make arguments that have led to the declaration of a national park. This park now protects a unique steppe area jutting into the Black Sea, a stop-off point for many migratory birds, as well as a haven for fauna (e.g. birds & wolves) and flora (it boasts amongst other things Europe's biggest orchid field).

Altai Republic

Data collected by our expeditions in the Altai have helped our local and international partners make arguments that have led to the declaration of a protected area in the Altai Republic, Central Asia. This area now provides a protected habitat for a number of endangered species, including the snow leopard. Also in the Altai, we have converted local poachers into conservationists by paying them for verifiable camera trap pictures of snow leopards surviving year-on-year. This is obviously not a long-term strategy, but with so few snow leopards remaining, some stopgap solutions are needed until the long-term ones can be reached.

Australia

When Australia created the world's largest network of marine reserves in 2012, the Roebuck Commonwealth Marine Reserve, site of our flatback turtle study, was part of the network. Along with our local partners, we were working towards getting flatback turtles listed within the 'major conservation values' of the reserve and this is what happened, with the citation being 'Foraging area adjacent to important nesting sites for flatback turtles'.



Pictures © Alfredo Dosantos

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(press release 27 November 2013)

Biosphere Expeditions welcomes protection for unique marine ecosystem in Musandam, Oman



In two secluded bays in the coral-rich waters of the Musandam peninsula in Oman, all fishing bar the local handline fishing has been banned by a new ministerial decree. This significant step forward in the conservation of the beauty and resources of this relatively untouched marine area has been welcomed today by the research organisation that has spearheaded the underwater research effort and campaigned towards greater protection, Biosphere Expeditions. Dr. Matthias Hammer, the founder and executive director of the organisation, today talked about the work that Biosphere Expeditions has been doing in the area since 2008: "This area has a high coral coverage at nearly 60 per cent of the underwater surface. This is greater than that of most reefs around the world, and the Musandam reefs are certainly the best in the region. The Ministry of Agriculture and Fisheries's (MoAF) decision prohibits the use of all kinds of nets and cages, and any other fishing equipment, except handlines. This is a wise and important step in ensuring the survival of this unique marine ecosystem and natural jewel in Oman's crown."

A senior official at the Marine Sciences and Fisheries Centre, on whose recommendations such decisions are taken, said that both the Khor Najd and Khor Hablain bay areas are rich in corals, and fishing would end up destroying them. "The destruction of corals means severe damage to the marine life in the area. So this measure not only protects reefs, but also helps in sustainability of marine resources."

"We could not agree more", says Hammer, "and we are delighted that our voice has been heard, that our reports have been read and our recommendations have been heeded." But he also added a note of caution, saying that without further intervention, the low numbers of fish and invertebrate populations in the area could mean that any additional stress may lead to coral die-off. "The general fishing ban announced by MoAF is certainly a progressive and welcome step in the right direction", says Hammer. "Moving forward we recommend that a Marine Protected Area (MPA), or a network of MPAs, is created in north Musandam. We also urge rapid action before what is at the moment still a unique natural treasure for Oman is degraded and lost. If more habitat is lost or degraded before full MPA protection is implemented, there is a good chance that fish and invertebrate populations will not be able to recover from their current very low numbers and that the current high coral coverage will be lost. As a result, the decrease in some fish and invertebrate families is likely to have future negative impacts on substrate composition and the reef ecosystem as a whole. This in turn will threaten livelihoods and treasured lifestyles around Musandam", warns Dr. Hammer.

The next stage, said Dr. Hammer, is to obtain formal support to extend protection from fishing bans to a full MPA. Biosphere Expeditions will continue its research, now including studying the effects of the fishing ban. Ultimately, given funding and government support, Biosphere Expeditions plans to extend its efforts to comprehensive surveys (including for example, fisheries landings, stakeholder consultations, etc) and a roadmap towards an MPA. ■

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Establishing community-based monitoring programmes in the Maldives



"I really appreciate the effort Biosphere Expeditions makes to involve locals in their expeditions to the Maldives. Curious about the Reef Check course, I approached them in 2013. This year I have qualified as a Reef Check trainer, which qualifies me to conduct my own surveys and train my compatriots here in the Maldives. Together with Rafil we hope to monitor many sites now, feeding into Reef Check and national conservation efforts, which are needed urgently. I hope to get more people to see the reef as I do now."
Shaha Hashim

(Also see news on first-ever all-Maldivian survey on page 46.)



Via our local partner LaMer, the Rufford Foundation kindly supported these placements.



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2014 local placements (left to right): Rafil Mohamed, board member of the Maldives Dive Association; Shaha Hashim from GEMANA NGO; Ibrahim Shameel from the Maldives Whale Shark Research Programme

SUMATRA - INDONESIA

Forest flagship: researching & conserving critically endangered Sumatran tigers in Rimbang Baling Wildlife Sanctuary, Sumatra, Indonesia

This tiger conservation project will take you to the Indonesian island of Sumatra to survey critically endangered Sumatran tigers and the rainforest setting in which they are struggling to survive. You will be working as part of an international team from a comfortable traditional timber house expedition base inside the forest. You will be covering ground on foot, in boats and on motorbikes, looking for tracks, kills, scats and the animals themselves, and setting camera traps. You will also work with local people on capacity-building and creating local incentives for tiger conservation. All this in an effort to mitigate human-wildlife conflict and create strategies to ensure the survival of the critically endangered Sumatran tiger into the future.



Expedition contribution

£1940 (ca. €2420 | US\$3220 | AU\$3450)

Dates & meeting point

3 - 15 May 2015

17 - 29 May 2015

31 May - 12 June 2015

26 July - 7 August 2015

9 - 21 August 2015

23 August - 4 September 2015 (13 days)

The meeting point is Pekanbaru, the capital of Riau, a province in Indonesia on the island of Sumatra.

More info www.biosphere-expeditions.org/sumatra

We continue to be proud of everything that all those who contribute to Biosphere Expeditions achieve, but doubtless the biggest achievement in the year since the last Magazine was the creation of two marine protected areas in Oman. The efforts of Biosphere Expeditions and its citizen scientists were pivotal for this and the story is covered in more detail in the article "Time and money, scientists and their citizens" on page 27.

Small, flexible, ethical

Biosphere Expeditions continues to be a small, flexible, ethical organisation. We talk a lot about ethics in voluntourism and the world's obsession with growth. In last year's round-up we said that we "definitely do not want to be part of the [world's] obsession with growth". This is now reflected in our economic policy, which also goes hand in hand with our sponsorship policy (see info box on the right). To our knowledge these policies are unique in citizen science and voluntourism, as is our vegetarian food policy (also see info box on the right), which we have had in place for some years now. And further on ethical topics, our battle against the charlatans in citizen science / voluntourism continues. Our Top Ten Tips (see below) continue to make an impact with the media and prospective citizen scientists. In fact, this whole Magazine issue is on this topic and how to make the best use of keen and committed citizen scientists for wildlife conservation.

Big cats in Sumatra, Tien Shan and South Africa

2015 will see the launch of two new, exciting big cat expeditions: Tigers in Sumatra, as well as leopards and caracal in South Africa. This is on top of our very successful 2014 launch of the inaugural snow leopard expedition to the Tien Shan mountains of Kyrgyzstan. The snow leopard pro-



The two Biosphere Expeditions directors
Kathy Gill and Matthias Hammer look back at 2014 and ahead

ject has only been running for a year, but it has already won the accolade of "Life-changing Volunteering trip for 2014" from Wildlife Extra in the UK, something that demonstrates its importance for volunteers as well as the snow leopard. The tiger and snow leopard projects are in collaboration with WWF Indonesia and German NABU (Naturschutzbund) respectively, two well-known and important conservation NGOs. The South African leopard project is with an old friend and expedition scientist from Peru who has since then returned to his native South Africa. These project together will add greatly to our understanding of big cats around the world and we look forward to receiving the reports from teams as their work is analysed and written up.


New website and placement programme

One of the most significant outward-facing changes in 2014 was our new website, which was launched in the autumn. Migrating and implementing the new site took almost a year before we finally flipped the switch in October 2014.


Top Ten Tips

on decent citizen science in wildlife conservation

TOP TEN TIPS
Choosing a wildlife volunteering experience
This is what you should look out for



- 1. Reputation, reputation, reputation:** has the organisation won awards or accolades, who are they associated with, what is their philosophy, do they write & publish their results and what's their safety record.
- 2. Qualified staff:** work should be led by qualified & proven experts, group leaders should be well qualified and all staff should be well briefed on risks and safety issues.
- 3. Where does your money go:** good organisations will always publish clear information that shows how your money is spent.
- 4. Proper follow-through:** a good organisation will, through updates and reports, keep you informed about how the project progresses even after you've left.
- 5. What will you get out of it:** be clear about what you want to get out of the experience - training, self-development, an adventure - then check whether the organisation is clear in communicating what's on offer for you.
- 6. Community involvement and benefit:** understand a project's relationship to the local community and make sure that the organisation is properly embedded with local efforts and people
- 7. Your fellow participants:** understand the profile of the people that will share your trip by checking the organisation's website and social media sites.
- 8. In the field:** check that the organisation is clear & transparent about what will be happening day to day, the accommodation, food and other logistics, and also what is expected of you.
- 9. Captive animals:** if the experience involves captive animals, be very clear on the purpose of the captive facility, where the animals come from and whether it is part of a reputable programme.
- 10. Handling animals:** steer clear of organisations that encourage handling of captive wild animals for anything other than essential veterinary or neo-natal surrogate care. If wild animals are handled, it should only be for essential research & conservation work and following strict animal welfare guidelines.



More details at www.biosphere-expeditions.org/toptentips

From an article written by Matthias Hammer and published in Wildlife Extra in October 2014:

Voluntourism has come in for rough ride in the recent past, and rightly so. With impressive growth rates, profit-driven charlatans and pretenders have sadly flooded into the market. The worst examples include bogus animal sanctuaries and fake orphanages. When Biosphere Expeditions started in 1999, volunteering was the domain of charities and NGOs. Now it is a multi-million pound business with far too many touchy-feely wildlife projects.

Fortunately it's not that hard to look behind the glitzy fronts. The best way to avoid the charlatans is to ask the right questions. For example: is the operator a non-profit organisation or a profit-driven business? What is the rationale for involving volunteers (what will they do exactly, where and when)? What will be the outcome and how will local people and/or wildlife benefit? Does the organisation have any achievements it can list, any awards or other accolades? Is it transparent in its finances and structure?

A handful of pointed questions such as these will, in most cases, separate the good from the bad from the downright ugly.

The site aims to be easier to use and to help people to access reports and interesting videos and get a better idea of what life is like on expedition with us. We think it was worth all the work and we hope you will visit it and tell us what you think, but mostly we hope you will like it.

Along with the new site came an overhauled placement programme for locals. We now offer placements on all our expeditions, building capacity and integrating local communities through training and education all over the world. This is one of the most important strands of our work that permeates everything we do. After all it is people who will make the difference, so the more we can involve on our projects, the better. Have a look at the new programme on www.biosphere-expeditions.org/placements and forward it to deserving candidates.



Expedition reports

All of Biosphere Expeditions' scientific reports and publications are on the reports & publications page www.biosphere-expeditions.org/reports. As far as we are aware, Biosphere Expeditions is the only organisation in the world that has a direct and transparent link between the work done by citizen scientists and an expedition report. Each expedition year is matched by an expedition report for that year, which deals with the two main areas that expedition participants contribute to: funding and data collection. Chapter 1 of each report, written by Biosphere Expeditions, reviews the expedition logistics and publishes an expedition budget, which shows in a clear and transparent way income and expenditure for each expedition and the percentage of income spent on the project. Chapter 2 onwards, written by the expedition scientist, shows who collected what data, how they were analysed, what the conclusions were, as well as the conservation recommendations and actions flowing from this, and what future expeditions should do. In this way, each expedition comes full circle for its participants.

POLICY EXCERPTS

Economic policy

Biosphere Expeditions believes that we have designed an economy that is dependent upon too much growth. We have also designed an economy that generates incremental profits by constantly increasing productivity. The growth prescribed is an unhealthy and unsustainable mathematical impossibility. Cancer is perhaps the best analogy to this level of growth. It grows until it kills the body that hosts it. Therefore Biosphere Expeditions is not committed to growth. We want to do a few projects and we want to do them well, making a difference to our partners and local communities on the ground as well as the wildlife and habitats that support them. We want to retain full control of our processes and actions, with our left hand knowing what our right hand is doing. If there is growth, we will make sure that it is sustainable and necessary, which means it should be based on local demand and need. Our economic decisions will be based on this maxim.

Food policy

Biosphere Expeditions is all about animal conservation and research or caring for animals in the widest sense. Because of this Biosphere Expeditions will offer as part of its catering no animal meat (including fish) that is connected with animal abuse or suffering or obtained using unethical or unsustainable production and harvesting methods. When in doubt about any of the above, Biosphere Expeditions will err on the side of caution. In addition, the United Nations has identified vegetarianism as one of the major ways to reduce our impact on the planet; it has also concluded that a global shift toward a vegetarian or vegan diet is necessary to combat the worst effects of climate change. In line with all of the above Biosphere Expeditions will give preference to a vegetarian or vegan diet wherever possible on expedition.

Sponsorship policy

- Biosphere Expeditions will not accept support from the following:
- Corporations whose activities, services or products come with a persistent and large-scale negative impact on the environment. This includes oil, gas, logging, mining and other such companies, which Biosphere Expeditions judges to fall into this category.
 - Corporations whose activities, services or products come with a persistent and large-scale negative impact on human health or welfare. This includes tobacco, alcohol, some food production & processing and other such companies, which Biosphere Expeditions judges to fall into this category.
 - Corporations who Biosphere Expeditions judges to obtain their revenue by unethical means or who have a record of unethical conduct.

These are policy excerpts. More detailed and all other policies are on www.biosphere-expeditions.org/policies.

Reporting and results

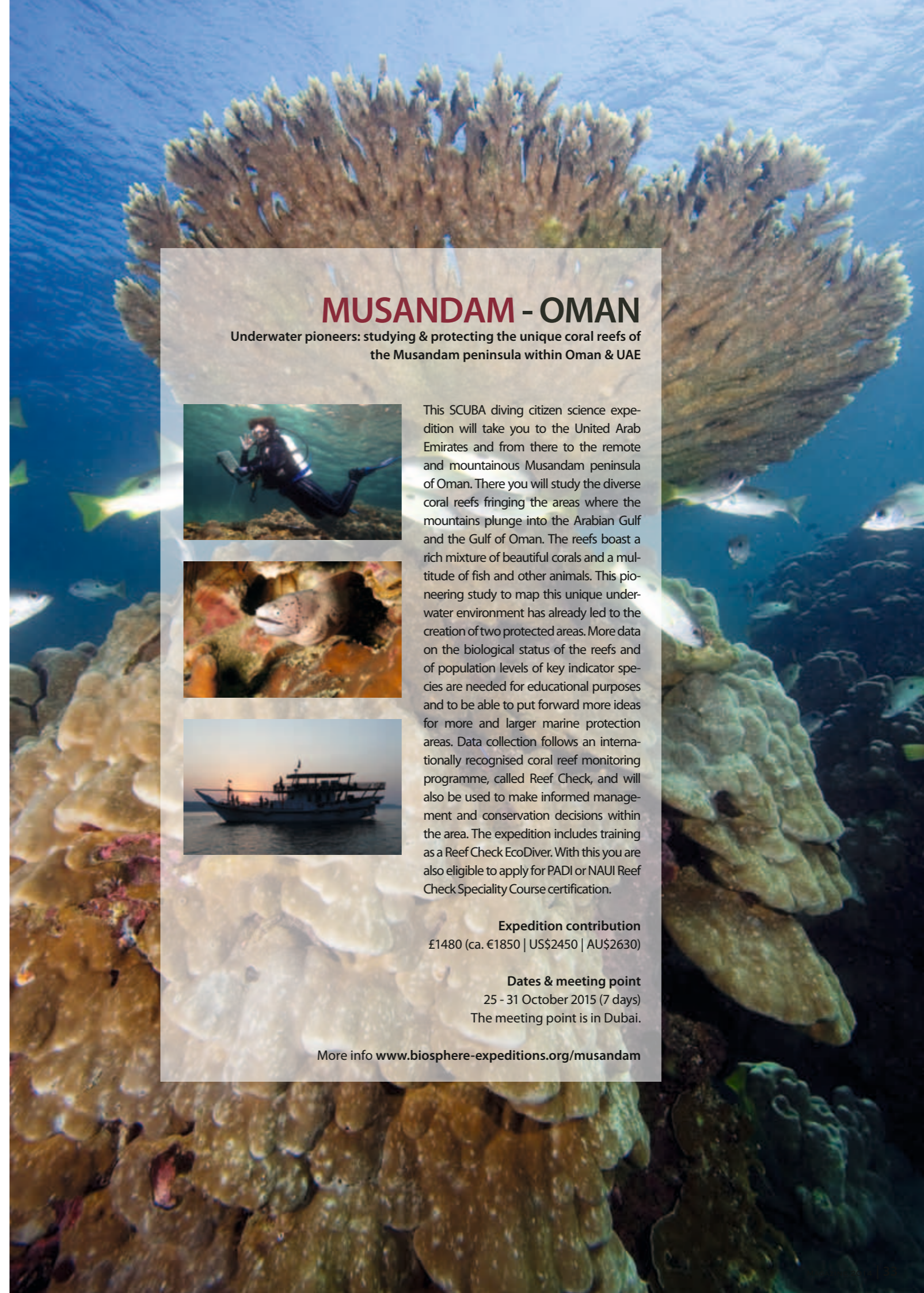
Our work in Musandam (Oman) is a good example of how volunteer-led research can lead to the creation of protected areas and help guide government in their management decisions. The latest Musandam report confirms the good state of the reefs there and continues to argue for further protection and recognition right up to UNESCO World Heritage Site status.

The Slovakia expedition report is another showcase of how citizen science can help generate realistic estimates of the abundance of flagship species such as lynx, wolf and bear, but also a stark reminder of how hunting quotas are often set at a whim, thereby threatening the survival of entire populations. In Slovakia this is particularly important as wolves are still hunted there based on significant overestimations that have little or no scientific basis.

In the Maldives we are urging the government to take action to protect fisheries and livelihoods. In Amazonia, citizen scientists and local communities managing their local resources work hand in hand for the benefit of sustainable livelihoods and wildlife conservation.

Moving into 2015

Moving with the times and our new website, we hope to continue to encourage citizens to become scientists, helping on new and established projects all over the world. 2015 will be about bedding in our new tiger and leopard projects, and perhaps adding a lion project in East Africa (watch this space), about building capacity with our local partners and communities, consolidating as an organisation by looking at where we can improve our ethics and the efficiency of supporting our local projects and partners, and by continuing to do what we believe in and stand for: Staying small and effective and punching well above our weight. ■



MUSANDAM - OMAN

Underwater pioneers: studying & protecting the unique coral reefs of the Musandam peninsula within Oman & UAE

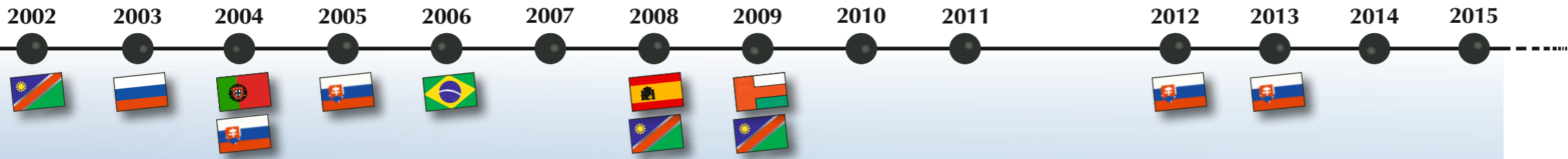


This SCUBA diving citizen science expedition will take you to the United Arab Emirates and from there to the remote and mountainous Musandam peninsula of Oman. There you will study the diverse coral reefs fringing the areas where the mountains plunge into the Arabian Gulf and the Gulf of Oman. The reefs boast a rich mixture of beautiful corals and a multitude of fish and other animals. This pioneering study to map this unique underwater environment has already led to the creation of two protected areas. More data on the biological status of the reefs and of population levels of key indicator species are needed for educational purposes and to be able to put forward more ideas for more and larger marine protection areas. Data collection follows an internationally recognised coral reef monitoring programme, called Reef Check, and will also be used to make informed management and conservation decisions within the area. The expedition includes training as a Reef Check EcoDiver. With this you are also eligible to apply for PADI or NAUI Reef Check Speciality Course certification.

Expedition contribution
£1480 (ca. €1850 | US\$2450 | AU\$2630)

Dates & meeting point
25 - 31 October 2015 (7 days)
The meeting point is in Dubai.

More info www.biosphere-expeditions.org/musandam



Expeditions by the dozen

by Martyn Roberts



The long, but short, way back to base
Picture © Andy Stronach

Martyn Roberts has been on twelve (!) expeditions with Biosphere Expeditions since 2000. He was also the President of the Friends for several years. Here's his view on volunteering in citizen science through the eyes of an expedition participant.



We were at the top of the mountain when the call came through on the radio. I was in the Altai Republic in Central Asia as a member of the first Biosphere Expeditions team to take part in a survey of snow leopards in this part of the world. Getting to base camp had been an expedition in itself. I had reached Novosibirsk in Russia, the nearest international airport, from the UK by a series of complicated flights that had included a convoluted transfer between terminals in Moscow.

After a long drive to our base camp in the mountains, followed by a couple of days training in how to drive our cars off-road, fill in data sheets, identify animals, use a GPS and orientate ourselves in the mountains, I was on my first survey walk. It was hard work and at first I was busy with myself, my legs getting tired, my lungs burning, wondering what exactly I was supposed to be doing again, trying to remember everything I had been taught over the last couple of days. It was all daunting and a bit frightening.

Then everything changed. The radio crackled to life. One of the other groups were nearer than we had thought and though barely able to speak through excitement, told us that they had just discovered fairly fresh snow leopard tracks! After a few moments we located them just visible down in the valley bottom. We set off down the scree slope using a technique our mountain guide demonstrated so that we could do it at speed. We reached the bottom and the other group safely in no time and on arrival found them silently staring into a gully that was well shaded and filled with snow. A set of very clear paw prints ran from top to bottom. Yuri, the expedition scientist, confirmed they were snow leopard tracks and a few days to a week old at the most. Starting in awe at them, I was overcome with a feeling of complete exhilaration. One of the rarest big cats in the world had passed through where I was standing. They were here and what we were going to do would help them and where they lived to survive. All the trials and tribulations of the past days fell away as we embarked on our tasks of recording and photographing the critical evidence we could only previously have dreamt of finding. The long walk back to base camp that night seemed to go by in seconds.

Communicating by radio in the Altai mountains





So how did I end up at the top of a mountain in the Altai Republic looking for signs of the elusive snow leopard? I had been a lifelong supporter of environmental and animal welfare causes as well as having a passion for travel. However, having lots of work and other commitments meant my activities in these areas were usually related to fundraising and letter-writing. Approaching my 46th birthday in 2002, I decided to take the opportunity to do something practical to support my beliefs and undertook my first volunteering expedition.

Having always been a great lover of big cats (especially cheetah) and wanting to visit Namibia, a country with a sizeable cheetah population, I started researching and found very limited options as I could only go for around two weeks. In the end I chose Biosphere Expeditions as they had a more interesting work programme based on what felt like genuine research and conservation objectives, rather than mere animal husbandry. They also just sounded much friendlier than other organisations.

Fired with enthusiasm after a great experience in Namibia, I immediately signed up for the inaugural Altai expedition in July 2003. Now, 11 years later, I have travelled with Biosphere Expeditions to well over a dozen countries across four continents trying to spot signs of everything from big cats to large whales and lots in between.

Meeting and working with a huge variety of people from other countries and cultures has been one of the highlights. Expedition and base camp conditions have varied greatly as well. The most challenging were in the Altai with a remote tented camp, long drop toilets and luke warm outdoor showers. I also have fond memories of base camp in Brazil, which, after a RAINforest downpour, resembled something designed for a mud wrestling competition! At the other end of the scale we stayed in comfortable apartments in the Azores, well appointed thatched huts in the Caprivi and chalet style accommodation in Slovakia.

During all the times I've been on expedition I have felt completely safe. Interestingly enough we are always told that the most hazardous activity is the drive from the rendezvous point to base camp rather than any activity associated with the research!

Initially I went on my own and was slightly apprehensive and nervous the first time. However, when I joined up with the group I found quite a number of people had done the same and that worked out really well. Since then I've travelled with people I met on my first time or met them in the country where the expedition was taking place.

Above all patience and a good sense of humour are definite requirements. Things are going to go wrong, vehicles may break down and plans will change. Being able to work well within often very mixed teams is a big plus. Resilience and problem-solving skills go a long way in tricky or challenging situations. Being prepared for the unexpected and ready for dealing with the consequences are essential qualities. Finally, learning from your own mistakes and being able to enjoy the overall experience is crucial.

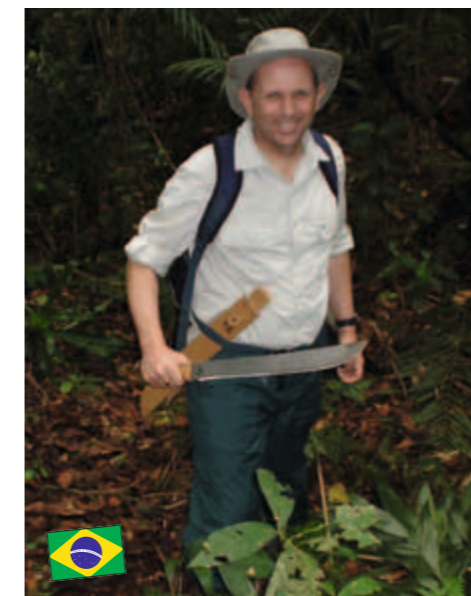
Feeling fully involved in the science and research is critical to a successful expedition. At the end of an expedition I always feel an overwhelming sense of achievement and satisfaction mixed with understandable sadness that a rewarding and fulfilling experience has come to an end. This is usually offset by the fact that we have always marked the end of expedition a by a celebratory meal, several drinks or group photo session. Usually by all three!

"If you are thinking about volunteering in wildlife conservation, stop thinking and do it!"

If you are thinking about volunteering in wildlife conservation, stop thinking and do it! You'll have a fantastically rewarding experience for all sorts of reasons. The memories you have and the friendships you make will last a long time.

Going back to the start, I'll never forget being on top of that remote mountain in the Altai Republic and hearing the news that snow leopard tracks had been found nearby. All of us staring silently and in awe at the tracks will stay with me forever. Our silence lasted several minutes and then we all began sharing our excitement before getting on with the scientific work. Just being in a place where snow leopards roamed wild, and may even have been watching us, was a feeling that is virtually impossible to describe.

Twelve years on from my first expedition and things have changed. I'm married with a family and new responsibilities. Getting away on expedition isn't as easy as it used to be. Planning a trip to search for snow leopards once again, this time in Kyrgyzstan, or to look for signs of tigers in Sumatra is going to be tricky, but having got the expedition bug, it is not something I'm going to shake off. If my experiences have given you the encouragement to go for the first time or sign up again, I look forward to meeting you sometime soon. ■



Pictures from top to bottom, left to right:

Martyn (centre) helping with collaring a sedated leopard in Namibia · Namibia 2008 expedition team · Altai 2003 expedition team at the border to the Altai republic

With the most dangerous expedition beast in Namibia · Tent base camp in the Altai mountains · The mountain chalet in the Carpathian mountains of Slovakia

A downpour in the Brazilian jungle · Cutting a research trail in the forest.

SLOVAKIA

True white wilderness: tracking lynx, wolf and bear in the Carpathian mountains of Slovakia

This ecovolunteer expedition will take you to the Carpathian mountains of Slovakia to monitor lynx, wolf & bear populations and their interrelationship with prey species. You will be part of a small international team, working with the local scientist and contributing to an important piece of research. You will track large carnivores through snow in the forest and meadow habitats of the mountains (using snow shoes, which are easy to use) and you may be involved in capturing and radio-collaring them. You will also learn how to recognise and record other signs of their presence, such as radio telemetry signals, scats and scent markings, camera trap them, collect samples to study their diet and for genetic analysis, and survey prey species. All in an effort to create a sustainable future for these icons of the Carpathian wilderness and to promote greater understanding of their role in European ecosystems.

Expedition contribution

£1290 (ca. €1590 | US\$2140 | AU\$2290)

Dates & meeting point

1 - 7 February 2015

8 - 14 February 2015 (7 days)

The meeting point is in Bratislava, the capital of Slovakia.

More info www.biosphere-expeditions.org/slovakia



TIEN SHAN - KYRGYZSTAN

Mountain ghosts: protecting snow leopards and other animals of the Tien Shan mountains of Kyrgyzstan



This citizen science expedition will take you to the Tien Shan mountains of Kyrgyzstan to survey snow leopards and their prey animals such as the Tien Shan argali mountain sheep and the Central Asian ibex, as well as other animals including marmots and birds. You will be working as part of a small international team from a mobile tented base camp set at various locations and altitudes of around 2000 m. You will be covering ground in the expedition vehicles and on foot, looking for tracks, kills, scats and the animals themselves, and setting camera traps. True expedition-style base camp conditions, testing but satisfying mountain surveying, off road driving, and variable mountain weather, make this our most challenging (and very rewarding) expedition.

Expedition contribution

£1860 (ca. €2320 | US\$3080 | AU\$3290)

Dates & meeting point

8 - 20 June 2015

22 June - 4 July 2015

13 - 25 July 2015

27 July - 8 August 2015 (13 days)

The meeting point is in Bishkek, the capital of Kyrgyzstan.

More info www.biosphere-expeditions.org/tianshan



CITIZEN SCIENCE - does it work ?

by Prof. Marcelo Mazzolli



It is quite common for a scientist unaware of the potential of citizen science to view participation of volunteers as a troublesome addition to their research and not as a positive part of the research itself: "I'll take them around while I do my research, or I'll take them around and do my research another time". This is a naïve perspective. Volunteers have added value to wildlife conservation and research since the 1960s. Starting in 1966, the so-called 'Breeding Survey', for instance, tracked the status and trends of North American bird populations. Even today, the U.S. Fish and Wildlife Service, Canadian Wildlife Service, and 'Partners in Flight' all use Breeding Survey trends along with other indicators to assess bird conservation priorities. Such large-scale monitoring is also employed in Europe, where the advantages of employing volunteers have been widely, and positively, evaluated in the scientific literature. In fact the role of volunteers in research in general has been widely recognised and it is growing. Volunteers are particularly crucial in large-scale monitoring programmes.

My own experience with citizen science began in 2006 when a group of about 20 volunteers from Biosphere Expeditions spent a month in the Atlantic Forest of

Prof. Marcelo Mazzolli started as the local scientist for Biosphere Expeditions' project in the Atlantic Rainforest of Brazil. Since then he has led or was involved in the science of Biosphere Expeditions projects



in Oman (Arabian leopard), Peru (Amazon biodiversity), Slovakia (lynx, wolves, bears) and the Tien Shan mountains of Kyrgyzstan (snow leopards). Together with fellow biologist and Biosphere Expeditions' executive director Dr. Matthias Hammer, he has also authored a manual for effective citizen science on elusive and cryptic terrestrial species.

southern Brazil. Since then I have worked with citizen scientists in the Brazilian and Peruvian Amazons, Middle East and Slovakia. One of the first things a scientist realises when working with volunteers for the first time is the large workforce available. The obvious advantage of a large team is that a lot of ground can be covered in short time spans, or the fact that long observations may continue with volunteers working in shifts. Second, after the first attempts of working with volunteers, comes the realisation that results depend on the quality of your study design, and, equally importantly, how clearly you are able to communicate the goals and procedures to your volunteers. This also means making available the analytical tools to identify and understand the evolution of the study during their stay, otherwise they will not be fully engaged in the task. Working with volunteers also brings a large dose of enthusiasm, enabling people to meet and share, collaborators from multiple backgrounds, new ideas and the thrill of sharing your own passion and calling with like-minded people from around the world.

Collaboration means that work is shared, so that the whole responsibility of the research does not fall on a single individual. This collaboration should be thought of during the planning of an expedition, but here we focus on the expedition itself. Collaboration is mainly needed during training, which includes the talks, training and such, but also the days spent practicing in the field

.....
Citizen science is always a collaborative team effort – Prof. Mazzolli with expedition teams in the Oman and Brazil



alongside the volunteers, and during the tabulation and analysis of data, as well as production of maps. Obviously it is also important to have supervision to make sure that skills learned are transferred and applied in the field. When data start coming in, the task of tabulating them right away and producing visual maps has a tremendous impact on those collecting the data, because it visualises effort and puts it into context – with the efforts of fellow citizen scientists and the bigger science picture. Because volunteers come from multiple backgrounds and will by and large have little training in biological field data collection, it is imperative that analytical tools are simple enough so that everybody can understand and participate as much as possible.

Over the years, I have found that the information available in the scientific literature on how data should be collected and analysed can be very fragmented and incomplete. This is a major source of problems for young scientists when designing field surveys and later analysing the data. As an example of half-truths found in the scientific literature, it is not uncommon for authors to recommend a single method such as camera traps to record species as if it was infallible, working with the rarest rare species, when in fact the target species may be so rare that other techniques should be employed too. In our multiple year study in the Atlantic Rainforest of Brazil, for instance, we have found jaguars only by tracks, and on the Arabian Peninsula we detected Arabian leopards only by using DNA scatology technique. We have also found that different techniques work best for different species. While many other authors have found the same and there is a consensus on that, fragmented and incomplete pieces of information often reach our libraries.

Other authors might insist that density estimates are required for a good study, disregarding information on distribution and habitat use. Again others disqualify

the use of tracks as a technique to identify individuals (and even if it was the case, 'forget' to mention that it can be used to map distribution and occupancy), and so on.

Such misguidance found in the literature has pushed me, in collaboration with Biosphere Expeditions' executive director and fellow biologist Dr. Matthias Hammer, to develop our own manual. In this manual for terrestrial (and large) mammals, we have covered aspects of sampling, effort, data tabulation, GIS, amongst others, in such a way that it can be handled by multiple collaborators with little time spent in training.



Front page of the Mazzolli & Hammer manual

In the end it's all about collecting the data and performing analyses. Good data will yield good analyses, which generate real results. The results of our own work with terrestrial mammals have generated new information on species ecology, having been incorporated into regional and national action plans (in Brazil, for example, our recommendations for puma and jaguar conservation are now part of state and country strategies). And more – in addition to the data collected and shared through reports and publications, we have provided capacity-building and training for local scientists and true research experiences for people worldwide. Those data would not have been collected without the help of citizen scientists. That alone disproves the notion that citizen science cannot work. ■

Prof. Mazzolli setting a camera trap in the jungle and discussing a track with a local



SOUTH AFRICA

Carnivores of the Cape Floral Kingdom: surveying Cape leopards, caracals and other species in the fynbos mountains of South Africa



This expedition will take you to South Africa's beautiful Cape Floral Kingdom (fynbos), a UNESCO World Heritage Site and the world's only biome contained within one country, to conduct a survey of leopard, caracal and fynbos biodiversity and to experience African fauna (such as buffalo, giraffe, eland, kudu, zebras, etc.). Based in a remote mountainous part of the Western Cape on a comfortable former farmstead with all modern amenities, you will first learn some bush skills and then conduct surveys on foot, mountain bike or car. You will also set camera traps, conduct game counts and you may assist with cat capturing and collaring. All this in an effort to mitigate human-wildlife conflict and create a sustainable future for all.

Expedition contribution
£1790 (ca. €2250 | US\$2790 | AU\$3190)

Dates & meeting point
4 – 16 October 2015
18 – 30 October 2015 (13 days)
The meeting point is in George, a regional centre in Western Cape province and on South Africa's famous Garden Route.

More info www.biosphere-expeditions.org/southafrica

AZORES - PORTUGAL

Fascinating creatures of the deep: Studying whales, dolphins and turtles around the Azores archipelago in the Atlantic Ocean

This expedition will take you to the Azores Archipelago in the middle of the Atlantic Ocean to study whales, dolphins and loggerhead turtles. You will photograph whales and dolphins and record them for local and international monitoring databases as part of a small international team. You will listen to and make recordings of whale and dolphin vocalisations and capture loggerhead turtles in the open ocean for tagging and release. All this in an effort to elucidate the animals' life histories and migration patterns across the oceans and assist with the formulation of effective conservation strategies. The whole team will be working on a modern catamaran research boat during the day and staying in a comfortable and modern guesthouse at night. Please note that this expedition does not involve any diving or getting in the water at all.



Expedition contribution

£1290 (ca. €1590 | US\$2140 | AU\$2290)

Dates & meeting point

6 - 15 April 2015

18 - 27 April 2015 (10 days)

The meeting point is the town of Horta on Faial Island.

More info www.biosphere-expeditions.org/azores

Biosphere Expeditions is an officially accredited member of the following bodies



United Nations Environment Programme's Governing Council and Global Ministerial Environment Forum



International Union for the Conservation of Nature



Marine Conservation Society



Reef Check

Biosphere Expeditions has won the following awards

(our definition of 'award' is a process that requires an entry via an application form and where a winner is chosen on a competitive basis by a judging panel)



First Choice Responsible Tourism Awards

Winner of the "Best Volunteering Organisation" award (international award scheme based in the UK)



Multiple National Geographic awards

NG Traveler "Tours of a Lifetime" awards for Altai and Namibia expeditions (international award scheme based in the USA)



Virgin Holidays Responsible Tourism Awards

Highly commended in the categories "Best for Protection of Endangered Species" and "Best Volunteering Organisation" (international award scheme based in the UK)



Environmental Best Practice Award

Silver award by the Green Organisation (international award scheme based in the UK)



Travel + Leisure Global Vision Award (for Responsible Tourism)

Winner of the "Conservation Award" (international award scheme based in the USA)



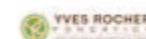
Umwelt-Online-Award (Environment-Online-Award)

German government prize awarded to businesses and organisations with an online presence who have displayed excellence and best practice for the environment (international award scheme based in Germany)



Best Practice and Environmental Excellence Award

From Greenstop.Net, who assess eco-friendly practices and responsible tourism (international award scheme based in the UK)



"Trophée de femmes"

Our Namibia scientist was made a laureate of this environmental prize by the Fondation Yves Rocher



Blue List Award

Best in Sustainable Travel for Azores expedition (international award scheme based in the USA)

Biosphere Expeditions has won the following accolades

(our definition of 'accolade' is a listing, usually through an editorial process, which does not require an application)



National Geographic Adventurer

"Best New Trip" listing for Slovakia expedition

"Best Holiday for Green-Minded Travellers"

for experience days; "Top Ten Outdoor Pursuits" for Altai & Azores expeditions; "Best Desert Adventure Holiday" for Arabia expedition; "Best Activity and Adventure Break" for Musandam expedition; "Best Volunteer Career Break" for Brazil expedition; "Best for the Wild at Heart" for Slovakia expedition.



"Best Adventure Outfitter" and "Best Save-the-Earth Trip" listings



"Ten Best Wildlife Volunteering Holidays" for Oman expedition; "Ten Best Wildlife Holidays in Europe" for Azores expedition



"Best Volunteer Travel" for Namibia expedition
"Most satisfying trip of the year" for Altai expedition



"Top Ten Conservation Holiday" for Altai expedition



"Life-changing volunteering trip" for Tien Shan expedition



"Unforgettable Travel Adventure (Unvergessliches Reise-abenteuer)" for taster days and Honduras expedition



"Top Holiday For Nature" listing in the category "Where can I do something for nature during my holidays?" (Wo kann man im Urlaub etwas für die Natur tun?)



"Top Responsible Holiday" for Amazonia expedition
"Twenty of the world's greatest adventures" for Brazil expedition



"Best Volunteer Dive Organisation" (international online magazine)



"Best Volunteer Vacation" for Namibia expedition



"Trip of the Year" for Maldives expedition



"30 Great Escapes/Best Adventure Trips on the Planet" for Slovakia expedition



"Best Trip that Offers a Way Back" for Malaysia expedition

++ NEWS ++

National Geographic Traveller lambasts voluntourism, praises Biosphere Expeditions

(press release 27 April 2014)

In the April issue of National Geographic Traveller, associate editor Sarah Barrell is critical of much of voluntourism, but singles out a few organisations for praise, amongst them Biosphere Expeditions and its snow leopard and big cat conservation work.



Recently, Barrell observes, much of the voluntourism sector has been receiving a “kick-in” in the news, “painting it as little more than a money-making enterprise that either panders to wealthy First World volunteers or exploits both them and the Third World communities in which they volunteer”. The worst examples include bogus animal sanctuaries and fake orphanages, she writes, and that “ethical volunteering and the profit-driven travel industry aren’t natural allies”.

Dr. Matthias Hammer, Biosphere Expeditions’ founder and executive director, could not agree more. “When we started in 1999 volunteering was the domain of charities and NGOs. Now it is a multi-million dollar business. Sarah Barrell’s criticisms are well founded – there are far too many touchy-feely wildlife projects that have more to do with a petting zoo than conservation.”

Barrell, Hammer and many others agree that the best way to avoid the charlatans is to ask questions. Is the operator a non-profit organisation or a profit-driven business? What is the rationale for involving volunteers, what will they do exactly, where and when? What will be the outcome and how will local people and/or wildlife benefit? Does the organisation have any achievements it can list, any awards or other accolades? Is it transparent in its finances, structure and the way it conducts its business? “A handful of pointed questions will in most cases split the good from the bad from the downright ugly”, says Hammer, “which is why we came up with our TOP TEN TIPS on choosing a wildlife volunteering experience as a guideline for people whose enthusiasm and willingness to help should not be exploited.”

“Quick fixes in conservation are rare”, he continues, “and good science is not safari”. Barrell in her article agrees, mixing memories with pragmatism and praise for Biosphere Expeditions and mentioning the organisation’s snow leopard and African big cat projects. “Ten years ago, I took part in a two-week trip to Siberia, to work on a new conservation project with Biosphere Expeditions. The focus was monitoring the habitat of the endan-

gered snow leopard”. At the time there were “mutterings” from volunteers unable to see “instant or quantifiable results - or indeed a leopard”. “But a good voluntourism project is a long-term local investment that has a slow, creeping impact. A decade later, you can see how this particular project has produced results. Data collected by Biosphere Expeditions volunteers was used to support a campaign to establish a protected area in the Altai Republic. It now provides a safe habitat for various endangered species, including the snow leopard. Good things, it seems, come to those volunteers who wait.” ■

First ever all-Maldivian Reef Check survey

(press release 14 November 2014)

After years of investment by Marine Conservation Society’s Dr Jean-Luc Solandt in training Maldivian divers in Reef Check methods in collaboration with Biosphere Expeditions, the first ever Maldives survey undertaken by nationals alone takes place today (14 November 2014) at Velassaru reef, just to the south of the capital, Male’.



The surveys are being organised by Mr Rafil Mohamed of the Divers Association of Maldives and Ms Shaha Hashim from local NGO Gemana – both of them qualified as a Reef Check Ecodiver Trainers in September 2014 whilst aboard the MV Carpe Diem for the recent Biosphere Expeditions surveys of North Male’ reefs. Facilitating this survey is Mr Adam Ashraf from Dive Desk Dive Centre in Male’. The rest of the team is made up of Ibrahim Shameel from the Maldives Whale Shark Research Programme and other Maldivian nationals from different NGOs and civil society.

They and the Maldivian organisations they represent are committed to preserving the reefs of the Maldives in the face of population growth, increased demand on reef fish from the tourist and grouper fishery sectors, and climate change threats. The hope is that civil society bottom-up efforts such as these are eventually mirrored by active government management of the Maldives’ spectacular reefs, including comprehensive controls on fish sizes when exported and caught, reductions in overfishing of local reefs and marine reserve stipulations properly enforced at or near to every tourist island.

Individuals undertaking the survey have all been trained by Dr Solandt, some at the Marine Research Centre in Male’, and others during the course of Biosphere Expeditions research work around the archipelago since 2011.

Dr Solandt says he is “delighted that this survey is taking place. Reef Check provides all the data that managers of reefs need in order to make informed decisions on reef health. The beauty of the Reef Check methodology is that it is replicated every year in different parts of the world, producing valuable insights on how reefs are doing over time.

The stark truth of the data collected around the Maldives so far is that reefs have very low numbers and sizes of grouper – a very important predatory fish. This is of concern, because local islanders depend on fish, and many predator fish species are important to keep in check some of the animals that damage the reef (such as Crown-of-Thorns starfish and Drupella snails – both of which eat corals).”

Rafil Mohamed adds “I would like to thank Dr Solandt and Biosphere Expeditions again for certifying us as Reef Check Ecodivers and trainers. Dr Solandt’s training efforts and the Biosphere Expeditions placement programme for locals (in association with LaMer and the Rufford Foundation) for locals have kick-started us into doing this first of what we hope will be many community-based surveys to come. In the absence of the Maldives government doing any meaningful conservation work on the reefs that form the very bedrock of our country and livelihoods, it falls to us as ordinary Maldivians to preserve the reefs, not least because of their beauty, but also because of their importance for our lives and culture. Because without our reefs, there would be no Maldives.” ■

Expedition leader Alisa Clickenger has signed up as the first American to compete on a motorcycle in the Rallye Aïcha des Gazelles in Morocco



2015 marks the 25th anniversary of the event, and it is the only sporting event that is ISO 14001 certified for strict environmental practices. www.MotoGazellesUSA.com ■

New accolade



Wildlifeextra.com honours our Tien Shan snow leopard expedition in its “Life-changing volunteering trip” list for 2014. ■

Expedition leader Astrid Callomon has walked the Pacific Crest Trail (PCT)



The Pacific Crest Trail is a 2,661 mile hiking trail, starting in Mexico and ending in Canada. To continuously hike the whole trail in one long attempt is called through-hiking. Astrid says “I through-hiked the whole trail this year, starting in April as the deserts warmed before the greatest heat, and finishing in September before the first snow. As an outdoorswoman, before I left I wondered excitedly on the things I would experience – I felt I already knew enough to ‘survive’ in the outdoors, but I pondered on what little intricate gems I would be shown by being in the wild and being in it for the next five months. Would it be very different from a week in the Lake District? Oh yes it would!” Read more on her blog at <http://frontierbushcraft.com/2013/11/05/why-walk-the-pacific-crest-trail/>. ■

New achievement

Biosphere Expeditions played a pivotal role in establishing Namibia’s largest leopard research project, working with local ranchers and resolving human-wildlife conflict, which led to a significant reduction in big cats killed in the country. ■



get involved

The Friends of Biosphere Expeditions & the Look Ahead network

WESTERN AUSTRALIA

Marsupials galore: protecting quokkas, quolls and quendas in Western Australia's Walpole Wilderness

This conservation expedition will take you to the beautiful Walpole Wilderness Area biodiversity hotspot in Western Australia to study and protect threatened native Australian marsupials (the quokka, quoll and quenda). Working in the majestic Southern Forests of towering karri, tingle and jarrah trees, you will survey the area for suitable habitat, capture and release the animals, radio tag them, follow their movements and study their habits. You will be part of a small international team, based at comfortable and modern chalets inside the Walpole Wilderness and working with the local scientist on an important native fauna conservation project. All in an effort to improve local management efforts of these marsupial species and the unique Western Australian ecosystem of which they are part.



Expedition contribution
£1480 (ca. €1850 | US\$2450 | AU\$2630)

Dates & meeting point
24 January - 1 February 2015 (9 days)
The meeting point is in Albany, a major and easily accessible city on the south coast of Western Australia, about 400 km from Perth.

More info www.biosphere-expeditions.org/australia

WHO ARE the Friends of Biosphere Expeditions?

The Friends of Biosphere Expeditions are people who feel passionate about providing support to our critical wildlife conservation and research projects across the globe. By joining the Friends you can play a vital part in making a real difference to the survival of our planet's endangered species. Joining is easy, not expensive and just a few clicks away (just follow the link below).

Become a member of the Friends

If you can't take part in a full-blown expedition or project yet, or if you have already been with us and would like to stay involved, or if you would simply like to be part of what we are doing, then why not become a Friend of Biosphere Expeditions. Help us to support critical wildlife conservation and research projects across the globe for a membership fee starting from a monthly £ 8 / €10 / US\$15 / AU\$15.

As a Friend of Biosphere Expeditions, benefits for you will include expedition and events discounts, the Biosphere Expeditions Magazine, first notification and preference for last-minute expedition places, news and updates on how your membership fee is making a difference to our conservation work in the field, and much more. More information and a joining form are at www.biosphere-expeditions.org/friends.

What happens to the Friends' funds?

Wondering where your money will go? We guarantee that 100% will go into supporting conservation. We can do this because we are a small, flexible organisation with no steel and glass headquarters to maintain or bureaucratic dinosaurs to feed. Whenever we make a significant expenditure on one of our conservation projects from the Friends' funds, we will let you know in a clear and transparent way. For example, we may spend some of the fund to enable scientists from different projects to present the findings of their Biosphere-supported projects at international conservation conferences, or we may spend some of the fund on printing education materials for local people, or on training up a local conservationist under the guidance of our project scientists, or creating placements on our expeditions for local students and people. Have a look on the right for recent examples of what the Friends' funds have been spent on.

Friends activities 2014

In 2014, the Friends concentrated on capacity-building with locals through the Biosphere Expeditions placement programme. This programme (see www.biosphere-expeditions.org/placements) now makes places for locals available on all expeditions. This is especially important in places such as the Maldives, where the government is slashing funds for conservation, so civil society has to come to the fore.

"On the capacity-building front, we trained two Maldivians – Rafil Mohammed and Shaha Hashim – to become Reef Check trainers. They are both Male'-based. Our longer-term aim is to enable them to start reef surveys near Male' [which they have done since, see page 46]. With Shaha and Shameel Ibrahim (the latter from the Maldives Whale Shark Research Programme who trained to be an eco-diver this year, and next we'll train him to become a trainer) we want to start some surveys, capacity-building and education down at Dhigurah. I'd very much like them to use Reef Check methods to survey the reefs in and around the islands – either by snorkel or dive. And then to go on and use the Reef Check method called 'Discover RC' to raise awareness of their work, and why the reefs are important to whale sharks, fisheries and the very bedrock of their homes."

Dr. Jean-Luc Solandt, expedition scientist, Maldives

Left to right: Shaha Hashim, Rafil Mohammed, Dr. Jean-Luc Solandt, Shameel Ibrahim



The Friends also supported the 2014 appeal for camera traps to help with snow leopard conservation in the Tien Shan mountains of Kyrgyzstan.

Camera trap in situ in the Tien Shan mountains

Look Ahead

and spread the word!



There are many ways of getting involved with Biosphere Expeditions. Joining an expedition is one; joining our Look Ahead programme is another. We are building an amazing network of people - have a look at how people have helped; we hope it gives you some inspiration. Then see which one is for you and get in touch.



Make a donation

You can make a tax-efficient donation via our crowd-funding website www.crowdrise.com/biosphere-expeditions or straight into the accounts of our US 501(c)(3) charity, our German e.V. charity, or our UK or Australian non-profits.

Involve your company



Does your company publish a company magazine? If so, the editor would probably be very interested to hear from you as they are always keen to cover interesting features relating to their members of staff.

Many employers, particularly in the USA and Canada, but also elsewhere, will match fund charitable contributions made by their employees, retirees and employees' spouses. In Biosphere Expeditions' case this means that your employer may match fund your expedition contribution payments and other donations you make to Biosphere Expeditions. Some employers also provide matching funds to support employee volunteer hours.

Some companies also have grants for non-profit organisations such as Biosphere Expeditions, so why not talk to the relevant people in your company? You may have a Corporate Responsibility Manager, or an Environmental or Communications Manager who may be able to help you. Some companies are also keen to get their staff involved in non-profit causes and might like to send staff members on an expedition or a taster day, so this is another option you could investigate.

Raise funds



Support critical wildlife conservation and vital research by raising funds for Biosphere Expeditions. There are many ways to do this. Why not organise an event, or take part in a sporting endeavour? It's fun, a great way to meet people and to do something different to challenge yourself. By raising funds you can make a long-lasting contribution to our wildlife conservation work worldwide.

I'm Anne Schroedter from Germany and I joined the Azores whale and dolphin project in 2010. Straight after, joined the Friends of Biosphere Expeditions and when I recently had two laptops to give away I thought of Biosphere Expeditions. One of them is now going to the turtle project in Western Australia, which is some-what strange since that very laptop had been to Western Australia with me before! For the second one Biosphere Expeditions is currently conducting another assessment of need and will then send it to another project in need.



Events

Host an event for us in your neck of the woods. Examples include staffing a stand at an exhibition, holding a drinks reception in a local pub, a dinner party at your home, a talk at your local wildlife or conservation society, a get-together at your professional organisation or club, or anything else you can think of. We can send you support materials such as postcards and brochures that you can hand out at your event. In addition, Biosphere Expeditions staff member might be able to come and support you or give a talk.

My name is David Warnock. I was inspired by the Biosphere Expeditions snow leopard project in the Altai, and decided to give a talk in my local church hall in Callander, Scotland. Not only did I have the chance to share my expedition photos and re-live the experience, but I also managed to educate people about conservation, raise money for the Snow Leopard Trust and deliver key messages about the need to take climate change and other environmental issues seriously.



Media

Local newspapers and radio stations are always looking for new stories, and they are very likely to want to hear about your experiences. Biosphere Expeditions has an extensive archive of high resolution photos and broadcast quality HD films, so please contact us if you need pictures or film clips to illustrate your story or if you would like help with your press release or media work.



Time & skills

We always need people with skills who can help us out. Examples are skills in the outdoors, accounting, graphic design or IT. Or people who can help by writing blogs, tweets or talking to the media. If you have any of those skills or if you would like to help online, then please send us an e-mail telling us what your skills are.



In-kind donations

You may have laptops, GPSs, video cameras, binoculars or other items we can use on expedition to give away. If so, please let us know and we will either use them ourselves on our wildlife conservation projects or pass them on to our local partners.



Spread the word!



Another way of helping us to help wildlife and people across the world is to spread the word. Word of mouth (in person and online) is by far the best way to get people excited. Talk to your family, friends and colleagues about your experience and encourage them to join in too.

We hope this gives you some inspiration. Have a look at www.biosphere-expeditions.org/lookahead for more examples of what people have done. ■

MALAYSIA

Paradise in peril: studying & protecting reefs, sharks, dolphins and turtles of the Pulau Tioman Marine Park, Malaysia



This SCUBA volunteer project will take you to Tioman, the Malaysian island named by Time Magazine as one of the world's most beautiful. Working in a very small group of five participants, one scientist and one expedition leader, you will assist the local researcher to study and protect the local Marine Park's beautiful but fragile coral reefs, as well as its marine megafauna such as sharks, dolphins & turtles. For the first five days of training and familiarising yourself with the Reef Check research techniques, you will be based at a beach chalet resort on Tioman island. After this, you will move to a 45 ft sloop rig sailing yacht research vessel, which will take you to remote areas of the Marine Park. The expedition includes training as a Reef Check EcoDiver; with this qualification you are eligible to apply for PADI or NAUI Reef Check Speciality Course certification after the expedition.

Expedition contribution

£1470 (ca. €1830 | US\$2440 | AU\$2590)

Dates & meeting point

This expedition is on sabbatical until 2016. You can go on a waiting list via the link below to be notified when it comes back online. The meeting point is in Tioman Island, Malaysia.

More info www.biosphere-expeditions.org/malaysia

the way to biosphere

by Alisa Clickenger



The Camino is an historic 750 mile Catholic (for me spiritual) pilgrimage to the tomb of St. James in Santiago de Compostela, Galicia, Spain. I started walking in St. Jean Pied de Port, France, and I kept going all the way to the Atlantic Ocean, crossing the Pyrenees on foot, and walking through five of Spain's provinces.

The Way of St. James, often called 'The Way', really changed my life. I didn't suddenly become religious, or even change that much on the outside, except for getting quite lean.

I have what is arguably the best job in the world. As expedition leader for Biosphere Expeditions, I get to do important conservation work the world over while giving back in a meaningful way. I am privileged to travel all over the globe, meet and befriend new and interesting volunteers from a variety of cultures, and have the opportunity to work with dedicated scientists in some of the most magnificent settings this planet has to offer. Plus, I get to learn something new each and every day.

I love the fact that people sign up with Biosphere in order to give something back to the world. At the initial expedition briefings, I always ask why they are drawn to Biosphere and to the particular project we're working on, and the answers are as varied as are the people. Most say that they want to contribute to a conservation project and many others say they want to be a part of an international group working towards a common goal. Whatever the reason, the group dynamic is always a terrific, and sometimes a challenging, part of the project.

On every expedition at least one person asks how I started working with Biosphere. The truth is, I am a very lucky gal. I was looking for something meaningful to add to my life. I had just quit the 'corporate' world in 2006 in order to walk the Camino de Santiago.

Alisa's route across the American continent



The regenerative and grounding effects of being outdoors every day for an extended period of time solidified in me a desire to re-connect with nature. I came home and reinvented myself; I started pursuing some of the dreams I'd put off. One thing I did was to buy a motorcycle in order to take a long road trip.

An interesting thing had happened on the Camino. I met a German journalist at O'Cebeiro and he was travelling on a motorcycle. Our conversation started something like, "Excuse me, do you speak English?" He did. "This might sound really funny," I said. "But one of my life dreams has always been to take a month off from my job and ride a motorcycle across the United States. Funny how life is, because last month I quit my job and what do I do? I start walking across Spain." It turned out that he'd done the Camino in his own way - riding a motorcycle - and we ended up chatting for several hours.

Meeting the moto-journalist inspired me. I went home and bought the motorcycle of my dreams. I purchased one located on the other side of the United States and I took over a month to ride it home, fulfilling a long-held dream. On that journey I met another German on a motorcycle, and he was riding across not just the United States, but across all of the Americas. That motorcyclist planted another seed: to ride my motorcycle across the United States, Central and South America.

On 1 November 2009 I took off and rode my motorcycle from New York all the way to Argentina. I spent seven months travelling alone and it was another transformative journey. As well as seeing some amazing sights on my travels, I also saw widespread destruction, disorder and suffering. The trip further ignited my rampant wanderlust, and at the same time it also gave me the impetus to start looking for meaningful ways to effect change in our world - both on a personal and on a more general level.

In addition to riding and writing, I started leading motorcycle tours for women and giving presentations on living "outside of the box"; empowering others to live lives they love, using motorcycling as my metaphor for self-empowerment and change. I started being a resource first for other female motorcyclists, and later as a traveller and 'do-gooder'.

My work with Biosphere Expeditions has helped me do exactly that; effect change by gathering information and helping scientists form meaningful conclusions. While I've had to learn a lot of patience and re-adjust my thinking from my previous idealistic 'save the world right now' ideal-



ogy, I've come to learn that all conservation projects are valuable even though it might take years to see the effects.

I've also learned that just by doing what we're doing with Biosphere Expeditions - raising awareness, bringing funding and attention to scientific projects in a sustainable way, and telling our friends about it, that we're contributing to a solution. I admit that sometimes I have to remind myself of what a great job I have when I am on the back of a boat being sick or when logistics in a remote part of the world go awry. Yet when Biosphere sends around the list of expeditions and asks us which ones we want to lead, I always find myself putting my name forward for all of them!

Eight years ago I did not imagine myself being a motorcycle journalist / travel writer / public speaker / conservationist. Looking back, I can see how once I opened up, took my leap of faith, and followed my heart, life's synchronicities all led me

to Biosphere. And now each year I get to meet and work with similarly-minded people, and I cannot help but wonder where this connection through Biosphere Expeditions will lead me, and where I might be able to lead others.

I really do have the best job in the world. ■



Pictures from top to bottom: On the Camino somewhere, tired and exhausted - At the end of the Camino - On a salt lake in Bolivia - On a beach somewhere in Central America - Alisa with Lisa Steiner, the scientist of the Azores whale & dolphin expedition - Alisa showing expedition participants in Namibia how to record an animal track



EXPERIENCE DAYS - AUSTRALIA, UK, USA

Experience days are just what they say they are: days that will give you a unique insight into what it's like to be in the field with Biosphere Expeditions assisting scientists with wildlife research and conservation. They are set amongst the beautiful scenery of a national park or protected area, where you will be part of a small team, alongside a park ranger or nature guide, and your expedition leader. You will discover expedition and wildlife research and conservation skills such as working with a map, GPS and compass, collecting important animal data, reading animal tracks and signs, using telemetry equipment and wildlife camera traps. You will also learn about the area you are in, its fauna and flora, history and the conservation work going on inside.



Experience day contribution

AUS\$95 | £65 | US\$95 per person.

We will credit AU\$75 | £50 | US\$75 back to you if you subsequently join one of our expeditions.

Dates & locations Australia

Melbourne - 18 October 2015*
Sydney - 25 October 2015*

Dates & locations UK

New Forest National Park - 21 June 2015*
Broads National Park - 28 June 2015*

Dates & locations USA

Minnewaska National Park, NY - 17 May 2015*
Lory State Park, CO - 24 May 2015*
King's Canyon National Park, CA - 31 May 2015*

*Experience days are always on a Sunday from 09.00 a.m. to 17.00 p.m.

More info www.biosphere-expeditions.org/experience

SCHNUPPERTAGE - DEUTSCHLAND



Wo Schnuppertag draufsteht, ist auch Schnuppertag drin: Verbringen Sie einen unterhaltsamen Tag mit uns und schnuppern Sie rein in das Feldforscherleben und Mitforschen bei Biosphere Expeditions. Unsere Schnuppertage finden in einigen der schönsten Nationalparkflecken Deutschlands statt. Als Teil eines kleinen Teams erlernen und probieren Sie Seite an Seite mit einem Naturführer und Ihrem Expeditionsleiter Techniken und Fertigkeiten im Natur- und Artenschutz aus. Dazu gehört der Umgang mit dem GPS, Navigation mit GPS oder Kompass, Arbeit mit Kamerafallen und Radiopfeilsendern für Wildtiere, Spurenlesen, Ausfüllen von Datenblättern, etc. Obendrein lernen Sie selbstverständlich auch den Nationalpark kennen; seine Fauna, Flora, Geschichte und Naturschutzaktivitäten. Am Ende Ihres Schnuppertages werden Sie also nicht nur viel über den Nationalpark wissen, sondern auch einen sehr guten Eindruck davon haben, wie es ist, mit uns auf Expedition zu sein.

Beitrag

€65 pro Person. Falls Sie sich nach dem Schnuppertag für die Teilnahme an einer Expedition entscheiden, schreiben wir Ihnen €50 davon wieder gut.

Termine

(jeweils sonntags von 09:00 bis 17:00 Uhr)

Nationalpark Niedersächsisches Wattenmeer (Norderney): 3. Mai 2015

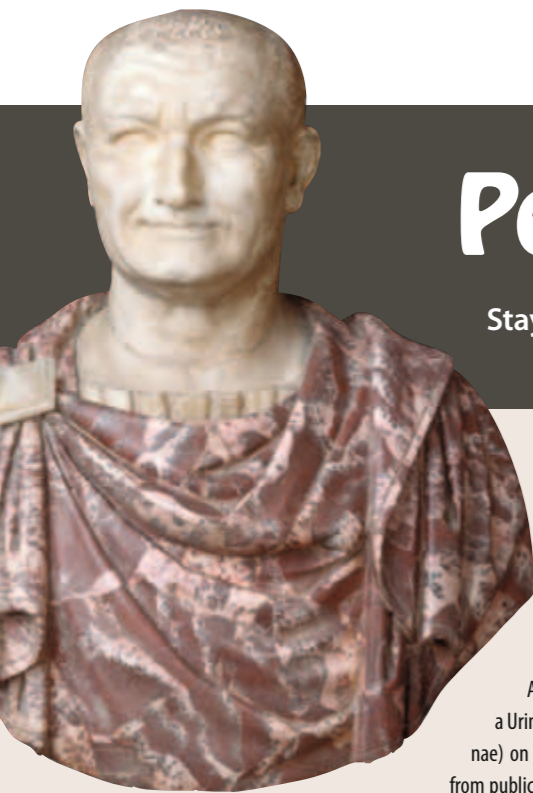
Nationalpark Kellerwald: 12. Juli 2015

Nationalpark Unteres Odertal: 19. Juli 2015

Nationalpark Eifel: 9. August 2015

Nationalpark Berchtesgaden: 27. September 2015

Mehr Info www.biosphere-expeditions.org/schnuppertage



Pecunia non olet?

Staying ethical in an increasingly unethical corporate world

Pecunia non olet

(money does not stink) is a Latin saying.

The phrase is ascribed to the Roman emperor Vespasian (ruled 69-79 AD). Vespasian imposed a Urine Tax (Latin: vectigal urinae) on the distribution of urine from public urinals in Rome's Cloaca Maxima (great sewer) system. The urine

collected from public urinals was sold as an ingredient for several chemical processes. It was used in tanning, and also by launderers as a source of ammonia to clean and whiten woollen togas. The buyers of the urine paid the tax. The Roman historian Suetonius reports that when Vespasian's son Titus complained about the disgusting nature of the tax, his father held up a gold coin and asked whether he felt offended by its smell (sciscitans num odore offendetur). When Titus said "No," he replied, "Yet it comes from urine" (atqui ex lotio est). The phrase Pecunia non olet is still used today to say that the value of money is not tainted by its origins.

Text from Wikipedia, picture courtesy of History.com

How can a small non-profit stay ethical? Biosphere Expeditions' founder and executive director Dr. Matthias Hammer takes a look at the organisation's finances.

In this age of neoliberalism, does money (pecunia) really not smell (non olet) (see info box on the right). I think it does, and the more it does, the more we, as a small non-profit/charity (see info box on our status around the world), need to be aware of our sources of funding (see below).

Ethics and placements

We have strong ethical guidelines about the kind of money we accept from sponsors and, perhaps even more importantly, have no aspirations to be part of the obsession with growth (see policy info box on sponsorship and growth on page 32). With these policies and beliefs in place, it is not surprising that 80% of our income comes from the people who join us as private citizen scientists on expedition, and who we hope will be safe in the knowledge that their money is being spent ethically. This bottom-up, community-based approach to funding also reflects how we want to spend our money: on projects that make a significant conservation impact through research, community involvement and capacity-building. The linchpin for the latter two is our placement programme. Over the last few months we have extended this to include all our expeditions and simplified the application process to make it more accessible for local people. A number of supporters are also involved in financing the placements (see next page) - and in locations where there are none, Biosphere Expeditions, or in most cases the Friends of Biosphere Expeditions, pick up the tab (see the Friends article on page 49 for more details).

Expenditure and transparency

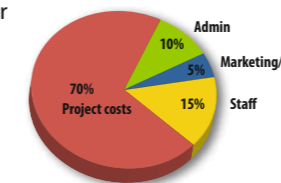
So where does the rest of the money go? The bulk (around 70% on average over the years) goes towards the direct project costs of running our conservation work in the field. The 70% are made up of field staff, equipment, board, lodging, transport & fuel, permits & admin and all the other small costs that come with running



Working together with local people and training them on the expeditions is a crucial component of Biosphere Expeditions' work. We are grateful for the support of our placement programmes to achieve this from the following: the Rufford Foundation (supporting the Maldives expedition placement programme), Ford Motor Company Environmental Grants (UAE), Anglo-Omani Society (Oman), Amazonia Expeditions (Peru), Vascutek (Kyrgyzstan), Friends of Biosphere Expeditions (all other locations).



expeditions in remote places. The remaining 30% go towards staff (average 15%), admin (average 10%) and marketing/PR (average 5%). The costs for each expedition are detailed in our annual expedition reports (see www.biosphere-expeditions.org/reports), which, next to the results of the research and conservation work, also specify project costs in a separate budget. To my knowledge we are still the only volunteer organisation who practices this total one-to-one transparency, demonstrating for each expedition, as well as for the organisation as a whole, our pledge of putting at least two-thirds of all our income into the wildlife conservation projects on the ground.



EXPENDITURE

Conclusion

We believe that with (1) our pledge not to be part of the obsession with growth and (2) the bulk of our funding coming bottom-up from private individuals with a passion for conservation, rather than top-down from corporations operating on neoliberal principles and more often than not a desire to greenwash, as well as (3) the checks and balances in place in our policies and finally (4) the transparency in finances and otherwise displayed through our expedition reports, we are well placed to serve as a showcase of ethical citizen science and voluntourism. I hope you will agree, see for yourself and join us in the field one day. ■

Neoliberal capitalism

By Henry A. Giroux, born 1943, an American scholar and cultural critic



Neoliberalism is a philosophy, expounded over the last 25 years or so, which construes profit-making as the essence of democracy and consuming as the only operable form of citizenship. It also provides a rationale for a handful of private interests to control as much as possible of social, economic and political life in order to maximise their personal profit. Neoliberalism is marked by a shift from the manufacturing to the service sector, the rise of temporary and part-time work, growth of the financial sphere and speculative activity, the spread of mass consumerism, the commodification of practically everything. Neoliberalism combines free market ideology with the privatisation of public wealth, the elimination of the social state and social protections, and the deregulation of economic activity. Neoliberalism advocates lifting the government oversight of free enterprise/trade thereby not providing checks and balances to prevent or mitigate social damage that might occur as a result of the policy of "no governmental interference"; eliminating public funding of social services; deregulating governmental involvement in anything that could cut into the profits of private enterprise; privatising such enterprises as schools, hospitals, community-based organisations, and other entities traditionally held in the public trust; and eradicating the concept of "the public good" or "community" in favour of "individual responsibility."

Neoliberalism's rigid emphasis on unfettered individualism, competitiveness and flexibility displaces compassion, sharing and a concern for the welfare of others. In doing so, it dissolves crucial social bonds and undermines the profound nature of social responsibility and its ensuing concern for others. In removing individuals from broader social obligations, it not only tears up social solidarities, it also promotes a kind of individualism that is almost pathological in its disdain for public goods, community, social provisions, and public values. Given its tendency to instrumentalise knowledge, it exhibits mistrust for thoughtfulness, complexity, and critical dialogue and in doing so contributes to a culture of stupidity and cruelty in which the dominant ethic is organised around the discourse of war and a survival of the fittest mentality. Neoliberalism is the antithesis of democracy.

Photo courtesy of Science Media Lab - McMaster University

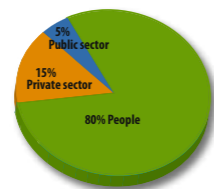
INCOME STREAMS

PEOPLE

You - through your expedition contributions, which is the bulk of that income, but also through the FRIENDS (more about them on p. 49) and via some donations and legacies. This makes up about 80% of all our income.

PUBLIC SECTOR

This includes government co-operations, for example Australia's Department of Environment and Conservation (DEC) providing support in terms of staff and vehicles for our marsupial conservation work in Western Australia or the Maldives Ministry of Fisheries supporting our coral reef work. At the moment this is a very small percentage (about 5%) of our budget, but this may grow as we go for state funding such as grants from the European Union or national governments.



PRIVATE SECTOR

The rest of our income (about 15%) comes from the private sector. This can be private foundations, corporate foundations, corporate sponsorship, employee or CSR (corporate social responsibility) programmes.

Biosphere Expeditions non-profit / charity status around the world

In the **UK** Biosphere Expeditions Ltd. is a non-profit organisation registered in England, registration number 3906154.

In **North America**, Biosphere Expeditions Inc. is registered as both an IRS tax-exempt 501(c)(3) non-profit charitable corporation, EIN 72-1614948, and a Florida domestic non-profit Corporation, Document Number N06000004396.

In **Germany** Biosphere Expeditions e.V. is a non-profit organisation registered with the local court of Würzburg, registration number VR 200383.

In **Australia** Biosphere Expeditions Inc. is an incorporated non-profit charity association registered in the State of Victoria, incorporation number A004912Y, ABN 24002831061.

In **France** Biosphere Expeditions is a non-profit organisation registered with the Prefecture of Paris, registration number 05/3750, file number 00172675.

MEDIA CLIPPINGS 2014

Biosphere Expeditions is in the media a lot. Below is a selection. A full overview is on ISSUU at <http://issuu.com/biosphere-expeditions>.

In English

Reef Check enews "Transect Line"

Article about Maldives expedition from Jean-Luc's press release
http://reefcheck.org/news/news_detail.php?id=1054

Wildlife Extra (ezine)

Essay on how to choose a decent wildlife volunteering experience
<http://issuu.com/biosphere-expeditions/docs/wildlifeextra14/0>

Idaho Falls Life

Three-page feature on expedition leader Alisa Clickenger and the Namibia big cats & elephants expedition
<http://issuu.com/biosphere-expeditions/docs/na-idahofallslife14/0>

The National newspaper

Two-page feature about Namibia big cat & elephant expedition, and voluntourism
<http://issuu.com/biosphere-expeditions/docs/na-womensadventure13>

Muscat Daily

Quarter-page on 2013 Musandam coral reef expedition report and calls for World Heritage Site
<http://issuu.com/biosphere-expeditions/docs/mu-muscatdaily14/0>

AA Traveller South Africa

Four-page article about voluntourism with mention of Biosphere Expeditions' Altai and Namibia expeditions
<http://issuu.com/biosphere-expeditions/docs/na-aatravellerza14>

National Geographic Traveller

Five-page feature about Musandam coral reef expedition
<http://issuu.com/biosphere-expeditions/docs/ngtravelleruk14>

Wildlifeextra.com

Long write-up of the Namibia big cats & elephants expedition, linked in their ezine
<http://issuu.com/biosphere-expeditions/docs/na-wildlifeextra14>

Wild Travel

One-page article on voluntourism written by Biosphere Expeditions director Kathy Gill
<http://issuu.com/biosphere-expeditions/docs/wildtravel14.pdf>

Wildlifeextra.com

Tien Shan mentioned on their "Life-changing volunteer trips for 2014" list
<http://issuu.com/biosphere-expeditions/docs/ts-wildlifeextra14/0>

Triptease.com

Short piece on Namibia expedition
<http://triptease.com/member/peter-lynch--2/43148>

County Life

Two pages (print) on Slovakia and other expeditions and longer article online
<http://issuu.com/biosphere-expeditions/docs/sk-countrylife13>

Muscat Daily

Short announcement about Biosphere Expeditions' comment to protected area in Musandam. Picked up from Biosphere Expeditions press release
<http://issuu.com/biosphere-expeditions/docs/mu-muscatdaily13b>

Times of Oman

Feature about Musandam coral reef expedition
<http://issuu.com/biosphere-expeditions/docs/mu-timesoman13>

In German

NABU Schneeleo-Post

Coverage of our Tien Shan snow leopard expedition in German NABU's snow leopard newsletter
http://issuu.com/biosphere-expeditions/docs/ts-schneeleo-post_14/0

Abenteuer & Reisen

Half-page on Namibia expedition and conservancy system as part of larger feature on Namibia
http://issuu.com/biosphere-expeditions/docs/na-abenteuerreisen14_be/0

Ein guter Tag (book)

Book about sustainable living with Biosphere Expeditions as the recommendation in the travel section
http://issuu.com/biosphere-expeditions/docs/ein_guter_tag_14/0

Die ganze Woche

Half-page on Azores whale & dolphin expedition in Austrian TV magazine
<http://issuu.com/biosphere-expeditions/docs/az-dieganzewoche14/0>

Naturschutz heute



Two-page article about NABU's snow leopard work in Kyrgyzstan with a mention of the co-operation with Biosphere Expeditions

http://issuu.com/biosphere-expeditions/docs/ts-naturschutz_heute_13

InStyle Magazin

Slovakia and Azores expedition mention (half page each) within a larger four-page "charity travel" piece.
<http://issuu.com/biosphere-expeditions/docs/az-instyle13>

Cover picture:
Expedition participants surveying
primates in the Peruvian Amazon

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Biosphere Expeditions is an international non-profit conservation organisation registered in England, Germany, France, Australia and the USA.

Officially accredited member of the United Nations Environment Programme's Governing Council & Global Ministerial Environment Forum.

Officially accredited member of the International Union for Conservation.

