



Operation
Wallacea

schools brochure 2020/21



www.opwall.ac.uk

Operation Wallacea (Opwall) is an organisation that runs a series of biological and conservation management research programmes that operate in remote locations across the world. These expeditions are designed with specific wildlife conservation aims in mind - from identifying areas needing protection, through to implementing and assessing conservation management programmes. What is different about Operation Wallacea is that large teams of ecologists, scientists and academics, who are specialists in various aspects of biodiversity or social and economic studies, are concentrated at the target study sites. This gives volunteers the opportunity to work on a range of projects. The surveys result in a large number of publications in peer-reviewed journals each year and have resulted in 30 vertebrate species new to science being discovered, 4 'extinct' species being rediscovered and \$2 million levered from funding agencies to set up best practice management examples at the study sites. These large survey teams of scientists and volunteers, funded independently of normal academic sources, have enabled large temporal and spatial biodiversity and socioeconomic datasets to be produced, and provide crucial information to help with organising effective conservation management programmes.

All students pay to join the expeditions; this is how the entire unique programme is funded and makes our research possible. The vast majority of science programmes that deliver key research outcomes are characterised by short-term funding with restricted aims and biogeographical ranges. Long-term projects covering large biogeographical scales that incorporate more than one ecosystem are rare. The Operation Wallacea programme provides the opportunity to do just this, and consider science and conservation of key ecosystems from a global perspective. Opwall is able to draw upon researchers from a wide range of different disciplines and academic institutions to address major issues related to the sustainable management and conservation of some of the world's most diverse but threatened environments.

Groups of sixth form/high school students in their last two years before going on to university can join these biodiversity survey expeditions as long as they are accompanied by a teacher. The school groups are required to collect data for at least part of their expedition which helps with the research objectives and publications for that site. During their two week expeditions the school groups also have the opportunity to work alongside a range of different field scientists and learn about the survey techniques and species encountered. At each of the sites a lecture series is run to provide background information about the habitats and species, which are tied into many of the concepts learned in pre-university biology, geography and environmental science courses.



www.opwall.ac.uk

1 & 2 week expeditions to 16 countries

Expedition Costs

The costs vary depending on where your group is based and where they want to go, the size of the group and the exact week you want to join the expedition. The normal expeditions are for 2 weeks and this costs £1275 or \$1900 for the 2 weeks and includes all food, accommodations, transfer around the sites, participation in the research projects, training (except canopy access), diving, dive training, medical support on site and £1 million medical insurance. However, there is the possibility at a few sites (Transylvania, Peru, Guyana, Honduras and Indonesia) for a one week only expedition and for these the costs are £765 or \$1050 for the expedition. On top of these though you need to add the costs of the international flights and the 'internal travel' which is the bit from the arrival airport to the expedition start and back again at the end of the expedition. There is a free expedition place for a teacher for every group of 8 students and the costs of their travel to and from the site are divided between the 8 students.

Contact us

Please contact your nearest Operation Wallacea office (see back cover of brochure) for a detailed quote for any of the expeditions of interest to you. Opwall can provide the whole expedition package or you can source your own international flights and Opwall can just charge you for the expedition and in country travel costs to and from the start and end points of the expedition.

Insurance

Opwall expedition costs include a travel insurance policy including unlimited Overseas Medical and Travel Expenses, cover for Personal Property and Cancellation, Curtailment and Rearrangement cover for all participants. This is provided by Zurich Insurance Group, one of the world's largest insurance groups. The travel insurance provided by Opwall also covers travel to and from the expedition site. This policy offers cover to all volunteers on a 'Fit to Travel' basis, therefore providing you are fit to travel you do not need to separately declare any pre-existing medical conditions to Zurich.

It is advisable to check with your school if any further insurance is required.

Health and Safety

All the expeditions provided by Operation Wallacea meet the requirements of BS8848 specification for the provision of visits, fieldwork, expeditions and adventurous activities outside the UK. In addition Opwall has been audited and awarded a Learning Outside the Classroom badge for taking students on overseas expeditions. Medical support is arranged for each of the sites and safety auditing is performed during the research programmes. On the Opwall website (www.opwall.com) you can find details, for each country, of the risk management systems, how the expedition meets and exceeds each clause of the BS8848, the information describing the support and leadership at each point on the expedition, the medical and evacuation report and a summary of the accidents and illnesses at each site in the previous year. Looking at the statistics from each site it is apparent that joining an Opwall expedition is less risky than most sports tours and considerably less risky than activity type trips such as skiing.

Key to symbols



Circle: denotes a single week Green circle: terrestrial week Blue circle: marine week

IMPORTANT NOTE: The details of the expedition programmes described in this brochure are correct at the time of going to print. However, please note that you will be joining a real scientific expedition and that on occasion the work carried out on individual projects will differ from that described in order to respond to scientific priorities. Please keep checking our website www.opwall.ac.uk for the most up-to-date information about the expeditions.

Research Objectives

Mexico

The Calakmul forest research is quantifying the biodiversity value of an extensive tract of lowland forest that has one of the highest biodiversity levels in the world. These data are being used to evaluate the impact of climate change and changing rainfall patterns on the abundance, ranges and diversity of fauna and to assist the park authorities with the management of the park in terms of mitigation and habitat restoration. Data are also used to assess the efficacy of a range of sustainable development projects with buffer zone communities designed to minimize forest encroachment. In addition, there are specialist studies on niche separation in jaguars and pumas, behaviour of spider monkeys and population levels of Morelet's crocodiles. On the marine side the research is examining the effects of tourist activity on feeding and breeding behaviour of turtles in the newly formed Akumal Marine Protected Area.

Dominica

This expedition is designed to provide datasets to Dominica's forestry and fisheries departments. Surveys include assessments of: forest structure, arthropods, birds, bats, freshwater invertebrates, marine fish populations and coral reef health. Our monitoring will focus on the recovery and changes in flora and fauna since hurricane Maria in 2017. In addition to biodiversity monitoring students participate in two projects focussed on the impacts of climate change during their forest week. The first project investigates the competitive dynamics that occur between the invasive and endemic anole species on the island under different climate change scenarios. The second project focuses on ocean acidification, studying Champagne Reef where there are carbon dioxide vents lowering the pH of the water. The second week is spent up in a restored British fort on the north part of the island where the programme is helping monitor two marine protected areas, through stereo video surveys, benthic surveys and 3D modelling.

Croatia

This expedition is providing assistance to the Croatian Institute of Biodiversity in Krka National Park. In the Krka river valley the teams are providing data for the Park authorities to help with management and protection of the biodiversity. Studies include a range of taxa: Orthoptera, butterflies, fish, amphibians, reptiles and mammals including the otters and small mammal communities and the diversity of some of the more easily accessible cave systems. The second part of the expedition is on the island of Silba where the teams are gathering data on the fish and seagrass communities

Transylvania

The aim of this expedition is to monitor the biodiversity of the man-made and spectacularly beautiful landscape of the Tarnava Mare Natura 2000 site in the foothills of the Carpathians. This is needed because the species rich meadows are under threat from intensification of farming practices and the ancient woodlands from logging. The survey teams will be working with ADEPT, a Romanian NGO to quantify changes in farming practices, monitor the diversity of indicator plant species and butterflies in the meadows, assess changes to bird communities, and to examine changes in bat communities and large mammal populations including the Eurasian brown bear.

Borneo (Indonesia)

This new expedition is providing baseline data on a 10,000ha primary forest area in East Kalimantan that was originally scheduled for clearance for a palm oil plantation, but was set aside by the regional government for protection and to increase tourism to the area. However, so little is known about the forest that there is not even a reliable species list of the vertebrates. The forest has orangutans, proboscis monkeys, gibbons and possibly even sun bears as well as many spectacular bird species such as the Great argus. The objective is to quantify the value of this site which is nearly entirely surrounded by palm oil plantations but remains linked by a corridor to a wider area of natural forest. Work will concentrate on describing mammal, bird, reptile and amphibian communities as well as initiating primate behaviour studies as a potential long-term research site.

Indonesia (Wallacea region)

This is one of the largest research programmes run by Opwall and also the longest running. The forest research takes place within the endemic-rich Wallacea region of central Indonesia, on Buton Island, SE Sulawesi. The standardised monitoring data on forest structure and carbon stocks, bat, bird, butterfly, reptile and amphibian communities and relative abundance of anoa and macaques are being used to submit an application under the REDD+ scheme for funding to benefit the local communities in return for them protecting their unique wildlife. The marine research which is conducted at research sites with an outstanding publication record in the centre of the Coral Triangle (the most diverse reef systems in the world as measured by hard coral diversity) is monitoring changes in fish, macroinvertebrate and coral communities as well as looking at adaptations of marine species to climate change using a mix of field and lab based research.

Honduras

This is one of the longest running and largest research programmes run by Opwall. The scientists working on the Honduras cloud forest project in Cusuco National Park have recorded so many endemic and threatened species at this site that in an analysis of 173,000 protected areas, Cusuco was identified as being in the top 50 most irreplaceable sites in the world (and the top 25 for amphibians alone). The data from the various research teams are being used to package the forests under a private sector carbon trading scheme to provide long-term funding for this site. There is also a large marine research programme that is addressing key conservation priorities for the Caribbean region from a mix of field and lab based studies. These include the effect of invasive species such as lionfish on reef fish communities and restoration of *Diadema* urchins as keystone herbivores. In addition, this programme is exploring how new technology can be used to better quantify changes to the reef ecosystem.

Bay Islands

This all marine expedition takes in two different research sites focusing on conservation priorities for the Caribbean region. Our core research focuses on collecting long-term reef monitoring data to assess changes in benthic health and fisheries biomass, with a particular focus on integrating technological solutions to help improve data accuracy and efficiency. This includes the use of stereo-video surveys for fish biomass and 3D modelling to calculate habitat complexity. More specific research includes improving our understanding of the impacts of the Caribbean lionfish invasion, and our conservation efforts include restoration techniques for the keystone urchin *Diadema antillarum*.

Ecuador and The Galapagos

Opwall has committed to completing an inventory of the biodiverse rich rainforest of the Sani Indian Reserve along the Napo river in Amazonian Ecuador. The Sani Indian community need help in identifying the species richness and value of their site in order to make a success of their ecotourism lodge venture. The Galapagos week is based in a wildlife reserve where the students will complete a Galapagos Island ecology course and have the opportunity to experience the spectacular biodiversity of one of the natural world's most iconic locations.

Peru (Amazon)

The overarching goal of this project is to help conserve the Peruvian Amazon through field research that provides the science base for biodiversity conservation. The main effect of climate change on the wildlife of the Amazon is in the frequency and height of flooding events. In the seasonally flooded forest that connects the Pacaya-Samira National Reserve and the Tamshiyacu-Tahuayo Community Reserve about 92% of the area is flooded during a normal wet season forcing the terrestrial species such as peccaries, deer and jaguars into just 8% of the area. However, in recent years the floods have intensified so that at times only 5% of the area has been dry land. This is having an impact on terrestrial species and also on the opportunities for fish populations to increase. The research is also being used to study another recent threat to the impacts on wildlife and people of the proposed dredging of the hydrovia infrastructure project. There has been no scientific evidence on how planned dredging may impact the biodiversity and people of the region. This long-term research programme is collecting data on a range of taxa that are indicators of high quality forest or river quality (macaws, large mammal species, dolphins, water birds) and those which are exploited (fish, caiman, turtles, peccaries), both to help determine sustainable harvesting quotas for the local communities but also to identify any changes in the wildlife communities as a result of the changing flooding and drought patterns, which may also be linked to a recently implemented mega hydrovia dredging project.

Guyana

The Guyana government set aside 1 million acres of prime rainforest to explore whether a forest could fund its own protection, while also maintaining wildlife diversity. The Iwokrama forests are some of the most intact in South America and have high populations of jaguars, tapirs, giant river otters and other iconic Neotropical fauna. The management of Iwokrama in association with the Surama tribe of Makushi Amerindians have set aside 50% of the area as wilderness, which will never be exploited, and the remaining 50% to be selectively logged on a 60-year rotation. The selective logging results in only 1% of the trees in any area (5% by volume) being felled, which provides the same income as if the area were clear cut. The Opwall survey teams are monitoring the impact of this selective logging on the wildlife at sites that have just been selectively logged, and at various points after that and contrasting it with the wildlife communities of the wilderness areas.

Brazil

This expedition is designed to help local scientists gathering biodiversity, animal behaviour and human-wildlife conflict data to aid the local community on developing a better tourism activity. Biodiversity research includes projects on the birds, mammals and plant communities. There are also investigations into the stock of crabs, on which many locals rely for their incomes, and how Rufous Crab-hawk behaviour could help with understanding crab distribution. Another behaviour survey is focused on the critically endangered Golden-Bellied Capuchin and how environmental enrichment could help to switch its reputation as coconut thief to an important ecotourism attraction. In addition, there is a project monitoring river water quality using freshwater invertebrates as indicators. The activities in Guarapari, the marine site, will be based on establishing a long-term monitoring data in the most biodiverse reef on the Brazilian coast.

South Africa

The unique approach used by South Africa in terms of wildlife management is that they fence their reserve areas, which separates the wildlife from community areas. The state parks cover huge areas making up around 8% of the total landmass, but this is just the tip of the iceberg with private reserves contributing much more land to wildlife conservation. Wildlife tourism is consequently a major income source for South Africa and the return on investment for using land as a wildlife reserve is greater than most other land use opportunities. Even though the fenced areas are vast in many cases, they are still finite and managing a balance of species is crucial. The Opwall South Africa research programme covers several reserves with very different management issues. Projects include assessing vegetation health and diversity, monitoring ranging patterns of large herbivores such as elephant and rhino, and assessing changes in avian diversity over time.

Madagascar

Madagascar has an objective of setting aside 10% of its land as national parks in order to protect the unique wildlife of the island, but the country is a long way from achieving that target. An additional approach that may contribute significantly to wildlife conservation is to include community managed forests in the protected forest network. These community managed forests are nested in a landscape of areas used for farming, but are managed to ensure the wildlife are protected and the community can gain an income from ecotourism. The Madagascar research programme is looking at the effectiveness of example dry forest and rain forest areas that are community managed. Research projects (depending on the site chosen), include diurnal lemur behaviour and abundance, nocturnal lemur ecology, abundance of endemic species of reptiles and amphibians, colour change in chameleons, Pollard surveys for butterflies, bird community structure and forest structure. The marine teams are monitoring fish populations and coral cover on the reefs around Nosy Be.

Fiji

This expedition is working with the Nambu Conservation Trust to establish the first substantially sized national park in Fiji. The Nambu Conservation Trust is working with a group of mataqali (land owning groups of families) in one of the most valuable conservation areas on the North island to establish this park and demonstrate the benefits that could accrue to local communities. The research objectives in the forest are to quantify the forest structure and total carbon content, to identify the biodiversity value of the peninsula for various invertebrate groups, the population size of key endemic birds and butterflies and the impact of the introduced mongoose on the native fauna. On the marine side where the research is taking place in the largest bay in the South Pacific, the objectives are to quantify the coral cover and the fish communities and to monitor changes over time.

Malawi

Ever-expanding human populations have led to increasing human-wildlife conflict in many areas of the world. This is particularly apparent in African cities, where carnivore species have managed to carve themselves a niche within the human developments. Lilongwe, Malawi's capital, is home to many carnivore species - including hyena, serval and jackal - as well as a large diversity of bird and bat species. This expedition is working to understand this diversity and how it interacts with the human activity surrounding it, as well as gaining important data to help mitigate future conflicts. Since environmental education is a key factor in this, the teams will also be visiting local community groups to discuss key conservation issues of the area. As an interesting comparison, the second part of the expedition is learning about management of large mammal species in a fenced game reserve. The final part of this expedition is on Lake Malawi, helping with fish community surveys.

Dates

2020

	EXPEDITION 1	EXPEDITION 2	EXPEDITION 3	EXPEDITION 4	EXPEDITION 5	EXPEDITION 6	EXPEDITION 7	EXPEDITION 8
Bay Islands	17 June* 30 June	24 June* 7 July	1 July* 14 July	8 July* 21 July	15 July* 28 July	22 July* 4 August		
Borneo (Indonesia)	14 June 27 June	21 June 4 July	28 June 11 July	5 July 18 July	12 July 25 July	19 July 01 August		
Croatia	11 June 24 June	18 June 1 July	25 June 8 July	2 July 15 July	9 July 22 July	16 July 29 July	23 July 5 August	30 July 12 August
Dominica	8 June 20 June	15 June 27 June	22 June 4 July	29 June 11 July	6 July 18 July	13 July 25 July	20 July 1 August	
Ecuador and The Galapagos	9 June 22 June	16 June 29 July	23 June 6 July	30 June 13 July	7 July 20 July	14 July 27 July	21 July 3 August	28 July 10 August
Fiji	14 June 27 June	21 June 4 July	28 June 11 July	5 July 18 July	12 July 25 July	19 July 1 August	26 July 8 August	
Guyana	16 June* 29 June	23 June* 6 July	30 June* 13 July	7 July* 20 July	14 July* 27 July	21 July* 3 August		
Honduras	17 June* 30 June	24 June* 7 July	1 July* 14 July	8 July* 21 July	15 July* 28 July	22 July* 4 August		
Indonesia (Wallacea region)	14 June* 27 June	21 June* 4 July	28 June 11 July	5 July 18 July	12 July 25 July	19 July* 1 August	26 July* 8 August	
Madagascar	14 June 26 June	21 June 3 July	28 June 10 July	5 July 17 July	12 July 24 July	19 July 31 July		
Malawi	24 June 7 July	1 July 14 July	8 July 21 July	15 July 28 July	22 July 4 August			
Mexico	22 June 5 July	29 June 12 July	6 July 19 July	13 July 26 July	20 July 2 August	27 July 9 August		
Peru (Amazon)	7 June* 19 June	21 June* 3 July	5 July* 17 July	19 July* 31 July				
South Africa	13 June 26 June	20 June 3 July	27 June 10 July	4 July 17 July	11 July 24 July	18 July 31 July	25 July 7 August	1 August 14 August
Transylvania	17 June* 30 June	24 June* 7 July	1 July* 14 July	8 July* 21 July	15 July* 28 July	22 July* 4 August	29 July* 11 August	5 August 18 August

2021

	EXPEDITION 1	EXPEDITION 2	EXPEDITION 3	EXPEDITION 4	EXPEDITION 5	EXPEDITION 6	EXPEDITION 7	EXPEDITION 8
Bay Islands	16 June* 29 June	23 June* 6 July	30 June* 13 July	7 July* 20 July	14 July* 27 July	21 July* 3 August		
Borneo (Indonesia)	13 June 26 June	20 June 3 July	27 June 10 July	4 July 17 July	11 July 24 July	18 July 31 July		
Croatia	10 June 23 June	17 June 30 June	24 June 7 July	1 July 14 July	8 July 21 July	15 July 28 July	22 July 4 August	29 July 11 August
Dominica	7 June 19 June	14 June 26 June	21 June 3 July	28 June 10 July	5 July 17 July	12 July 24 July	19 July 31 July	26 July 7 August
Ecuador and The Galapagos	8 June 21 June	15 June 28 June	22 June 5 July	29 June 12 July	6 July 19 July	13 July 26 July	20 July 2 August	27 July 9 August
Fiji	6 June 19 June	13 June 26 June	20 June 3 July	27 June 10 July	4 July 17 July	11 July 24 July	18 July 31 July	25 July 7 August
Guyana	15 June* 28 June	22 June* 5 July	29 June* 12 July	6 July* 19 July	13 July* 26 July	20 July* 2 August		
Honduras	16 June* 29 June	23 June* 6 July	30 June* 13 July	7 July* 20 July	14 July* 27 July	21 July* 3 August		
Indonesia (Wallacea region)	13 June* 26 June	20 June* 3 July	27 June 10 July	4 July 17 July	11 July 24 July	18 July* 31 July	25 July* 7 August	
Madagascar	13 June 25 June	20 June 2 July	27 June 9 July	4 July 16 July	11 July 23 July	18 July 30 July		
Malawi	23 June 6 July	30 June 13 July	7 July 20 July	14 July 27 July	21 July 3 August			
Mexico	21 June 4 July	28 June 11 July	5 July 18 July	12 July 25 July	19 July 1 August	26 July 8 August		
Peru (Amazon)	13 June 25 June	27 June 9 July	11 July 23 July	25 July 6 August				
South Africa	12 June 25 June	19 June 2 July	26 June 9 July	3 July 16 July	10 July 23 July	17 July 30 July	24 July 6 August	31 July 13 August
Transylvania	16 June* 29 June	23 June* 6 July	30 June* 13 July	7 July* 20 July	14 July 27 July	21 July 3 August	28 July 10 August	

Our most popular dates are printed in bold

*one week expeditions available at these locations with the same start dates as listed above

Educational Benefits

Enhanced understanding of course syllabuses

The lecture courses and practical experience gained in the field provide examples that can help to understand and illustrate many of the principles inherent in most Biology, Environmental Science and Geography courses. For many courses (often country specific) we have looked at how the experience of participating in an expedition might 'match' with specific specifications and many of these matching tables can be located in the school booklet for each country, which can be found on the Opwall website for each country.

Help develop additional career opportunities

Opwall's research expeditions provide an ideal opportunity for students to meet university academics, ecologists and scientists and, depending on the expedition, to work alongside university students doing degree courses of potential interest to them. These expeditions provide an excellent way of making contacts and many of the students that have joined previous Opwall expeditions have then completed degrees in relevant subjects, go on to careers in wildlife conservation or field research, or return to Opwall to complete their final year dissertations.

Personal and interpersonal development

Many countries require their students to acquire experience in vocational aspects of their education such as Active Citizenship, Enrichment Activities, Career Planning and Global Awareness. A number of schools involved in Opwall expeditions have successfully used their expedition experience to help in this area such as the UK ASDAN Universities Award and the CAS (Creativity, Activity, Service) requirement for the IB Diploma course.

Opportunity to carry out Independent Research Projects (IRPs)

Many educational systems encourage students to carry out their own independent research which often involves producing a written report on a specific research question. These research projects take many different forms, but what they all have in common is the need to pose and answer a research question. Examples of these include **Extended Project Qualification (EPQ)**, **Extended Essay (EE) for IB**, as well as many different projects specific to many educational systems worldwide.

We are able to support the **dissertation essay style** research question; however individual scientific investigations (in which students design and collect their own data) are more difficult to facilitate given the short amount of time students are present on-site. It is a great opportunity for a student to witness first-hand many of the aspects of their research question and, in many cases, they will have access to samples of past datasets for their project. Students may also have the opportunity to talk with the actual scientists involved which will give them a convincing 'slant' to the way in which they answer their research question.

For success with IRPs, careful planning is needed by the student and a lot of the work will be done prior to their expedition. They will need close guidance from their school supervisor and the scientists in the field need to be briefed so that support can be provided where they can.

Example Research Questions

- How does inter species competition and environmental changes affect the populations of the different species of caiman in the Pacaya-Samiria Reserve?
- Comparing how habitat varies on a spatial scale across cloud forest in Cusuco National Park in Honduras.
- To what extent will the lionfish (*Pterois volitan* and *Pterois miles*) invasion impact the environment of the Utilian coral reef communities and evaluate current management strategies applied in Utila?
- What effects do different disturbance levels, both human and abiotic disturbance, have on bird abundance and species richness on Buton Island, Indonesia?
- What differences and similarities can be found between primary and secondary rainforests and what may be the causes? Which forest type has the biggest conservation value?
- How does the establishment of REDD+ scheme in Cusuco National Park (Honduras) affect the conservation of biodiversity and the communities living within and around the national park?

Enhance university applications including course credit

When applying to university, college or a job, students have the opportunity to stand out from the crowd beyond their personal statement (CV), test or exam results and extracurricular activities. Through entrance essays or interviews, students may choose to reference their time on an expedition to demonstrate independence and global efficacy, while the unique opportunity to meet academics from universities around the world will also set them apart from other applicants.

If the students are going to a US university then they can gain 3 course credits through either the California or Florida state systems. For applicants to UK universities then they can obtain a University Award which can then be included on their UCAS form.

Educational Resources

Operation Wallacea has been running research expeditions since 1995. Using some of the data we have created a science resource known as The Wallace Resource Library (WRL). This resource provides novel datasets for the classroom and uniquely, have all been processed and produced by the actual scientists involved in the research. The WRL comprises 19 full datasets that can be used for 40 minute classroom or homework exercises and 45 biodiversity data tasks that use an examination question type approach to teach math skills.

Posters



Participating Academics

Operation Wallacea works with specialists in numerous fields from a range of universities and institutions around the world. In total there are more than 200 academics involved in the research programme. A sample of the academics are listed below that have been involved in recent years in the field research programmes, contributing to publications, supervising PhD students who form part of the programme or are involved in data analysis or conservation management outputs from the research.

Conservation Management Scientists

Dr Julian Clifton - University of Western Australia, Australia
Tom Avent - Wetlands and Wildfowl Trust, UK
Dr Angela Benson - University of Brighton, UK
Dr Richard Bodmer - University of Kent, UK
Dr Keri Brondo - University of Memphis, USA
Dr Alice Eldridge - University of Sussex, UK
Barry Ferguson - University of East Anglia, UK
Dr Jeri Fox - University of New England, USA
Chris Majors - Operation Wallacea, Indonesia
Dr Ruth Malleson - Social and Economic Consultant, UK
Dr Wanda McCormick - Moulton College, UK
Dr Mika Peck - University of Sussex, UK
Dr Richard Phillips - University of Liverpool, UK
Dr Sarah Pilgrim - University of Essex, UK
Dr Edi Purwanto - Tropenbos, Indonesia
Dr Ali Reza - Delta State University, USA
Dr Selina Stead - Newcastle University, UK
Prof Ian Swingland - Operation Wallacea Trust, UK
Dr Chui Ling Tam - Calgary University, Canada
Dr Raquel Thomas - Iwokrama Rainforest Research Centre, Guyana
Helen Tedds - Moulton College, UK
Dr Katharine Vincent - University of the Witwatersrand, South Africa
Roger Wardle - Consultant on agri-environmental schemes, UK
Dr Ateek Widayati - Northumbria University, UK
Dr Tony Whitten - Flora and Fauna International, UK
Dr Olivia Norfolk - Anglia Ruskin University, UK
Dr Kathy Velerander - Napier University, UK

Genetics, Oceanography and Geology Scientists

Dr Danielle Gilroy, University of Manchester
Sylvie Bardin - University of Ontario Institute of Technology, Canada
Dr Stephen Burrows - Clark University, USA
Dr Giulia Casasole - University of Antwerp, Belgium
Dr Greg Cowie - University of Edinburgh, UK
Dr Alan Dykes - Kingston University, UK
Dr Antonia Ford - Bangor University, UK
Dr Leanne Hepburn - University of Essex, UK
Dr Tom Horton - SUNY ESF, USA
Dr Ben Horton - Upenn, USA
Dr Richard Hunter - Salisbury University, USA
Dr Geg Kerr - South Australia Govt, Australia
Dr John Milson - University College London, UK
Christopher Phipps - Canterbury Christchurch University, UK
Dr Claire Raisin - University of Kent, UK
Ben Titus - The Ohio State University, USA
Professor George Turner - Bangor University, UK
Dr Alexandra Tyers - Bangor University, UK
Dr Cathy Walton - University of Manchester, UK
Dr Moyra Wilson - Curtin University, Australia

Invertebrate (terrestrial and freshwater) Specialists

Professor Martin Speight - University of Oxford, UK
Dr Jan-Robert Barr - University College Dublin, Ireland
Dr George Beccaloni - Natural History Museum London, UK
Dr Sarah Beynon - University of Oxford, UK
Professor Mark Brown - Royal Holloway, UK
Dr Moya Burns - University of Leicester, UK
Dr Greg Chamberlain - BSG Ecology, UK
Dr Patricia Chow-Fraser - McMaster University, Canada
Professor James Cook - University of Reading, UK
Thomas Cready - Natural History Museum/Imperial College London, UK
Dr Will Earle - INVAS Biosecurity, University College Dublin, Ireland
Michael Geiser - Natural History Museum London, UK
Professor Francis Gilbert - University of Nottingham, UK
Andy Godfrey - Consultant Entomologist, UK
Dr Sammy de Grave - Oxford Natural History Museum, UK
Dr Neal Haddaway - Royal Swedish Academy of Sciences, Sweden
Dr Ian Hardy - University of Nottingham, UK
Dr Merlijn Jocque - University of Leuven, Belgium
Dr Mary Kelly-Quinn - University College Dublin, Ireland
Dr Stuart Longhorn - NUI Maynooth, Ireland
Dr Erica McAlister - Natural History Museum, UK
Dr Kenneth McCravy - Western Illinois University, USA
Dr José Nuñez-Mino - Bat Conservation Trust, UK
Dr Paul O'Callaghan - University College Dublin, Ireland
Dr Graham Rotheray - National Museum of Scotland, UK
Dr Simon Segar - University of Reading, UK
Dr Jo-Anne Sewlal - University of the West Indies, Jamaica
Dr Sergiu Torok - Babes-Bolyai University, Romania
Dr Roy Wiles - University of Glamorgan, UK

Ornithologists

Dr Tom Martin - Operation Wallacea, UK
Dr Jake Bicknell - DICE, University of Kent, UK
Dr Alan Blackburn - University of Lancaster, UK
Dr Robin Brace - University of Nottingham, UK
Dr Simon Butler - University of Reading, UK
Dr Bruce Byers - Umass Amherst, USA
Dr Hannah Clarke - University of Dundee, UK

Dr Nicola Goodship - Wetlands and Wildfowl Trust, UK
Dr Martin Jones - Manchester Metropolitan University, UK
Dr Dave Kelly - Trinity College Dublin, Ireland
Dr Sean Kelly - Trinity College Dublin, Ireland
Paul Leafe - Montgomeryshire County Recorder, UK
Professor Nicola Marples - Trinity College Dublin, Ireland
Martin Meads - Sparsholt College, UK
Dr Mark Miller - James Cook University, Australia
Dr Brian O'Shea - North Carolina Natural History Museum, USA
Dr Joel Prashant Jack - Environmental Protection Institute, India
Sam Jones - University College London, UK
Fabiola Rodriguez - Universidad Nacional Autónoma de Honduras
Dr Eimear Rooney - Queens University Belfast, UK
Cindy Stacier - Dalhousie University, Canada
Matthew White - RSPB, UK
Dr Nurul Winarni - World Conservation Society, Indonesia
Dr Rueven Yosef - Arava Institute for Environmental Studies, Israel

Herpetologists

Dr Steve Green - Cornwall College, UK
Dr Scott Boback - Dickinson College, USA
Dr Jeff Burkhart - University of La Verne, USA
Dr Tim Colston - University of Mississippi, USA
Dr Jacquelyn Eales - University of Bangor, UK
Julius Frazier - California Polytechnic State University, USA
Dr Graeme Gillespie - University of Melbourne, Australia
Rob Gandola - University College Dublin, Ireland
Jon Kolby - James Cook University, Australia
Dr Mike Logan - Harvard, USA
Dr Chad Montgomery - Truman State University, USA
Professor Randall Morrison - McDaniel University, USA
Dr Eridani Mulder - Central Queensland University, Australia
Jose Nobrega - University of Salford, UK
Dr Silviu Petrovan - University of Hull, UK
Dr Bob Reed - USGS, Guam
Stephen Roussos - Texas Tech University, USA
Mariano Suarez - Centro Ecologico Akumal, Mexico
Dr Katy Upton - Chester Zoo, UK
Dr Charles Watson - Midwestern State University, USA

Botany, Plant Sciences and Forestry Specialists

Dr Bruce Carlisle - Northumbria University, UK
Dr Harrison Andriambelo - Antananarivo University, Madagascar
Richard Barker - Queens University Belfast, UK
Dr Sven Batke - Trinity College Dublin, Ireland
Dr Gareth Bruce - Glamorgan University, UK
Dr Jon Cocking - JCA Ltd, UK
Dr Anke Dietzschke - Trinity College Dublin, Ireland
Dr Daniel Kelly - Trinity College Dublin, Ireland
Dr Melinda Laidlaw - Queensland Herbarium, Australia
Dr Grace O'Donovan - Independent ecology consultant, UK
Dr Pascale Poussart - Princeton University, USA
Dr Andrew Powling - University of Portsmouth, UK
Dr Andrew Smith - University of Oxford, UK
Dr Sarah Taylor - University of Keele, UK
Dr Peter Thomas - University of Keele, UK
Caroline Whiteford - Natural History Museum, UK
Dr Samy Zalal - Nature and Science Foundation for Egypt, Egypt

Marine Scientists

Professor Dave Smith - University of Essex, UK
Dr Dan Exton - Operation Wallacea, UK
Dr Gabby Ahmadi - World Wildlife Fund, USA
Dr Dominic Andradi-Brown - World Wildlife Fund, UK
Prof Jorge Angulo Valdes - University of Havana, Cuba
Dr Arthur Anker - Muséum National, Paris, France
Dr Anastazia Banaszak - Universidad Nacional Autónoma de México, Mexico
Dr Richard Barnes - University of Cambridge, UK
Professor James Bell - Victoria University of Wellington, New Zealand
Dr Wayne Bennett - University of West Florida, USA
Dr Max Bodmer - Open University, UK
Dr Paul Bologna - Montclair State University, USA
Dr Heidi Burdett - Heriot Watt University, UK
Dr Isabelle Cote - Simon Fraser University, Canada
Professor James Crabbe - University of Bedfordshire, UK
Dr Simon Cragg - Portsmouth University, UK
Dr Leanne Cullen - Cardiff University, UK
Dr Jocelyn Curtis - Quick - University of Exeter, UK
Dr Caine Delacy - University of Western Australia, Australia
Dr John Erme - University of North Texas, USA
Dr Teresa Fernandes - Heriot Watt University UK
Dr Andy Gill - Cranfield Institute, UK
Dr Helen Graham - Institute of Marine Research, Bergen, Norway
Dr Ben Green - Environment Agency, UK
Dr Emma Hayhurst - University of Glamorgan, UK
Dr Ian Hendy - University of Portsmouth, UK
Dr Sebastian Hennige - University of Edinburgh, UK
Dr Jess Jaxion Harm - University of Vienna, Austria
Dr Magnus Johnson - University of Hull, UK
Dr Tim Johnson - University of Glamorgan, UK
Dr Jamal Jompa - COREMAP Indonesia
Dr Nick Kamenos - University of Glasgow, UK
Dr Tina Kutti - Institute of Marine Research, Bergen, Norway
Dr Vanessa Lovenburg - University of Oxford, UK
Jenny Mallon - University of Glasgow, UK
Dr James McDonald - Rutgers University, USA
Dr Steve McMellor - University of Essex, UK
Dr Ed Morgan - University of Glamorgan, UK
Dr Owen O'Shea - Cape Eleuthera Institute, Bahamas
Dr Claire Peddie - University of St Andrews, UK
Dr Alan Pinder - Dalhousie University, Canada
Dr Johanna Polisenberg - US House of Representatives, USA
Dr Niamh Quinn - University of Galway, Ireland

Dr Sam Rastrick - Institute of Marine Research, Bergen, Norway
Dr Dai Roberts - Queens University Belfast, UK
Professor Alex Rogers - University of Oxford, UK
Dr Pelayo Salinas de Leon - Charles Darwin Foundation, Galapagos, Ecuador
Dr James Saunders - St Andrews University, UK
Dr Patric Scaps - University of Perpignan, France
Dr Jon Shrivess - Jersey State Fisheries Department, UK
Dr Edd Stockdale - University of Western Australia, Australia
Dr Dave Suggett - University of Technology, Sydney, Australia
Prof Chris Todd - University of St Andrews, UK
Dr Richard Unsworth - Swansea University, UK
Dr Brigitta Van Tussembröek - Universidad Nacional Autónoma de México, Mexico
Dr Nerida Wilson - Western Australia Museum, Australia
Dr Kyle Young - Aberystwyth University, UK

Mammal Specialists

Dr Kathy Slater - Operation Wallacea, Mexico
Dr Heather Gilbert - Operation Wallacea, UK
Victoria Boulton - University of Reading, UK
Dr Mark Bowler - St Andrews University, USA
Dr Jedediah Brodie - University of British Columbia, Canada
Professor Mike Bruford - University of Cardiff, USA
Dr Anthony Caravaggi - Queens University Belfast, UK
Dr Ruth Cox - University of Prince Edward Island, Canada
Dr Christian Dietz - University of Tuebingen, Germany
Dr Nigel Dunstone - Natural History New Zealand
Dr Jonathan Flanders - University of Bristol, UK
Dr Ivar Fleur - Universidad Nacional Autónoma de México, Mexico
Professor Laura Graham - University of Guelph, Canada
Matthew Hallett - University of Florida, USA
Dr Abdul Haris Mustari - IPB, Bogor, Indonesia
Dr Justin Hines - Operation Wallacea, Canada
Hannah Hoskins - Queens University Belfast, UK
Dr Marine Joly - University of Portsmouth, UK
Frederick Kiene - Hanover University, Germany
Juliet Leadbeater - University of Chester, UK
Dr Burton Lim - Royal Ontario Museum, Canada
Professor Aubrey Manning - University of Edinburgh, UK
Professor Suzanne MacDonald - York University, Canada
Dr Niall McCann - University of Cardiff, UK
Dr Nkabeng Mzileli - WEI, South Africa
Dr Sarah Papworth - Royal Holloway, UK
Huma Pearce - Independent Bat Consultant, UK
Dr Abigail Phillips - University of Birmingham, UK
Dr Rob Pickles - Panthera, USA
Rob Pitman - Panthera, South Africa
Dr Nancy Priston - Oxford Brookes University, UK
Professor Ute Radespiel - Hanover University, Germany
Dr Felix Rakotoniraparanany - Antananarivo University, Madagascar
Dr Osvaldo Eric Ramirez-Bravo - Universidad de America, Puebla, Mexico

Malcolm Ramsay - Hanover University, Germany
Dr Neil Reid - Queens University Belfast, UK
Dario Rivera - University of Queensland, Australia
Dr Steve Rossiter - Queen Mary University of London, UK
Dr Adrian Seymour - Independent Wildlife Film Maker, UK
Dr Myron Shekelle - National University of Singapore, Singapore
Dr Andrew Smith - Anglia Ruskin University, UK
Dr Kym Snarr - University of Toronto, Canada
Dr Peter Taylor - University of KwaZulu Natal, South Africa
Dr Pamela Thompson - UCLA, USA
Professor Stewart Thompson - Oxford Brookes University, UK
Ivar Vleut - UNAM, Mexico
Dr Kevina Vulinec - Delaware State University, USA
Dr Phil Wheeler - Open University, UK
Dr Anne Zeller - University of Waterloo, Canada
Heike Zitzer - Pongola Elephant Reserve, South Africa

Fisheries Scientists

Dr Tim Coles OBE - Operation Wallacea, UK
Dr Dave Bird - University of Western England, UK
Iven Forbes - Environment Agency, UK
Dr Emmanuel Frimpong - Virginia Polytechnic, USA
Professor Tim Gray - Newcastle University, UK
Dr Peter Hendersson - University of Oxford, UK
Piotr Kalinowski - Fisheries consultant, UK
Stephen Long - University College London, UK
Dr Duncan May - Fisheries Consultant, UK
Joel Rice - Fisheries consultant, USA
Dr Rodney Rountree - University of Connecticut, USA
Paul Simolin - Cornell University, USA
Professor Michael Stewart - Troy University, USA
Dr Mike Walkey - University of Kent, UK

GIS and Statistical Analysis

Dr Peter Long - University of Oxford, UK
Dr Joe Bailey - University of Nottingham, UK
Jesse Blits - University of Amsterdam, Netherlands
Oliver Burdakin - BurdGIS, London, UK
Dr Natalie Cooper - Harvard University, USA
Dr Bella Davies - Oxford Brookes University, UK
Dr Richard Field - University of Nottingham, UK
Dr Fiona Hemsley Flint - University of Edinburgh, UK
Dr Alan Jones - University of Sheffield, UK
Dr Marco Lusquinos - Imperial College London, UK
Cristi Malos - Babes-Bolyai University, Cluj, Romania
Dr Gareth Mann - Rhodes University, South Africa
Dr Lisa Manne - CUNY, USA
Dr Peter Randerson - Cardiff University, UK
Dr Allister Smith - Oxford Brookes University, UK
Dr Emily Woolless - University of Edinburgh, UK
Professor Kathy Willis - University of Oxford, UK

Academic journals in which Opwall teams have published

General Science

Nature
PLoS ONE
Royal Society Open Science
Scientific Reports
PeerJ
Caribbean Journal of Science
Cuadernos de Investigación UNED
PNAS

General Conservation Biology

Biological Conservation
Conservation Biology
Biodiversity and Conservation
Animal Conservation
Oryx
Global Ecology and Conservation
Conservation Genetics Resources
Environmental Conservation
Aquatic Conservation:
Marine and Freshwater Ecosystems
Tropical Conservation Science
Conservation and Society

General Ecology and Zoology

Ecology
Proceedings of the Royal Society B: Biological Sciences
Ecological Applications
Global Change Biology
Ecography
Functional Ecology
Journal of Natural History
Journal of Zoology
Biodiversity and Ecology
Animal Behaviour
Integrative and Comparative Biology
Diseases of Aquatic Organisms
Ecological Indicators
Biological Invasions
Integrative Zoology
Bioscience Horizons
Journal of Tropical Ecology
Biotropica
Tropical Ecology
Acta Oecologica
Aerobiologia
Hydrobiologia
Zoological Journal of the Linnean Society
Biological Journal of the Linnean Society
Aquatic Biology
ISRN Zoology
Australian Journal of Zoology
African Journal of Wildlife Research
Raffles Bulletin of Zoology
The Southwestern Naturalist
Egyptian Journal of Biology
Proceedings of the Biological Society of Washington
Microscopica
Physiological and Biochemical Zoology
Entomological Ornithology and Herpetology
Zoology in the Middle East
Bothalia

Applied and Theoretical Biology

Journal of Biogeography
Environmental Evidence
Molecular Phylogenetics and Evolution
Molecular Ecology
Environmental Microbiology
Environmental Evidence

Journal of Thermal Biology
Environmental Science and Technology
Computational Biology and Chemistry
Journal of the Acoustical Society of America
Environmental Modelling and Software

Faunistics and Taxonomy

The Raffles Bulletin of Zoology
European Journal of Taxonomy
Zootaxa
Zookeys
Zoologica Scripta
Checklist
Annales des Naturhistorischen Museen in Wien
Acta Societate Zoologica Bohemia
Comptes Rendus Biologies

General Marine and Freshwater Biology

Marine Biology
Marine Biodiversity
Marine Ecology
Marine Ecology Progress Series
Coral Reefs
Frontiers in Marine Science
Journal of Marine Biological Association of the United Kingdom
Journal of Experimental Marine Biology and Ecology
Regional studies in Marine Science
Bulletin of Marine Science
The Open Marine Biology Journal
Marine and Freshwater Research
Canadian Journal of Fisheries and Aquatic Sciences
Gulf and Caribbean Research
Ocean Challenge
Atoll Research Bulletin
Revisita Investigaciones Marinas
Diving Hyperbaric Medicine
Freshwater Biology

Ichthyology

Journal of Fish Biology
Neotropical Ichthyology
Copeia

Mammalogy

American Journal of Primatology
Mammalian Biology (Zeitschrift für Säugetierkunde)
International Journal of Primatology
Australian Mammalogy
Small Carnivore Conservation
Acta Chiropterologica
Anthropologie

Herpetology

Journal of Herpetology
Herpetological Review
IROC Reptiles and Amphibians
The Herpetological Bulletin
British Herpetological Society Bulletin
Herpetology Notes
Herpetological Conservation and Herpetology
Herpetologica
Salamandra
Herpetozoa
South American Journal of Herpetology
Mesoamerican Herpetology
Iguana
Alytes
Captive and Field Herpetology

Ornithology

Bird Conservation International
Ostrich
Cotinga
Sandgrouse
Forktail
Ornithologia neotropical
BirdingASIA
The Ring
El Esmeralda
Ibis
Bulletin of the British Ornithologists Club

Botany and habitat structure

Acta Societate Zoologica Bohemia
Comptes Rendus Biologies
PhytoKeys
American Fern Journal
Palms
New Phytologist
International Journal of Plant Physiology and Biochemistry
Reinwardtia
Journal of the Botanical Research Institute of Texas
Annals of the Missouri Botanical Garden
Assiut University Journal of Botany

Entomology and other Invertebrates

Journal of Insect Science
Journal of Insect Conservation
The Florida Entomologist
Ecological Entomology
Journal of Crustacean Biology
Crustacean Research
Crustaceana
Nematology
Journal of Arachnology
The Coleopterists Bulletin
Nachrichten des Entomologischen Vereins Apollo

Social science, Policy and Environmental Management

Forest Ecology and Management
International Journal of Pest Management
Sustainability
Marine Policy
Human Ecology
Society and Natural Resources
Ocean and Coastal Management
Fishery Management
The International Journal of Interdisciplinary Social Sciences
Indian Journal of Traditional Knowledge
SPC Traditional Marine Resource Management and Knowledge
Information Bulletin
Madagascar Conservation and Development

Education and Tourism

Journal of Biological Education
Journal of Ecotourism
Journal of Sustainable Tourism

Physical Geography and Geology

Journal of Quaternary Sciences
Limnology and Oceanography
Journal of Limnology
Proceedings of the American Society of Limnology and Oceanography
Estuarine, Coastal and Shelf Science
Cave and Karst Science
AAPG Bulletin

Bay Islands overview



Expedition to learn to dive and assist a team of researchers collect data at two sites in the Bay Islands. Students will spend a week at each site, based on islands of Utila and Roatan.

- Key facts**
- The Roatan Marine Park is considered one of the best examples of community-based conservation management in the Caribbean, and is home to abundant fish and turtle populations
 - Conservation initiatives are focused on restoring populations of a keystone sea urchin species, and managing threats from the invasive lionfish
 - People living on the Bay Islands are economically reliant on dive tourism, therefore protecting the reefs is a conservation priority
 - Although they are in a Spanish speaking country, English is actually the main language



Expedition Research Objectives

The Bay Islands are made up of eight large islands and 53 smaller islets situated at the southern tip of the Mesoamerican Barrier Reef in the Western Caribbean. This forms the second largest barrier reef system in the world, and stretches along 1000km of coastline from Mexico in the north, through Belize and Guatemala, and ending at the Bay Islands, which lie 15-60km off the coast of mainland Honduras. The Bay Islands are popular tourist destinations, and are amongst the most famous scuba diving destinations anywhere in the Caribbean. This, combined with the large local human population, places significant pressure on their marine resources.

This expedition combines two of our marine research sites in the Caribbean to form an expedition fully focused on tropical marine ecology, with a particular focus on coral reefs. The primary aim of this expedition is to address major Caribbean coral reef conservation priorities and improve our understanding of how these vital ecosystems function in a changing world. Half of the expedition will be spent on the island of Utila, which is home to largely unmanaged reefs and a booming low cost tourism industry. The other half will be spent on the island of Roatan, where reefs have been well managed by the Roatan Marine Park and tourism is mostly high cost. These two sites therefore give contrasting examples of the state of Caribbean coral reefs.

Opwall's marine research in the Bay Islands can be divided into a series of key objectives. At the most basic level, our groups conduct a long-term monitoring programme of coral reef health and fisheries biomass, with a particular focus on developing novel technologies to advance data quality and efficiency. More specifically, we lead regional efforts to restore populations of the long-spined sea urchin *Diadema antillarum*; a keystone herbivore critical to the future health of Caribbean coral reefs. We are also exploring novel methods for controlling a Caribbean invasive species; the lionfish (*Pterois volitans*).

Travel information

Airport: Roatan
(Juan Manuel Gálvez International Airport)

Arrival Day: Tuesday

Departure Day: Tuesday

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Structure

Caribbean reef ecology, diving and research in the Bay Islands

This expedition will be split between the islands of Utila and Roatan. In the first week if you are not already dive trained you will complete a PADI Open Water dive training course to earn an internationally recognised qualification. If you are already dive trained or would prefer to snorkel this week you will complete a Caribbean coral reef ecology course, with two lectures and practicals each day (either by diving or snorkelling). This week is designed to give students the theoretical knowledge and practical experience needed to join the research teams in their second week.

Courses:

- PADI Open Water dive training course **or** Caribbean reef ecology course*
- * Can be completed by snorkelling only or as a fully qualified diver



In the second week, students will put their new skills into practice and work alongside our marine biologists collecting data to contribute to our project aims and objectives. Students will rotate between a number of different projects, each using different survey techniques and focusing on a different study organism or taxonomic group. Projects will include (1) assessments of the benthic community to estimate reef health, using video transects, (2) belt transects to quantify the abundance of key macroinvertebrates, (3) an introduction to state of the art 3D modelling to calculate habitat complexity, and (4) stereo-video and underwater visual census surveys to estimate fish biomass. These projects all involve in-water surveys, with most also involving analysis back on land.



Key Surveys:

- Reef health
- Macroinvertebrates
- 3D reef modelling
- Fish

1 week programme available
Contact us for details and itinerary

Accommodation

Roatan:
Bunk beds in air conditioned dormitories by the sea, with shared bathroom facilities



Utila:
Bunk beds in air conditioned dormitories by the sea, with shared bathroom facilities



For more images and details visit the Opwall website www.opwall.com

Borneo (Indonesia) overview



Expedition to East Kalimantan to help with a lowland forest biodiversity inventory and diving on the reefs of Derawan island.

- Key facts**
- Quantifying the carrying capacity of the reserve for orangutans
 - Opportunity to live and work in a primary rainforest in Borneo
 - Identifying the primate and predator (cat species, sun bears, civets) populations in the reserve
 - Diving at a site with regular turtle, manta ray and whale shark sightings



Expedition Research Objectives

Borneo was once mainly covered in forests but in just the last 40 years over 30% of the remaining forests have been felled. One of the main drivers of lowland forest destruction has been clear felling in order to develop palm oil plantations. In the province of East Kalimantan much of the lowland forest has been cleared for these plantations but the Berau government has stepped in to preserve 10,000ha of prime lowland forest from being converted. The Lesan protection forest is bordered by the Kelay river and an orangutan rehabilitation release site has been established in the buffer zone. Operation Wallacea has been invited by the Berau government to help with identifying the fauna of the Lesan forests and to then establish a standardised monitoring protocol that can identify any changes in key taxa over time. The government would also like to develop the Lesan forest site as a location for tourists to see some of the spectacular wildlife of the Borneo forests. As a result of this objective, one of the outputs from the 2019 surveys will be a photographic guide to the butterflies, moths, beetles, reptiles, amphibians, birds and mammals.

In addition, to identifying the faunal diversity of the forest, the Berau government would also like data on the carbon storage value of the protected forest. By protecting the forest from being clear felled the Berau government has foregone the value of the timber and one way of replacing some of this lost income is by payments being made under the REDD+ scheme. This scheme is designed to provide payments to local communities for protecting the carbon value of the forest (and thereby reducing carbon emissions). Preference is given to protecting the carbon value of forests with high nature conservation value when including forests with the REDD+ scheme. So the results of the faunal studies will be combined with the forest structure and carbon levels surveys so that an application can be made for ongoing annual funding to ensure the Lesan forests remain protected for the next 25 years.

Travel information

- Airport:** Berau
- Arrival Day:** Sunday (before 1200hrs)
- Departure Day:** Saturday (after 1400hrs)
- Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Structure

Orangutans and Indo Pacific Reefs

The first week will be spent in the Lesan Conservation Forest camp where students will participate in a Borneo wildlife and conservation course and will help with a series of biodiversity surveys. These surveys will include mist nets and point counts for birds, forest structure surveys to support the REDD+ application, primate and mammal surveys, pitlines and standardised searches for herpetofauna, and invertebrate surveys using a range of techniques such as sweep nets and flight intercept traps.

Key Surveys:

- Forest structure
- Birds
- Primates and large mammals
- Herpetofauna
- Invertebrates
- Bats



During their second week students will complete six days of training in marine ecology at Derawan Dive Resort on Derawan Island. Here students have the option of completing their PADI Open Water dive qualification or if they are already dive trained or don't want to learn to dive then they can complete the Indo Pacific reef ecology course (with the practicals done either by diving or snorkelling). A third alternative is to complete their theory and confined water practicals before coming out and then just do their four open water dives to achieve the PADI Open Water qualification and then move onto the reef ecology course. Students will be occupied in the evenings through a series of science talks, documentary viewings and discussions/activities relative to the ecology course.

Courses:

- PADI Open Water dive training course
 - or
 - Indo Pacific reef ecology course*
- * Can be completed by snorkelling only or as a fully qualified diver

Accommodation

Lesan:
Shared tents



Derawan:
4 person shared rooms



Brazil overview



Expedition to the most biodiverse country in the world to help with a series of biodiversity research projects and chance to dive on the biggest rhodolith beds in the world.

- Key facts**
- Experience the way of life and human-wildlife relationships in fishing village of 400 people
 - Variety of animal behavior studies (birds, primates, invertebrates)
 - Opportunity to learn to dive on a hotspot for endemic, threatened and targeted species of South Atlantic Ocean



Travel information

Arrival Airport: Salvador International Airport (Deputado Luís Eduardo Magalhães Airport)

Departure Airport: Goiabeiras Airport (Eurico de Aguiar Salles Airport) OR Salvador International Airport (Deputado Luís Eduardo Magalhães Airport)

Arrival Day: Tuesday (before 1500hrs)

Departure Day: Tuesday (after 1300hrs for Vitória or after 1800hrs for Salvador)

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com



Expedition Structure

Remarkable Brazilian biodiversity and diving

During the first week students will stay in Siribinha, a fishing village of 400 people on the north coast of Brazil. Whilst there students will complete a Brazilian Coastal Biomes Ecology and Conservation course, as well as rotate between a series of research projects, helping scientists on data collection.

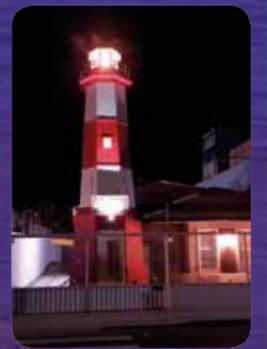
Key Surveys:

- | | |
|------------|--------------------|
| Birds | Primates |
| Mammals | Macroinvertebrates |
| Crabs | Ethnobiology |
| Vegetation | |

For the second week students will move south to Guarapari. During this week, students that are not dive trained can complete a PADI Open Water Dive Course. Students that are already dive trained or prefer to snorkel will complete a theoretical-practical South-western Atlantic Reef Ecology Course with the chance to scuba dive or snorkel. In addition, all students, in groups, will conduct a brief biodiversity research project, from developing a question to collecting the data and analyzing the results before giving a presentation.

Courses:

- | | | |
|--|----|---|
| PADI Open Water dive training course | or | South-western Atlantic Reef Ecology Course* |
| * Can be completed by snorkelling only or as a fully qualified diver | | |



Expedition Research Objectives

Brazil is the most biodiverse country in the world. Such biodiversity has been suffering many threats, and habitat loss is by far the most preeminent pressure driving species toward threatened status. In the coast, habitat loss is mainly caused by tourism over-exploitation. Siribinha is a tiny fishing village located about 200km north of Salvador, and the tourism development has not yet reached this community. Our main goal is to help local scientists on collecting biodiversity (plants, mammals and birds), animal behavior and human-wildlife interaction data to aid the local community on developing tourism activities. One of the surveys will investigate the stock of crabs, which many locals rely for their incomes, and how Rufous Crab-hawk behavior could help in understanding crab distribution. Another behavior survey is focused on the critically endangered Golden-Bellied Capuchin and how environmental enrichment could help to switch its reputation with locals as coconut thief, to being an important ecotourism attraction. In addition, we will monitor the river water quality using freshwater invertebrates as indicators. Guarapari, where our marine site is located, is on the largest rhodolith beds in the world, has the highest richness of resident reef fish species in Brazil. It is a transitional region that shelters biogenic reefs to the north and rocky reefs under upwelling influence to the south. It was also shown to be one of the most critical areas for conservation actions on the Brazilian coast, as it is a hotspot for endemic, threatened and targeted species. Our plan is to start the implementation of a long-term biodiversity monitoring program in this area.

Accommodation

Siribinha:
Shared bedrooms with own bathroom and toilet facilities



Guarapari:
Tents with shared bathroom facilities



For more images and details visit the Opwall website www.opwall.com

Croatia overview



Expedition to the Krka Valley to help with biodiversity surveys and the opportunity to dive and help with marine surveys in the Adriatic.

- Key facts**
- Opportunity to work in the spectacular Krka river valley in an area with wolves, jackals and other keystone species
 - Only European based expedition that provides the opportunity to combine marine and terrestrial research work
 - Includes boat trip through the Adriatic Islands and the chance to work at a research centre on the island of Silba



Travel information

Airport: Split

Arrival Day: Thursday (before 1500hrs)

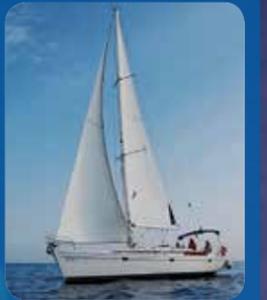
Departure Day: Wednesday (after 1200hrs)

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Structure

Biodiversity research in the Krka valley and diving in the Adriatic

The first week of this two-week expedition is spent in the valley of the Krka National Park. At this site you will complete a series of lectures about Balkans wildlife and conservation, whilst during the day you will work alongside a series of research teams. The projects include mist netting for birds and recording morphometrics, plumage and moult, and mammal surveys using camera traps and searches for prints and faecal samples. The valley houses some extremely rare and important species of snake such as the venomous nose horned viper, Vipera ammodytes, and the leopard rat snake, Zamenis situla, and these are surveyed using opportunistic searches along transect lines and from traps. Surveys are also completed for both native and invasive fish, using electrofishing. Biodiversity surveys of some of the larger cave systems which are also home to the blind cave salamander, Proteus anguinus, are carried out by one of the teams.



Key Surveys:

- Fish surveys
- Birds
- Reptiles
- Butterflies
- Cave fauna
- Mammals

In the second week, you will move to Silba Island. During this week if you are not dive trained you will complete a PADI Open Water dive training course. If you are already dive trained or would prefer to snorkel this week you can complete the Mediterranean ecology and survey techniques course, with two lectures and two practicals each day (either by diving or snorkelling). Alongside these training courses students can assist with some of the research projects, such as estimating and monitoring fish populations and seagrass surveys.

Courses:

- PADI Open Water dive training course
 - or
 - Complete a Mediterranean marine ecology course*
- * Can be completed by snorkelling only or as a fully qualified diver



Key Surveys:

- Stereo-video fish surveys
- Seagrasses

Expedition Research Objectives

The Krka Valley runs from the Dinaric mountains bordering Bosnia to the Adriatic and is only 60km in length. However, since the river runs through limestone there are some spectacular gorges and this is one of the most scenic river valleys in Europe. It is also important from a biodiversity viewpoint containing 20 endemic fish species and spectacular cave systems containing a number of potentially new species to science.

Tourism in the Krka Valley is concentrated in the lower end of the valley and few people visit the central and northern parts of the valley. The Krka National Park authorities have built a research centre and museum in a remote part of the valley, in an attempt to attract more visitors away from the tourist hotspots. This project is working with scientists to provide data on the status of the endemic fish species, describing the cave fauna, examining how so many species of snake are separating their niches in the valley and assessing the impact of wolves moving down the valley and on the surrounding plateaus on the native jackal and fox populations. All these data are being fed back to the Krka valley research centre and the Park authorities hope to use this initial work as a way of attracting additional international researchers to the valley.

Silba Island is in the northern Dalmatian archipelago and is a car and hotel free island. The island markets itself as a haven of tranquillity and much of the island is still covered by Mediterranean black oak and maquis. The objective of our partners on this island is to map the marine biodiversity around the island and particularly on the rocky reef islets which are currently protected for their breeding bird colonies, but which have no protection for their fish or seagrass communities.

Accommodation

Krka:
Shared bunk beds in dormitory style rooms with shared bathroom and toilet facilities



Silba:
Shared bunk beds in dormitory style rooms with shared bathroom and toilet facilities



For more images and details visit the Opwall website www.opwall.com

Dominica overview



Expedition to the 'Nature Island' of the Caribbean to help with a series of biodiversity and climate change research projects.

- Key facts**
- Opportunity to research recovery dynamics of tropical forests following a catastrophic weather event
 - Specific research on how climate change may affect tropical island species
 - Combines whale watching with forest research and the chance to dive



Travel information

Airport: Douglas Charles Airport (formerly Melville Hall)

Arrival Day: Sunday

Departure Day: Saturday

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com



Expedition Research Objectives

The Caribbean region is a Biodiversity Hotspot and is recognised as a conservation priority area. Despite occupying just 0.15% of Earth's surface the Caribbean is home to 2.3% of the planet's primary vegetation and 3.5% of all vertebrate species. Endemism in the region is also high with 100% of amphibians and 95% of reptiles found only in this hotspot. Operation Wallacea began surveying on the island in 2014, with large scale biodiversity surveys for birds, bats, invertebrates, reptiles and habitat. This has resulted in the discovery of 7 new species to science, many new species for the island and a much better understanding of the ecology of Dominica's wildlife.

On September 18th 2017 Dominica was hit by a devastating hurricane. Hurricane Maria hit Dominica at category five speed, with all areas of the island affected. The high winds and rains have had a significant environmental impact: early estimates predict 30% tree loss across the island, with most of the remaining trees losing foliage and branches. The impact on wildlife is currently unknown, so Opwall and its volunteers now have a unique opportunity to study the recovery of the forest after such a big event, using data from years previous to the hurricane for comparison. Our current focus is to study the impacts of Hurricane Maria and investigate ways to mitigate against biodiversity loss in the future from such events.

In addition to the forest conservation priorities, Operation Wallacea, in partnership with the Dominican Fisheries Department, have identified priority marine areas around the island for investigation. These areas are surveyed using stereo video, 3D modelling and benthic study methods. Results from these surveys will begin a marine monitoring scheme that can measure changes in the reef over time, and help advise the Dominica Fisheries department of any conservation measures that may need to be put in place.

Expedition Structure

Caribbean biogeography and ecology

The first week will be spent in the tropical forests of Dominica. The first day will be spent on lectures and orientation. The Caribbean Island ecology course runs throughout the first week and will cover topics such as the importance of the Caribbean biodiversity hotspot, the formation of the Lesser Antilles and biodiversity of Dominica, volcanology and survey techniques being used on the various projects during the week. On the second day the group will be divided into teams which will spend the next five days rotating around the different research activities, spending either a full or part day in turn on each of the 6 surveys listed below. These surveys will be interspersed with lectures, talks and practical sessions.



Key Surveys:

- Birds
- Invertebrates
- Forest structure
- Bats
- Herpetofauna
- Marine invertebrates



The second week will begin by travelling to Roseau, the capital of Dominica, where students will join a sea mammal search on a small catamaran. Here they will learn about some of the sea mammal research taking place around Dominica, and hopefully locate a sperm whale pod using hydrophones. The sea mammal search will end in Portsmouth in the north of Dominica from where groups will make the short transfer to Fort Shirley in the Cabrits National Park. The fort grounds have stunning views out over the island. Students will then take part in one of the courses, either learning to dive, or taking part in the Caribbean reef ecology course if they are already dive trained or have chosen to snorkel instead. Students will attend reef ecology lectures and assist in the analysis of stereo video data - identifying fish from underwater footage of the reef.

Courses:

- PADI Open Water dive training course
- or Caribbean reef ecology course*

* Can be completed by snorkelling only or as a fully qualified diver

Accommodation

Forest sites:
Tents or shared dormitories in a camp site



Fort Shirley:
Bunk beds in shared dormitories with shared bathroom facilities.



For more images and details visit the Opwall website www.opwall.com

Ecuador and The Galapagos overview



Expedition with the first week in lowland Amazonian rainforest and the second week participating in a Galapagos Island Ecology course.

- Key facts**
- Experience the truly remote Ecuadorian Amazon
 - Visit the iconic Galapagos Islands
 - Dive with sea lions and see giant tortoises



Travel information

- Arrival Airport:** Quito
- Departure Airport:** Baltra (Galapagos Islands)
- Flights to the Galapagos should be booked at the same time as your international flights. Please check with the Opwall travel team before booking.
- Arrival Day:** Monday
- Departure Day:** Monday (after 1700hrs)
- Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Structure

Lowland tropical forest surveys with manta ray and whale shark research

In the first week groups will travel to the remote Sani Reserve forest camp which is accessed by long boat along the Napo River. Whilst there students will complete an Amazonian Wildlife and Conservation course which comprises lectures and field based practicals, as well as joining the different research teams. Surveys include point counts and mist nets for birds, camera traps for large mammals and primates, habitat and vegetation community surveys, standardised searches for herpetofauna and a variety of invertebrate surveys.

Key Surveys:

- Birds
- Vegetation
- Large mammals
- Herpetofauna
- Primates
- Invertebrates



During the second week groups will complete a Galapagos Island ecology course which will cover the following topics: Introduction to the Galapagos Islands, vegetation zones and how species arrived, introduction to the Galapagos marine environment, fish and invertebrates of the Galapagos, endemic species of the islands, marine megafauna of the Galapagos, adaptive radiation and conservation of the Galapagos. Alongside the lecture series, students will also complete associated land and marine based practicals.

Course:

- Galapagos Island Ecology Course*
- * Can be completed by snorkelling only or as a fully qualified diver

Key Aspects:

- A Discover Scuba Dive
- Guided Visit to the Coastal Arid and Mangrove Zones
- Guided Visits to the Transitional and Humid Zones
- Geology Guided Visit
- Visit to Santa Fe

Expedition Research Objectives

Much of the Amazonian forest in Ecuador is under threat from oil extraction. In the Amazon, oil extraction has traditionally been followed with deforestation of the areas of extraction and has often been of little benefit to the native people on whose land the oil extraction is occurring. The Kichwa Amerindians have managed to protect their forests against proposed oil extraction. In essence, the Kichwa Indians are foregoing income from the oil industry in order to protect the forest, and that income needs to be replaced by an income of the same level or greater in order to ensure the long-term protection of the forests. Sani Eco Lodge was developed by the Kichwa community to create ecotourism income that provides sustainable jobs and income from leaving their forests intact. They have constructed a high-end ecotourism lodge in the centre of the 40,000 hectares that encompass the Sani Reserve, and a separate field research camp that is being used by the Opwall survey teams, and as a camping experience for the high end ecotourist visitors. In 2017 the first teams of Opwall scientists completed a detailed habitat and vegetation communities map of the reserve, compiled a photographic guide to the fish and amphibians of the reserve and gained initial distributional data on the birds and large mammals. As our research continues further teams of specialists will be developing the information on the biodiversity of this site yet further during the Opwall season.

The Galapagos portion of the expedition focuses on environmental education and training rather than research.

Accommodation

Ecuador forest:
Shared tents in a campsite



Galapagos Islands:
Tents followed by shared hotel rooms



For more images and details visit the Opwall website www.opwall.com

Fiji overview



Expedition to help create the first large national park in Fiji with a week in the endemic-rich forests and a second week diving in the largest bay in the South Pacific.

- Key facts**
- Be involved with the creation of the first large national park in Fiji
 - Dive in the largest bay in the South Pacific
 - Explore previously unsurveyed reefs
 - Spend time with local Fijian communities and learn about the ecology of Pacific islands



Travel information

Airport: Labasa Airport

Arrival Day: Sunday

Departure Day: Saturday

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

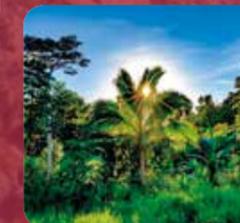
Expedition Structure

Unspoilt forests and spectacular reefs

During the first week of the expedition groups spend 2 nights in a traditional Fijian village before trekking up the mountains into the heart of the Natewa National Park to experience local Fijian culture and customs. During their 4 days and nights in the forest, students will complete a course on Pacific Island Ecology which summarises published literature over the last 10 years and has been written by Professor Martin Speight from Oxford University. During the day the students will join the research teams exploring the peninsula. The projects include quadrat surveys to assess forest structure and carbon levels, invertebrate surveys, bird point counts and transects in different parts of the peninsula and mist nets in order to describe patterns and trends in breeding, and, surveys of the invasive mongoose. This project is developing rapidly as new discoveries are made and by 2019 and 2020 additional arthropod surveys will be included.

Key Surveys:

- Forest structure
- Mongoose
- Birds
- Arthropod and molluscs
- Butterflies



During their second week students will complete six days of training in marine ecology at Natewa Bay Marine Research Centre. The work of Operation Wallacea has helped to establish a marine research centre and groups will be staying in two-person tents with views of the bay. At Natewa Bay Marine Research Centre the students have the option of completing their PADI Open Water dive qualification. If they are already dive trained or don't want to learn to dive then they can do the Pacific Reef Ecology Course (with the practicals done either by diving or snorkelling). Some of the practicals involve working with the marine biologists on site who are completing 3D modelling of the reefs and stereo video surveys of fish communities. A third alternative is to complete their theory and confined water practicals before coming out and then just do their 4 open water dives to achieve the PADI Open Water qualification and then move onto the reef ecology course. Students will be occupied in the evenings through a series of science talks, documentary viewings and discussions/activities relative to the ecology course.

Courses:

- PADI Open Water dive training course
 - or
 - Pacific Reef Ecology Course*
- * Can be completed by snorkelling only or as a fully qualified diver



Expedition Research Objectives

There are no substantially sized national parks in Fiji because most of the land is owned by family groups (called mataqali). One of the best candidates for a national park would be the Natewa peninsula on the island of Vanua Levu. This 'almost island' is connected only by a 2km wide strip of land to the rest of the island and has a number of species of birds, invertebrates and trees that are unique to the peninsula and the nearby island of Taveuni. The Opwall science teams are helping to identify the biodiversity value of this peninsula and of the nearby Natewa Bay.

The first surveys in 2017 & 2018 discovered a number of Fiji endemic species including 15 birds, 3 reptiles, 4 butterflies, 22 snails and 26 trees. Amongst this group of endemics though are the Natewa Silktail and the newly described Natewa Swallowtail that are both endemic just to the peninsula!

From 2019 onwards the surveys are being completed across the whole of the peninsula with mobile survey teams. In addition, from 2019 onwards a marine research programme is being established in Natewa Bay to build a species list of fish, coral and macroinvertebrates on these virtually unsurveyed reefs. Using new technology such as stereo video and 3D mapping an annual monitoring programme on a selection of reefs is being established so that changes in reef fish community structure or coral cover within the bay can be quantified.

The objective of these studies is to identify the best remaining areas of forest within the peninsula so that they can be declared as a national park. However, one of the early findings of the surveys has been how widespread the invasive mongoose has become across the whole peninsula. The mongoose have had an enormous impact on the reptile and amphibians in the forest and also on some ground bird species. The intention is to develop a trapping programme using local communities to reduce, or preferably eliminate, the introduced mongoose, rat, feral cat and cane toad species from the Natewa peninsula. A predator proof fence across the narrow neck of the peninsula is also being proposed so that the Natewa forests and the outstanding reefs in the Natewa Bay can become an important visitor attraction for Fiji.

Accommodation

Natewa Forest:
Field camp and shared tents



Natewa Marine:
Shared tents



Guyana overview



Expedition to some of the most biodiverse forests in South America to work on a project looking at the effects of a sustainable forestry management strategy.

- Key facts**
- Part of the Guiana Shield – a huge expanse of undisturbed tropical rainforest and one of the last frontier forests on earth
 - One of the most diverse ecosystems on the planet – with a very high abundance of Neotropical megafauna
 - Most remote of the forest expeditions
 - Opportunity to examine whether logging can be managed to have minimal impact on biodiversity
 - Run in partnership with Amerindian tribes eager to share traditional knowledge, tracking skills, bushskills, and medicine



Travel information

Airport: Georgetown Airport (Cheddi Jagan International)

Arrival Day: Monday (before 1900hrs)

Departure Day: Tuesday

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Structure

Biodiversity and Neotropical megafauna of the Guiana Shield

This expedition is to the spectacular Iwokrama forests on the Guiana Shield which has the same megafauna species and abundances as the best remaining parts of the Amazon. Of your two-week expedition, you will spend your first two days in the Iwokrama Forest research centre on the banks of the Essequibo River completing a lecture course on Guiana Shield wildlife and conservation, accompanied by practicals training you in some of the survey techniques being used. After that you will spend a week in a remote forest camp where surveys will be completed on forest structure, dung beetle communities, reptile and amphibian surveys from standard search transects and spotlighting at night, point counts, soundscape analysis and mist netting for birds, distance sampling to survey primates, patch occupancy and camera trapping for jaguars, pumas and other large mammals, mist netting and sound analysis surveys for bats. The last three days are spent on a boat survey along the Burro Burro River where you will be helping with water bird, giant river otter and arapaima surveys.

Key Surveys:

- | | |
|---------------|---------------------------|
| Birds | Bats |
| Herpetofauna | Forest structure |
| Invertebrates | Camera trapping |
| Large mammals | Burro Burro River surveys |

Courses:

- Guiana shield wildlife and conservation course



Expedition Research Objectives

The Iwokrama forests on the Guiana Shield in Guyana are 1 million acres of mainly pristine lowland rainforest, that have been handed by the Guyanese government to the Commonwealth Secretariat to manage as a demonstration site. The Secretariat is committed to managing the rainforest in a way that protects both biodiversity and develops income for local communities. The first attempt to develop such a strategy was the idea of using the site for ecotourism to sustainably produce income. However this failed to attract sufficient numbers to what is a very remote area. The decision was made to develop a limited logging programme in such a way that it had minimal impact on the spectacular wildlife of these forests. Half of the area was set aside as a wilderness area where no activities or extraction was allowed. The remaining forest was to be selectively logged on a 60 year rotation. The thesis that the foresters started with was that only a handful of the species have any commercial value and that only these would be targeted. Detailed maps are prepared of each 1km x 1km block of forest showing the position of each of the trees to be targeted and where the skid trails should be installed to minimize any losses of other species. The net result is that only 1% of trees (5% by volume) in any block are being harvested or damaged by the extraction process. The harvesting seems to produce as much return on investment as traditional harvesting techniques which are considerably more damaging, but does this new approach also minimise impacts on wildlife? The Opwall teams are helping scientists to compare the biodiversity value of a range of taxa in sites that have been recently logged, logged some years previously and wilderness areas.

1 week programme available
Contact us for details and itinerary

Accommodation

Initial 2 days:
Shared dorm style rooms



Rest of the expedition:
In hammocks



For more images and details visit the Opwall website www.opwall.com

Honduras overview



Expedition with the first week in species-rich cloud forest working with biodiversity researchers and a second week diving at one of the Opwall marine research centres on Utila or Roatan.

- Key facts**
- Largest number of forest research scientists and most published research site in Honduras
 - In the top 50 most irreplaceable forest sites in the world
 - Marine research focusses on finding solutions to major themes facing Caribbean coral reefs
 - Technological advancements developed on Utila may change future approaches to coral reef research



Expedition Research Objectives

The forests of Central America are some of the most species diverse forests in the world, partly because they are the meeting point of two great faunas – from North and South America – which have evolved separately. Many of these forests have been badly damaged, but there is a proposal to join currently discontinuous areas of forest into a continuous Mesoamerican forest corridor between the Yucatan peninsula in Mexico to the forests of Panama. Part of this corridor will be the cloud forests of Cusuco National Park in Honduras, however these forests have suffered some significant deforestation. Opwall survey teams have been working in Cusuco since 2003, and the data produced has resulted in Cusuco National Park being listed as one of the top 50 most irreplaceable forest sites out of 173,000 protected areas worldwide. Data collected by Opwall teams are also used to apply to the Natural Forest Standard (NFS) for funding to allow the issue of credits that can be sold to multinational companies wishing to offset their carbon emissions, while at the same time protecting biodiversity. Funding raised in this way can then be used to manage and protect the park.

In the Caribbean, there are a number of core issues that have been affecting the biodiversity of the reefs – including the mass mortality of keystone sea urchins that have allowed algal colonisation of reef areas, an invasive species originally from the Indo-Pacific (lionfish) that acts as a predator on reef fish which has been spreading across the Caribbean and overfishing of reef fish by local communities. Opwall has three monitoring sites in Honduras, two of which are part of the schools programme: the islands of Utila and Roatan. At both sites, teams of Opwall scientists and students collect annual monitoring data to assess temporal patterns of ecosystem change, alongside novel research to address key management priorities and gaps in our current understanding of tropical marine coastal ecosystem function.

Travel information

Airport: San Pedro Sula Airport
Arrival Day: Tuesday
Departure Day: Tuesday (after 1600hrs)

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Structure

Cloud forest biodiversity research and diving/snorkelling on Caribbean coral reefs

During the first week groups will travel to Cusuco where they will take part in a course on Neotropical forest ecology including lectures and field based practicals, as well as joining the different survey teams. There is also the option to participate in a canopy access experience*. For three nights participants will be working in one of the more remote camps deep in the heart of the forest. Surveys include forest structure surveys for the Natural Forest Standards application, bird point counts and mist nets, standardised searches for amphibians, large and small mammal population monitoring, mist nets for bats and a range of different invertebrate surveys such as light traps for the spectacular jewel scarab beetles.

Key Surveys:

- | | |
|------------------|------------------------------|
| Forest structure | Bats |
| Birds | Mammals |
| Invertebrates | Canopy access* |
| Herpetofauna | * carries an additional cost |

In the final week you will go to either Utila or Roatan marine research sites and complete a PADI Open Water dive training course or a coral reef ecology and marine survey methods course with practicals by diving (if already trained) or snorkelling.

Courses:

- | | | |
|--|----|--------------------------------|
| PADI Open Water dive training course | or | Caribbean reef ecology course† |
| † Can be completed by snorkelling only or as a fully qualified diver | | |



1 week programme available
 Contact us for details and itinerary

Accommodation

Cusuco:
 Shared tents with camping toilets and showers



Cusuco field camps:
 Shared tents or hammocks with field toilets and river showers



Utila:
 Bunk beds in dormitory style rooms with shared bathroom and toilet facilities



Roatan:
 Bunk beds in dormitory style rooms with shared bathroom and toilet facilities



For more images and details visit the Opwall website www.opwall.com

Indonesia overview (Wallacea region)



Expedition with the first week in the endemic-rich lowland forests of Sulawesi to help with biodiversity surveys and a second week diving at one of the Opwall marine research centres in the heart of the Coral Triangle.

- Key facts**
- In the centre of the Coral Triangle – the world's most biodiverse reefs
 - Endemic rich forests with new species described and more still to be discovered
 - Most published research site in the Coral Triangle and third most published terrestrial site in Sulawesi
 - Most developed Opwall site for conservation interventions with carbon and seaweed projects



Travel information

Airport: Makassar (formally Ujung Pandang)

Arrival Day: Saturday (before 2300hrs)

Departure Day: Saturday (after 1930hrs)

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Structure

Lowland forest ecology surveys and diving/snorkelling in the spectacular Coral Triangle

The first week is split between jungle skills training (including an optional canopy access experience*), learning about Wallacean wildlife and ecology from lectures and field based practicals, and joining the biodiversity surveys. You will be based in a forest camp which you will access via a small rural village on the island of Buton. Surveys include forest structure measurements as part of a REDD+ application, standard searches for herpetofauna, bird point counts, patch occupancy analysis for large mammal populations, sweep nets surveys for butterflies and mist nets or harp traps for bats.



Key Surveys:

- | | |
|------------------|---|
| Forest structure | Butterflies |
| Herpetofauna | Bats |
| Birds | Canopy access* |
| Mammals | <small>* carries an additional cost</small> |



The second week will be based at either of Operation Wallacea's research sites. One of these is near the town of Bau Bau on the island of Buton, and the other is on a tiny island called Hoga which is accessed via a long boat journey. At the marine sites students have the option of completing their PADI Open Water dive qualification. If they are already dive trained or don't want to learn to dive then they can do the Indo-Pacific reef ecology course (with the practicals done either by diving or snorkelling). Students will be occupied in the evenings through a series of science talks, documentary viewings and discussions/activities relative to the ecology course.



Courses:

- PADI Open Water dive training course **or** Indo-Pacific reef ecology course*
- * Can be completed by snorkelling only or as a fully qualified diver

Expedition Research Objectives

The Wallacea region comprises islands of the central part of the Indonesian archipelago that are separated by deep ocean trenches which prevented them from being joined to the main continental land masses during the lowered sea levels of the Ice Ages. As a result of the long period of isolation, a large number of unique species evolved. The forests of the Wallacea region are one of the least biologically studied areas in the world and one of the most likely places to discover vertebrate species new to science. Since 1995, the Opwall teams have been surveying the biodiversity of Buton Island in SE Sulawesi, so that more information is now available on the wildlife of this well studied area than anywhere else in the Wallacea region. The Opwall gathered data are being submitted to support a REDD+ application to protect the carbon and biodiversity of the forests and ensure that local communities have a financial benefit from this conservation programme.

There is a triangle of reefs in Eastern Indonesia that have the highest diversity of hard coral genera, the proxy commonly used to assess overall diversity of coral reefs anywhere in the world. Both the marine research stations being used by the Opwall teams are in the centre of this triangle. The South Buton Marine Training and Research Centre has established a series of standard monitoring sites on reefs south of Bau Bau and the objective is to use the data and extend the boundaries of the Wakatobi Biosphere Reserve. The Hoga Island Marine Research Station is located in the heart of the Wakatobi Marine National Park. Over the last 20 years, a series of scientists have been based at this site during the Opwall survey seasons and as a result, this is now the most published site in the Coral Triangle. For the last 13 years a series of constant monitoring sites around Hoga and eastern Kaledupa have been monitored for macroinvertebrates, fish communities, coral cover and community structure. Students will continue this monitoring and also include some additional research projects.

1 week programme available
Contact us for details and itinerary

Accommodation

Village:
Local homestays in pairs (or more) of students, with traditional mandi bathrooms



South Buton Marine Research Centre:
Shared bedrooms with own bathroom and western style toilet facilities



Buton forest camp:
Hammocks or shared tents with camp beds. Field toilets and river showers



Hoga Island Marine Research Station:
Traditional wooden houses with traditional mandi bathrooms



For more images and details visit the Opwall website www.opwall.com

Madagascar overview



Expedition with the first week working on biodiversity surveys in dry forest or rainforests, the second week on the northern part of the island at the marine site of Nosy Be.

- Key facts**
- 90% of all animals and plants found on Madagascar are endemic to the island
 - Only 10% of original Madagascar forest coverage remains, so urgent need for conservation
 - Unstudied coral reef systems at Nosy Be
 - World's fourth largest island



Travel information

- Inbound Airport:** Antananarivo (Ivato Airport)
- Outbound Airport:** Antananarivo (Ivato Airport) - forest site or Nosy Be - marine site
- Arrival Day:** Friday
- Departure Day:** Sunday (Antananarivo), Saturday (Nosy Be)
- Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Structure

Lemurs and diving

On this expedition, you will spend the first week in the dry forests of Mahamavo and then a week on the reefs in Nosy Be. During the first week at the forest camp you will have lectures about Madagascar wildlife and conservation, but for most of the time you will be rotating between a series of research projects. These projects include studies on the structure and composition of the forest, pollard counts of butterflies, spotlighting for amphibians, herpetofauna routes, bird point counts and mist netting, and distance sampling for lemurs (both day and night). In addition, there are other projects running such as colour change in chameleons, analysis of land change from satellite data, small mammal trapping, mark-release-recapture of nocturnal mouse lemurs and others that also require assistance from time to time.

Key Surveys:

- Birds
- Forest structure
- Herpetofauna
- Lemurs
- Butterflies

At the end of this first week you will transfer to Nosy Be. If you are not dive trained, then your week at the marine site will involve completing a SSI Open Water dive training course. Alternatively, if you are already dive trained or just want to snorkel then your week at the marine site will be completing the Indian Ocean reef ecology course and time can be spent helping the researchers with the 3D modelling of the reefs and quantification of the fish communities from the stereo-video surveys.

Courses:

- SSI Open Water dive training course
 - or
 - Indian Ocean reef ecology and survey techniques course*
- * Can be completed by snorkelling only or as a fully qualified diver



Expedition Research Objectives

Madagascar has declared 17% of its land as protected areas, but much of this land is already severely degraded, so the actual area of land under protection is much smaller. An alternative approach to just declaring land as protected and not allowing any usage, is to develop community managed areas such as Mahamavo, where there is a patchwork of protected and managed areas. DTZ, the German Technical Support Agency has established a series of community managed forests in the Mahamavo area that appear to be successful and may form the basis for conservation and improving livelihoods in other parts of Madagascar. The Opwall teams are monitoring how the forest structure and biodiversity in these community managed forests are changing over time to identify whether these community managed forests provide a viable alternative to national parks in terms of protecting biodiversity. The dry forests around Mahamavo have exceptional diversity with two species of diurnal lemur and another five to six species of nocturnal lemurs, two spectacular species of chameleons and many endemic birds. In addition to the forest work, the Opwall teams are also documenting the biodiversity value of the adjacent wetlands with a view to getting this area upgraded to a Ramsar site (a Ramsar Site is a wetland site designated of international importance under the Ramsar Convention).

Nosy Be is the premier dive destination on Madagascar, but there are few data on the coral reef communities that support this industry. The Opwall teams are gathering baseline data on the reefs of Nosy Be including data on fish community structure from stereo video surveys and coral cover from video transects and 3D modelling of the reefs.

Accommodation

- Mariarano village:** Shared tents with latrine toilets and bucket showers
- Matsedroy field camp:** Shared tents with latrine toilets and bucket showers.



- Nosy Be:** Bunk beds in dormitory style rooms with shared bathroom and toilet facilities



For more images and details visit the Opwall website www.opwall.com

Malawi overview



Expedition to Malawi to help with human-wildlife interaction surveys, learn about management of large game species in wildlife reserves and dive in Lake Malawi.

- Key facts**
- Study human-wildlife interactions and their effect on biodiversity
 - Cultural exchange with local people in the Lilongwe area
 - Learn to dive in Lake Malawi, which has a greater diversity of fish than any other lake in the world



Travel information

Airport: Lilongwe International Airport (LLW)

Arrival Day: Monday

Departure Day: Monday (after 2000hrs)

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com



Expedition Research Objectives

Biodiversity has never been more in danger than it is today. With human encroachment expanding, the wild areas in which biodiversity is traditionally thought to thrive are diminishing. But what about species that have found a niche outside of these "wild" areas? Species that have learnt to live alongside humans in the most unorthodox of places? Lilongwe – Malawi's capital – is small and rural in comparison to many African cities and maintains healthy populations of several carnivores, including hyena. So if the predators can survive here, what unstudied biodiversity is supporting them?

Opwall and it's scientists are working with local experts from Conservation Research Africa to monitor the biodiversity of this area and use this data to inform human-wildlife conflict mitigation. Spotted hyena and other carnivores are monitored through camera trapping, while bat diversity is studied through trapping and acoustic methods and is used as an indicator of overall biodiversity. Together we are also implementing novel invertebrate and bird monitoring in the area to establish baseline biodiversity estimates for these groups.

Lake Malawi has more species of fish than any other lake in the world, but most are more closely related to other species living in the lake than to species living elsewhere. So it appears that speciation is happening within the lake, but surprisingly little is known about how this occurred. At this site we are paired with a Malawian lake research centre, The Maru, which conducts underwater population and biodiversity surveys of the Lake's cichlid fish populations, a water quality monitoring programme and a fisheries monitoring programme. The goals of each of these programmes is to gather more detailed baseline data sets of cichlid population dynamics in the lake, its water quality and its fisheries and to assess the extent to which correlations between the three data sets might help explain changes within them.

Expedition Structure

Biodiversity research in Lilongwe, visit to Liwonde National Park and diving in Lake Malawi

The first five nights will be based in Lilongwe Research Centre helping to assess the biodiversity of the many green spaces, wetlands and river corridors in the area. Alongside receiving a series of lectures on the impact of humans on biodiversity in Africa, the groups will be split into smaller teams to collect data for a series of research projects. Camera traps and GPS tracking are used to monitor carnivore populations, focusing largely on the spotted hyena. Bat and bird surveys will be performed at selected survey sites throughout the area using methods such as harp-trapping, mist-netting, acoustic measurements and point counts. Detailed vegetation assessments will also occur at these sites. With the animals living in such close quarters with humans, environmental education is an important part of mitigating human-wildlife conflict. Students will have the opportunity to work with a local school or community group to share experiences of wildlife in their hometowns and learn about each other's culture.

Key Surveys:

- Hyena monitoring
- Small mammals
- Bats
- Birds
- Invertebrates
- Flora surveys
- Cultural exchange



For the second portion of the expedition you will move to Nkhata Bay on the shores of Lake Malawi. During this week if you are not dive trained you will complete a PADI Open Water dive training course. If you are already qualified or would prefer to snorkel, you will complete the Lake Ecology and survey techniques course, with lectures and in-water practicals each day (either by diving or snorkelling). Alongside these training courses students may be able to assist with some of the research projects, such as monitoring fish populations and water quality.

Groups will finish their expedition with a visit to Liwonde National Park. This is the best National Park in Malawi for big game viewing and you will undertake both a boat-based and vehicle safari as well as learning about reserve management.

Courses:

- PADI Open Water dive training course
 - or
 - Lake ecology and survey techniques course*
- * Can be completed by snorkelling only or as a fully qualified diver



Key Surveys:

- Fish populations
- Water quality

Accommodation

Lilongwe:

Bunk beds in dormitory-style rooms with shared bathroom and toilet facilities



Liwonde:

Bunk beds in dormitory-style rooms with shared bathroom and toilet facilities



Lake Malawi:

Bunk beds in dormitory-style rooms with shared bathroom and toilet facilities



For more images and details visit the Opwall website www.opwall.com

Mexico overview



Expedition with the first week helping researchers in the biodiverse rich Mayan forest and a second week diving and helping with turtle and reef surveys.

- Key facts**
- The Selva Maya (Mayan Jungle) is the largest expanse of tropical forest outside of the Amazon
 - Calakmul is one of the two largest ancient Mayan ruined cities
 - Best chance of seeing endangered species like jaguar
 - Akumal has huge numbers of nesting turtles and a permanent population of green turtles



Travel information

Airport: Cancun

Arrival Day: Sunday

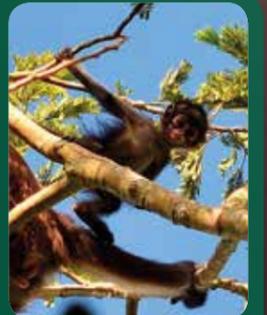
Departure Day: Sunday (after 1600hrs)

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Structure

Tropical forest and Caribbean diving ○○

The two week expedition involves spending a week in the jungle of the Calakmul Biosphere Reserve before moving to the picturesque Caribbean marine site of Akumal Bay. During your first week in the Mayan jungle, you will complete an introduction to the ancient Maya and Mayan jungle ecology course alongside practicals in survey techniques and assisting with biodiversity surveys. Mist net surveys including morphometric measurements of captures are used to monitor birds and bats and the species captured varies considerably across camps. Large mammal surveys involve recording primate sightings (distance sampling) and terrestrial mammal tracks (patch occupancy sampling) encountered along forest transects during morning surveys accompanied by an afternoon session analysing camera trap data. Herpetofauna are surveyed using line transect surveys and timed searches of aguada habitats. Frugivorous butterflies are surveyed using baited traps in different forest types. Forest structure is an essential dataset for the project and you will also assist with carrying out quadrat samples.



Key Surveys:

- Forest structure
- Herpetofauna
- Birds
- Bats
- Invertebrates
- Mammals

In the second week you will be at the Opwall Akumal marine site to complete a PADI Open Water dive training course. If you are already dive trained or just wanting to snorkel and not dive, then you will complete the Caribbean reef ecology course with practicals by either diving or snorkelling. Diving and snorkelling in Akumal provides an excellent example of the Caribbean reef with an abundant population of sea turtles.

Courses:

- PADI Open Water dive training course
 - or
 - Caribbean reef ecology course*
- * Can be completed by snorkelling only or as a fully qualified diver

Expedition Research Objectives

The Calakmul Biosphere Reserve (CBR) in Mexico is an UNESCO World Heritage Site of Culture and Nature and is part of the largest expanse of tropical forest north of the Amazon. It is filled with Ancient Mayan ruin sites and has one of the highest biodiversity levels in the world. The CBR is an extremely important wildlife corridor that is crucial for migrating birds and animals with extensive ranging patterns such as jaguar and tapir. Over the last 10 years the reserve has experienced a notable reduction in rainfall. Monitoring data on birds, bats, herpetofauna, butterflies, ungulates, felids and primates are being used to evaluate the impact of climate change and changing rainfall patterns on the abundance, ranging and diversity of fauna to help determine when and where mitigation should be used to restore water sources. Data are also used to assess the efficacy of a range of sustainable development projects with buffer zone communities designed to minimise forest encroachment. In addition, there are specialist studies on jaguar and their preferred prey, behaviour of spider monkeys and population levels of Morelet's crocodiles.

At the marine site, the research is focussed on assessing the efficacy of the newly formed Akumal marine protected area on the abundance and health of seagrasses and the impact of snorkel tours on the abundance, health and behaviour of sea turtles. The new protected area also provides the opportunity for recovery of the coral reefs, but as natural coral recovery rates are so slow, we are assisting the process by attaching coral fragments to artificial reefs composed of different substrates of varying structural complexity in order to assess the best methods for coral reef restoration in the region. Combined with mapping and monitoring of the existing reefs we are able to determine the positive impact of the new protected area on the coral reef ecosystem.

Accommodation

Calakmul:
Shared tents with dry toilets and bucket showers



Akumal:
Bunk beds in dormitory style rooms with shared bathroom and toilet facilities



For more images and details visit the Opwall website www.opwall.com

Peru (Amazon) overview



Expedition based on a research ship in a remote part of the Amazon working with a series of biodiversity researchers.

- Key facts**
- The largest protected seasonally flooded forest in South America
 - The only Opwall site to find pink and grey river dolphins
 - Staying on historically restored Amazon rubber boom ships



Travel information

Airport: Iquitos

Arrival Day: Saturday

Departure Day: Saturday

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Research Objectives

The study site is an area of seasonally flooded forest that connects the Pacaya-Samira National Reserve and the Tamshiyacu-Tahuayo Community Reserve. These reserves span over 20,000 km² of tropical rainforest and teem with aquatic and terrestrial life. The surveys will be conducted from a site on the banks of the Lower Yarapa river, which is a 50 km long channel that originates in the Ucayali river, which itself borders the Pacaya Samira Reserve, and discharges into the Rio Amazonas (River Amazon).

The overarching goal of this project is to help conserve the Peruvian Amazon through field research that provides the science base for biodiversity conservation. Particular areas of focus are sustainable resource use and community-based conservation, impacts of climate change and the mega hydrovia dredging project, and wildlife trade and recovery of endangered species.

The flooded forests (várzea) of this area are particularly susceptible to global climate change which appears to be increasing the frequency of extreme flooding events and low water periods. During the height of the annual floods, much of the várzea area is flooded, but this can be as high as 98% in extreme flooding events, confining land based mammals (agouti, deer, peccaries, armadillos) to small areas of land and thereby significantly impacting their population levels. In times of extreme low water, fish populations and their associated predators (dolphins, river birds) are under stress.

The research is also being used to study another recent threat to the impacts on wildlife and people of the proposed dredging of the hydrovia infrastructure project. Dredging activities are planned for the Hydrovia infrastructure project in the Peruvian Amazon to complete the connectivity between the Atlantic and Pacific oceans via the Amazon. There has been no scientific evidence on how planned dredging may impact the biodiversity and people of the region.

Data has been collected by Fund Amazonia in this area since the 1980's and annual surveys completed by the Opwall teams will allow an expansion of multiple research projects. Climatic change research will include upland forests and there will be continued work on sustainable use and certification projects. Data collection to gain an insight into the possible impacts of dredging on the hydrology and ultimately biodiversity of the region will be an important addition to the research carried out. This information will then be used to make management and policy decisions for the area to help conserve the Peruvian Amazon.

Expedition Structure

Howler monkeys, sloths and dolphins ○○

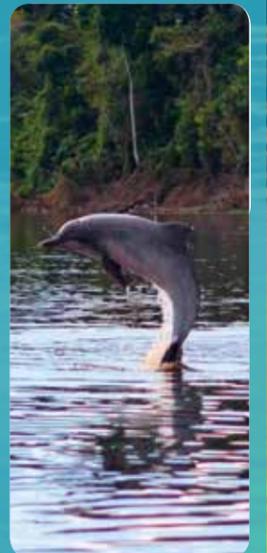
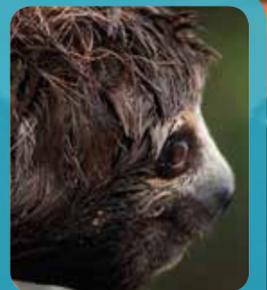
This two-week project is based on a historical research ship which will be moored on the banks of the lower Yarapa river. Students will travel by speedboat to the research site, which will take approximately one hour from nearby Nauta. Once on site you will then be rotating between a series of projects including boat-based surveys of pink and grey dolphin populations, gillnet and rod surveys of the fish communities and point counts of the macaws and wading birds. Foot based surveys of the várzea habitat include forest structure surveys, mist net surveys of the understory birds, camera trap surveys for the big cats, tapirs, peccary and deer, patch occupancy surveys for large mammals and distance sampling for the 8-primate species commonly encountered. After dark you will venture out to assist with fishing bat, amphibian and caiman surveys. Students can expect to participate in a series of lectures on Amazonian wildlife and conservation throughout their trip.

Key Surveys:

- | | |
|------------------------------------|---|
| Macaws | Herpetofauna |
| Water birds | Fishing bats |
| Understorey birds | Nighttime amphibian floating meadow survey |
| River dolphin transects | Nighttime caiman surveys |
| Fishes | Canopy access* |
| Large Mammal and Primate abundance | <small>* carries an additional cost</small> |
| Habitat assessment | |

Courses:

- Amazonian wildlife and conservation course



1 week programme available

Contact us for details and itinerary

Accommodation

Research boat:

bunk beds in dormitory style rooms with shared toilet and shower facilities.



For more images and details visit the Opwall website www.opwall.com

South Africa overview



Two different expeditions are available. Both expeditions include a week working in a game reserve with large mammals conducting important wildlife management research. Groups can choose to combine this with a week diving at Sodwana Bay or a week learning survival skills in Masebe Nature Reserve.

- Key facts**
- The Opwall site with the most abundant terrestrial megafauna
 - Opportunity to work on foot in a Big 5 reserve
 - Learn about wildlife conservation management for Big 5 species
 - Opportunity to learn to dive on one of the expeditions or gain advanced survival skills on the other



Travel information

Airport: Johannesburg
Arrival Day: Thursday
Departure Day: Friday (after 2000hrs)

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Research Objectives

Operation Wallacea and our partners, Wildlife and Ecological Investments (WEI), coordinate large-scale research programmes to provide an empirical backbone for key conservation projects in South Africa. Our main aim is to assist conservation managers with pressing large-scale issues that they do not necessarily have the resources to address themselves. The South Africa research programme covers a series of reserves across the country, each using slightly different management strategies to conserve diversity in their reserves. Big game areas in South Africa are fenced to avoid the spread of disease and conflicts between communities and dangerous animals. It is therefore important to understand how the ranging patterns of large mammals varies depending both the extent of the fencing surrounding them and the presence of human development in the area. Large mammal distributions are therefore monitored regularly through game transects. Our researchers can then combine this information with knowledge of the vegetation and any human activity "hotspots" to begin to understand the drivers behind large mammal movements. In some locations, our teams are also monitoring the use of roads through camera traps and behavioural observations to quantify how roads and vehicles affect animal movement, survival, and behaviour.

While high populations of large mammals are generally considered positive, they can lead to potentially unsustainable levels of vegetation impact when home ranges are restricted. Elephants, for example, are a keystone species but high feeding pressures can lead to excessive impact to the vegetation. By directly monitoring feeding impact on vegetation and its knock-on effects to other taxa, such as birds, our teams can assist the reserve managers to better understand how to manage their elephant populations to maintain a healthy and diverse ecosystem.

Expedition Structure

High Veld or Low Veld wildlife research with diving

This expedition is either in the high veld reserve of Dinokeng or the low veld reserve of Balule. Here the students will spend part of their time on foot or in open vehicles helping with Distance sampling of large mammals, quantifying browsing and grazing pressure for herbivores and point counting for birds. Half of their time will be spent in camp learning about African wildlife conservation and management.

Key Surveys:

- Species distributions
- Large mammals
- Vegetation quadrats
- Birds

The second week is spent in Sodwana Bay in KwaZulu Natal. During this week if you are not dive trained you will complete a PADI Open Water dive training course. If you are already dive trained or would prefer to snorkel you will complete an Indian Ocean marine ecology course, with lectures and in-water practicals each day.

Courses:

- PADI Open Water dive training course
 - or
 - Indian Ocean marine ecology*
- * Can be completed by snorkelling only or as a fully qualified diver

Accommodation

Terrestrial site:
Bunk beds in shared dormitory-style rooms with shared bathroom facilities.



Sodwana:
Tents situated in a shaded bush camp. There is a shared toilet and shower block.



For more images and details visit the Opwall website www.opwall.com

Expedition Structure

Survival course and high veld wildlife research

The first week of this expedition is a wilderness survival course based in Masebe Nature Reserve, a protected area forming part of the UNESCO Waterberg Biosphere. Students will work closely with knowledgeable local guides to develop practical survival skills, including navigation, tracking, foraging and shelter-building. Groups will also explore how pre-modern humans survived in this environment and learn about the cultural heritage of the area from members of the local community.

Course:

- African Origins Wilderness Survival Course

The second week will be spent at the high veld reserve of Dinokeng. Here students will be using skills developed in the first week to assist with wildlife management research. Half of their time will be spent collecting data on the ranging patterns of large mammals, avian diversity and the impact of herbivores on the vegetation with the reserve. The other half will be spent in camp learning about African wildlife conservation and management.

Key Surveys:

- Species distributions
- Large mammals
- Vegetation quadrats
- Birds

Accommodation

Masebe:
Accommodation will be in shared tents with shared bathroom facilities.



Dinokeng:
Bunk beds in shared dormitory-style rooms with shared bathroom facilities.

For more images and details visit the Opwall website www.opwall.com

Transylvania overview



Two or one-week expeditions to the foothills of the Carpathians to help a team of researchers monitor the effects of changes in farming practices on biodiversity in one of the most biodiverse man-made landscapes in Europe.

- Key facts**
- The largest population of brown bears anywhere in Europe
 - Unique medieval high nature value landscape
 - The most diverse wildflower meadows in lowland Europe
 - Best opportunity for Internal Assessment projects for IB



Travel information

Airport: Cluj-Napoca International Airport

Arrival Day: Tuesday (before 1800hrs)

Departure Day: Wednesday (after 1000hrs)

Getting from the airport to the expedition start point can be organised as part of a package by the Opwall travel team: internaltravel@opwall.com

Expedition Structure

Bears, meadows and ancient forests

On these expeditions the groups will be spending a week in each of different valleys in the foothills of the Carpathian mountains in Transylvania. The area is one of outstanding natural beauty with species rich meadows that have been managed with late hay cuts and no fertilisers for the last 700 years and ancient forests that were once part of the forest that covered much of Europe. On this project you will be working with specialists quantifying change in different taxa and using a wide variety of ecological survey techniques. The surveys include assessing the value of meadows from the occurrence of 30 species of plants that are indicators of high quality meadow communities, pollard counts and sweep net surveys of butterflies, point count and mist net surveys for birds, small mammal trapping and camera trapping for the large mammal species including bears and wolves. In addition, there is the opportunity to go out with a member of the local community and see if you can see some of the larger mammals in person, for example bears, wild boar and wild cat. Interview based surveys of small farms are used to assess whether the farming practices. At the end of each week you will travel over the mountains and down into the next valley to repeat the surveys.

Key Surveys:

Camera trapping for large mammals

Birds

Small mammals

Butterflies

Indicator plant species

Courses:

Transylvania wildlife ecology, opportunity to complete Internal Assessments for IB



Expedition Research Objectives

The foothills of the Carpathian mountains in Transylvania is one of the most spectacular and biodiverse areas in Europe. The species rich landscape has been nurtured by the low intensity farming practices stretching back up to 900 years. However, since Romania joined the European Union there was a gradual depopulation of the countryside coupled with moves to increase the efficiency of farming by combining fields and more intensive agricultural practices. To prevent these areas of outstanding natural beauty in the foothills of the Carpathians being affected by intensification, the EU offered farmers grants to continue farming using traditional techniques so as to maintain the landscape.

The Opwall teams in Transylvania are working with a local NGO called ADEPT and a series of scientists monitoring whether farming practices and biodiversity are changing in a series of valleys within the Tamava Mare region. Changes in farming practices such as any moves to silage production, removal of hedges, usage of fertilisers and pesticides or drainage of wetland areas are being monitored since they could have a big impact on the biodiversity. Direct monitoring of the biodiversity of groups such as meadow plant indicator species, butterflies, birds, small mammals and large mammals such as bears and wolves are also being monitored as part of this programme.

1 week programme available
Contact us for details and itinerary

Accommodation

Camp sites:

Tents shared with field toilets and bucket showers



For more images and details visit the Opwall website www.opwall.com



OPWALL OFFICES:

UK HEAD OFFICE

Wallace House, Old Bolingbroke
Lincs PE23 4EX United Kingdom

e: info@opwall.ac.uk

t: +44 (0)1790 763194

Including:

Croatia

e: croatia@opwall.com

Italy

e: italy@opwall.com

Japan

e: japan@opwall.com

New Zealand

e: newzealand@opwall.com

Nordic

e: nordic@opwall.com

Middle East

e: uae@opwall.com

South Africa

e: southafrica@opwall.com

AUSTRALIA

e: australia@opwall.com

t: +62 (0)8124 572 4054

BRAZIL

e: brazil@opwall.com

t: +55 11 974880606

CANADA

e: canada@opwall.com

t: +1 (905) 231-2095

MAINLAND CHINA, TAIWAN, HONG KONG & INDIA

e: asia@opwall.com

IBERIA

e: iberia@opwall.com

t: +315 915 787 531

MEDITERRANEAN OFFICE

e: malta@opwall.com

SE ASIA

e: seasia@opwall.com

t: +62 (0)8124 572 4054

USA

e: usa@opwall.com

t: +1 (973) 920-0487

PHOTO CREDITS; Many thanks to all the Opwall staff, students and partners who risk their equipment, take such fantastic photos and allow us to use them:

Guille Armero, Noah Arre, Luke Benham, Dr Jake Bicknell, Ryan Bollhorn, Dave Byng, Sara Carlson, Dr Hrovje Cizmek, Dr Tim Coles, Katryna Esposito, Katie Garrett, Nayara Hachich, Jack Hague, Dr Justin Hines, Dr Jonathan Kolby, Adam Laverty, Rita Leitão, Jennifer Linton, Sean McHugh, Fabian Muhlberger, James Muir, Matthew Norman, Marthe Odegard, Dr Roger Poland, Dr Nancy Priston, Tom Ross, Benjamin Sadd, Alex Tozer, Frederick Walters, Matthew Whiteley, Julio Yaber

PARTNERS: We have a number of partners in each country but the principal ones for each country are listed



IMPORTANT NOTE: The details of the expedition programmes described in this brochure are correct at the time of going to print. However, note that you will be joining a real scientific expedition and that on occasion the work carried out on individual projects will differ from that described in order to respond to scientific priorities. Please keep checking our website www.opwall.com for the most up-to-date information about the expeditions.



ABTOT

The Association of Bonded Travel Organisers Trust Limited (ABTOT) provides financial protection under ABTOT Combined and The Package Travel and Linked Travel Arrangements Regulations 2018 for Operation Wallacea (ABTOT number 5146), and in the event of their insolvency, protection is provided for the following:

1. non-flight packages;
2. flight inclusive packages that commence outside of the EEA, which are sold to customers outside of the EEA; and
3. flight inclusive packages, flight only and linked travel arrangements (LTAs) sold as a principal under ABTOT Combined.

ABTOT Combined cover provides for a refund in the event you have not yet travelled or repatriation if you are abroad. Please note that bookings made by customers outside the EEA are only protected by ABTOT when purchased directly with Operation Wallacea.

In the unlikely event that you require assistance whilst abroad due to our financial failure, please call our 24/7 helpline on 01702 811397 and advise you are a customer of an ABTOT protected travel company.

You can access The Package Travel and Linked Travel Arrangements Regulations 2018 here: <https://www.legislation.gov.uk/uksi/2018/634/contents/made>

ATOL

All the flights and flight inclusive packages in this brochure are financially protected either by ABTOT Combined or the ATOL scheme. When you pay for something protected by the ATOL scheme you will be supplied with an ATOL Certificate. Please ask for it and check to ensure that everything you booked (flights, hotels and other services) is listed on it. Please see our booking conditions for further information or for more information about financial protection and the ATOL Certificate go to: www.atol.org.uk/ATOLCertificate

