Team Members

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The Bazaruto Expedition is associated with H.E.L.P. (Scotland)
Registered Charity Number: SC018757

Expedition Summary:

Coral reefs and their associated habitats world-wide are being significantly affected by anthropologic stresses . This is thought to be the case in the Greater Bazaruto Marine National Park (Mozambique)(10) , which is a high biodiversity ecosystem (10, 11, 12, 12b) presently being monitored by the WWF. Mozambique is currently recovering from civil war and the more stable political situation has encouraged tourists to return to the country. There have been few recent marine scientific studies done and therefore relatively little information is available for formulating resource management strategies.

We will work with Mozambican counterparts in order to learn from detailed local knowledge and experience. The expedition has been formulated through contact with Dr. Almeida Guissamulo and Dr.Salomao Bandeira, both work at the Universidade de Eduardo Mondlane in Maputo Mozambique and Isilda Nhantumbo, a past colleague of Dr. Bandeira, now undertaking post graduate studies at the University of Edinburgh. Choice of a study site was made upon their recommendations.

The expedition is a combination of ecological and anthropological studies. We will start by ascertaining indigenous use of and relationships with the environment. In addition we will investigate the impacts tourism may be having. The scientific approach will consist of coral and other marine life identification and quantification. Much of the scientific work will be done underwater using S.C.U.B.A. apparatus. This will be complemented with mapping of the distribution of habitat types and marine life. More specific population studies will be carried out on commercially exploited species.

Photography, both aerial and underwater, are important aids to identification and mapping, and will form part of our methodology. Photographs as a visual resource will be used to complement the detailed written reports of the expeditions findings. These reports will form part of our development education initiative, both in Mozambique and Europe.

Local Counterparts:

Dr. Almeida Guissamulo has agreed to arrange for a total of five Mozambican students to join the expedition during its field work at The Bazaruto Archipelago. In addition to this we will hire two guards for the duration of the expedition fieldwork.
We will collaborate as best possible with WWF members working presently on the Bazaruto Archipelago.

Expedition Contacts:

Local advice at the University of Edinburgh has been sought from Stephen Gundry, Isilda Nhantumbo, Sandy Tudhope, Meriwether Wilson, Mike Brewin, Graham Russell, and many others.

Contact is frequently made with Frontier Expeditions, Coral Cay Conservation, the World Wildlife Fund, and many individuals with personal dive experience in Mozambique or with one of these organisations.

Contacts in the host country include Dr. Almeida Guissamulo and Dr. Salomao Bandeira. Attempts are being made to contact LINKS (after advice given by Mike Brewin), an NGO co-ordinating body in Maputo, Mozambique.

Expedition background:

It has frequently been brought to our attention by people from whom we have sought much advice that scientific expeditions in the past have developed a reputation for disregarding local counterparts by not fulfilling agreements or by not following up fieldwork with the proper output of results and reports to the host country.

This was emphasised upon communication with Dr. Almeida Guissamulo, one of our contacts in Mozambique. In communication he has agreed to support "The Bazaruto Expedition" with the condition that he is supplied with an official document (this proposal) that defines the activities to be undertaken by the expedition. His reason for this being that other expeditions have disappointed him in the past.

This strengthened our beliefs that an ecological study of the Bazaruto marine environment would be most effective if guided first by an anthropological study. We hope that this will help us in conducting a study of the best possible use to the people that live and work in close contact with the system.

Chico Birrell
Expedition Leader

Note about this proposal:

This proposal is available on the internet and any updates can be found at this site: (address to be included as the building of this site requires University approval)).

Artwork:

The Bazaruto Expedition logo and inside pictures were designed by Natalie Wingate.
Front cover photograph by Dr. Ramy Klein.
Graphics facilities and technical support, John Wexler, Beborah Duncan, Marie Cope (Graphics and Multimedia Resource Centre - The University of Edinburgh)

The expeditions general objectives:

1 - Combine international efforts for ecological conservation in a manner that is favourable to local inhabitants by conducting a social study first to direct the following scientific work.
2 - Contribute to a sustainable environmental awareness education program for the local community.
3 - Establish foundation for the continual monitoring of The Greater Bazaruto National Park.

Specific activities to be undertaken at the study site:

A- to assess human presence in the ecosystem in qualitative manner:
1 - Establish relationships with local communities to seek local co-operation and to ensure that we do not ignore local knowledge and expertise.
2 - Collect data on local fishing areas, techniques and types of catch.
3 - Identify any tourist activities that relate to the marine environment and investigate their impact.

B- to describe the status of the underwater biotic environment:
4 - Compile an inventory list of coral and benthic fauna accompanied by a photo library.
5 - Investigate appropriate sites for the establishment of six permanent underwater baselines. Conduct quantitative studies of marine populations along these baselines to provide accurate resource information also useful for future comparative studies and monitoring.
6 - Conduct species specific studies of heavily exploited Oysters and "Beche de Mer" (sea cucumbers - *Holothuria*) within the park.

C- to create a geographical representation of the biological environment:
7 - Construct maps of shallow (0-20m) marine habitats in selected study areas.
8 - Produce a low altitude set of air photographs covering the coral reef habitats in selected areas.
9 - Map the beachline positions of turtle nesting sites.
10 - Locate possible sources of pollution/sediment transport out on to coral reef areas from the Bazaruto Archipelago and chart the circulatory flow of surface waters from these sources.

D- to stimulate conservation awareness:
11 - Produce information packs and short reports before departure about coral reef conservation, for distribution and use during fun activities and talks at schools.

Deliverable outputs:
1 - Detailed written reports will be produced and results will be presented in a Geographical Information System, to facilitate their distribution and use.

2 - Continuation of relations with all involved with "The Bazaruto Expedition" in order to facilitate future projects.

Coral reef background:

Coral reefs were estimated to cover some 600 thousand square kilometres of the earth's surface (0.17% of the ocean surface) and 15% of sea areas within the 0-30 m depth zone in 1991 (1). They are currently declining at such a rapid rate that many areas of reefs will probably become locally extinct (2).

Wilkinson (1992) described 10% of the coral reefs of the world to have already been degraded beyond recognition, 30% as foreseen to join these in 10 to 20 years time (in a critical state), another 30% threatened to disappear within the next 20 to 40 years which leaves only 30% of the world's coral reefs to remain as stable systems.

Coral reefs, adjacent lagoons and seagrass habitats are strongly interlinked with coastal wetland, mangrove and other near shore shallow areas. Many species spend different portions of their life cycles in different parts of these habitats thus the well being of coastal systems is often important for the replenishment of the populations of the outer reef. Coastal habitats are sensitive to changes in the adjacent terrestrial ecosystems, especially forests and grasslands. Traditional inhabitants and users of these shores and interrelated habitats must be considered an integral part of these interrelated habitats and the current trend is for these to become more and more recognised as such (3).

Coral reef habitats are resourceful environments and provide many different ways for a society to survive and generate financial income (fishing, tourism,...). Indeed they often provide the shelter from oceanic swells that has allowed the very piece of land a community lives on to have accumulated or resist erosion. It is also important to understand how they fit in to the global ocean production processes and in turn what role they play in the storage and cycling of carbon and macronutrients. This is very relevant in assessing global environmental change (Baes and Killough, 1986; Buddemeier and Smith, 1988; cited in 1).

De Vooys (1979, cited in ref. 1) calculated that coral reefs contribute less than one percent of the net primary production for global sea water systems. However Smith (1978; cited in ref.1) estimated that coral reefs have a potential of 9% of global oceanic fish landings. Coral reefs and other related habitats are also important nursery sites for many of commercially landed fish.

Reefs are resilient and robust when faced with intermittent or extreme natural disturbances like hurricanes. The major threats to coral reefs are anthropogenic stresses. Wilkinson (1992) classed these in four major categories: organic pollution and inorganic pollution (from agricultural and industrial wastes, sewage), sedimentation (from land clearing, building,...) and over-exploitation (from fishing with particular reference to destructive fishing methods). These are all of growing concern because of the exponential increase of populations.

It is important to partition reef areas according to type and gather more information on the biological activity of reefs world-wide. At present the true extent of coral reefs and the processes these habitats take part in cannot be assessed due to insufficient data (1). Marine systems are relatively understudied when compared to terrestrial systems due to the greater difficulties and expenditure often involved in their study. Any effort to increase the knowledge representing them therefore calls for support.

Mozambique

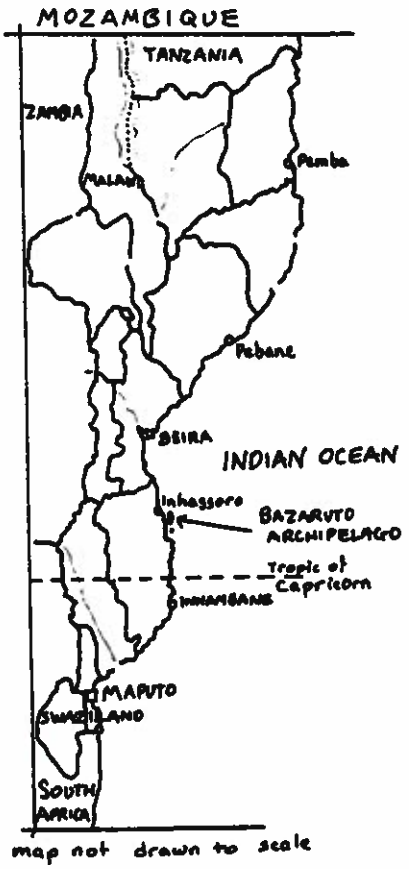
History: The Portuguese arrived by sea in 1498, led by Vasco da Gama. Initially the Portuguese restricted their activities to trade, but began colonisation in 1629. In 1752, Mozambique was officially declared a Portuguese colony but Portuguese expatriates did not arrive in any large numbers until 1929 when Antonio Salazar came to power in Portugal and encouraged the full exploitation of the colonies. Mozambique was a popular tourist destination up until 1971, when war made it an unsafe travel area.

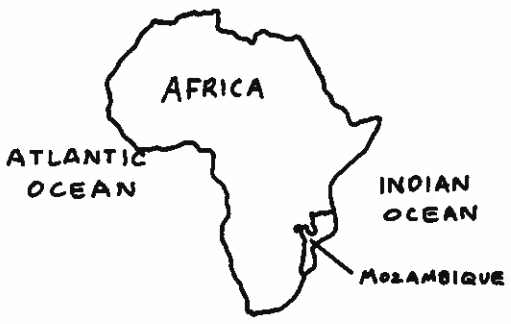
War: Frelimo (Front for the Liberation of Mozambique) was founded in 1962. They had widespread support within the country and the resultant war with the Portuguese ended in 1974, when the colonial government fell. Independence came in 1975.

Mozambique allowed Zimbabwean freedom fighters to operate within the country, and in response Zimbabwe created and funded Renamo (Mozambique National Resistance). Once Zimbabwe received independence, South Africa, under an Apartheid regime, funded Renamo as part of their policy of destabilising black-ruled countries. Renamo targeted infrastructure and food supplies and the resultant famine forced Mozambique to appeal for international aid. This was given on the condition that Mozambique made a 'switch to the West' and abandoned Marxism. In 1992 a peace treaty was signed in Rome between Renamo and Frelimo, but 4000 UN troops remain in the country.

Today: Mozambique is still dependant on international aid, which accounts for 76% of GNP. The main exports are prawns, petroleum products, cashew nuts and raw cotton. The population stands at 17 860 000, although 1.5 million are refugees outside Mozambique. Another 2 million are internally displaced refugees. 80% of the population live in rural areas, two thirds of which are subsistence farmers. The average life expectancy is 47 years.

The official language is still Portuguese, although 16 African languages, mostly from the Bantu linguistic family, are spoken, in particular Shagaan, Ronga and Muchope. 150 religions are officially registered, with approximately 4 million Muslims, 3 million Catholics and 2 million Protestants.





The Greater Bazaruto National Park (Parque Nacional do Bazaruto)

Area: 15 000 ha; a five kilometre marine zone surrounds the islands of the Archipelago.

Location: Approximately 22°00'S, 35°30'N

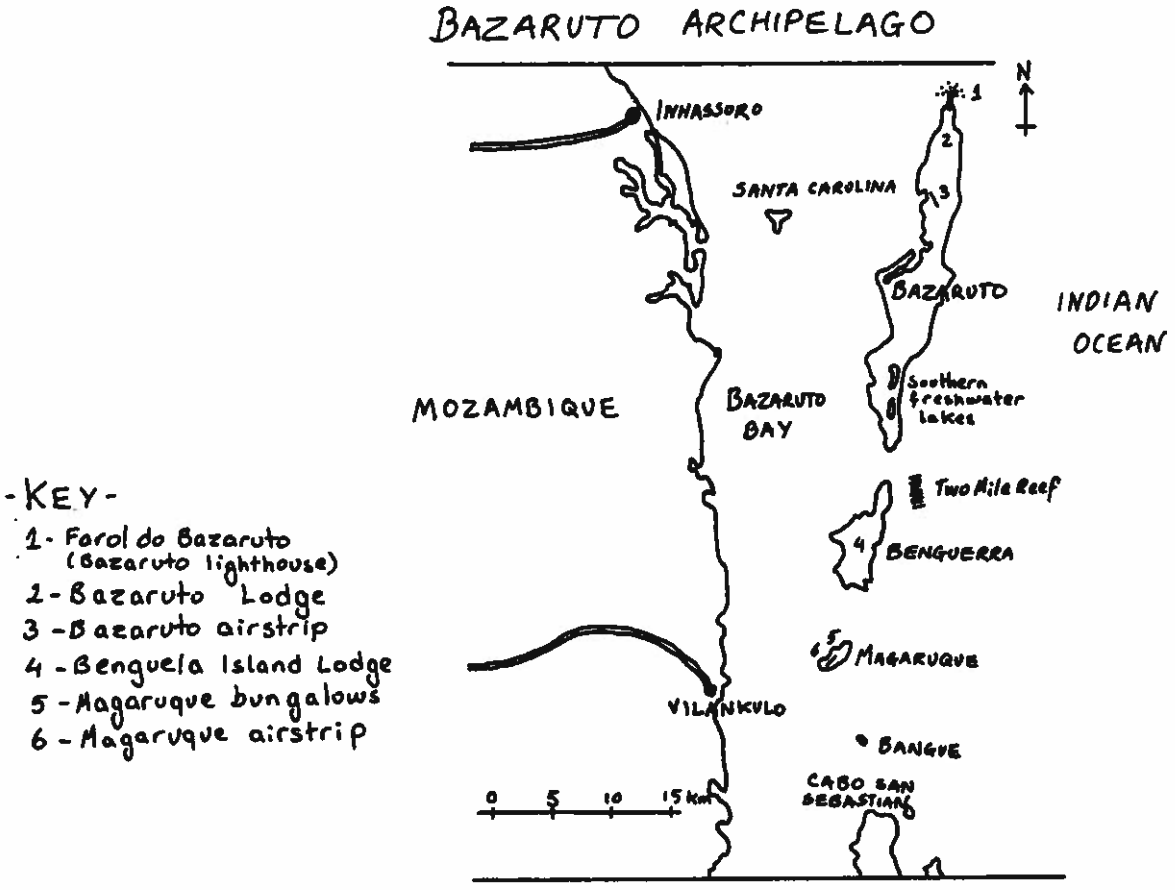
Population: 60 communities on the inhabited islands of the Bazaruto Archipelago.

Economy: based upon artisanal fishing, tourism, slash and burn agriculture, boat building and transport services.

Exploitation of Marine Resources by local inhabitants: self sustainment, supply of seafood to local lodges and hotels, supply of fish to the mainland.

Biota: marine mammals (humpback whales, dolphins, dugong), reptiles(5 species of marine turtles, freshwater crocodiles), extensive fringing coral formations and associated organisms.

Principal threats to the Bazaruto Archipelago ecosystem:
Previously unregulated tourism development. Slash and burn-shifting agriculture on unstable sand dunes. Excessive grazing and industrial exploitation of fisheries resources
Exacerbated population pressure as a result of refugees escaping war on the mainland.



Methodology

A - Methods for social research (activities 1,2 & 3):
Interviews and discussions with both structured and semi-structured interview questions.
Questionaires designed particularly for gathering information on tourists activities.
Observation and participation in the everyday lives of the locals, paying particular attention to any fishing or diving trips they might make.

We will be working with Mozambican counterparts from the Universidade de Eduardo Mondlane in Maputo, local boatmen, guides and guards from the Bazaruto Archipelago.

We shall attempt to accompany local fishing trips so as to gather information on traditional fishing sites and catches. We will also describe the methods of harvest used in the region and quantify catch sizes for each boat / day fishing observed. Hopefully this will also allow us to estimate the catch size of boats operating locally from the Archipelago.

B - Scientific Methods:
4 - The coral genera (and species where possible) will be identified in situ using identification guides and taxonomy books (8). In order to confirm the identification samples will be collected where permission is given. For this purpose small coral fragments will be carefully sampled and the colony will be photographed in situ. The coral samples will be numbered and identified with reference to museum and university collections. The fish will also be identified to genera (and species where possible) using identification manuals (9) in addition we will where possible collaborate closely with local fishing operations to gather photographic material of fish morphology and skeletons to confirm identification with existing museum and university collections. **Note:** samples will only be collected if appropriate host country counterparts decide this is necessary.

5 - Local fisherman and divers knowledge of the park will be sought to aid this study. Information gathered in the social studies will be crucial in determining appropriate sites. Manta tows will be done for large scale surveillance of the underwater areas of the park and for investigating study areas. Sites for the establishment of permanent baselines will be assessed, in consultation with Mozambican counterparts. Baselines will be laid perpendicular to the reef crest and short transects will be swam perpendicular to the baseline to both sides and at random spacing, this is an established methodology (6, 13) and members have used it before.

6 -"Beche de Mer" are presently of commercial interest to small enterprise/indigenous fisheries in Mozambique due to foreign demand (personal communication with Mike Brewin - Frontier Conservation Expeditions). Tourism has placed a value on other seafoods such as sand oysters, crayfish and squid from the park (communication with WWF) and species specific ecological studies will be carried out on at least two targeted populations using established transect methods in which team members are experienced.

C - Methods for geographical representation:
Positioning will be done with the aid of a GPS hand held receiver
Aerial photographs and the results from other activities, regional maps and GPS readings will all be correlated as best possible to provide information on a local habitat scale, the archipelago landscape scale and a global scale, as recommended (4).

7 - Line intersect transects will be used to describe habitat types (e.g. seagrass, exposed rock surface, sand). These will be plotted between identified locations. Areas will be described as to their Biological form for which semi-quantitative descriptions of abundance and

descriptions of physical form (depth, topography) will be made in situ. This will be done using established methodologies (4,5,6).

8 - Low altitude air photographs will be taken of: near shore coral reef, lagoon, mangrove, other marine habitats and also of beach shorelines that serve as turtle nesting sites (local knowledge will be sought to determine these). This will be done using a method of aerial photo-reconnaissance by kite. Positioning of the photos is achieved by GPS readings taken on the ground surface. Scale is determined by locating two markers separated by a known distance in each photo. A more detailed description is to be found in Scoffin (1982) (7). Members will undergo training in this exercise before leaving the UK

9 - Beach shorelines are important sites for turtle nesting. Local knowledge will be sought in identifying relevant beaches. Present shoreline positions will be mapped relative to sight levelled transects perpendicular to the shoreline initiated at known fixed points. This will be done using sight rules using established methodologies (14).

10 - The surface circulation of waters originating from areas likely to allow the runoff of sediments and pollutants will be charted using two sighting rulers mounted on fixed tables. Successive positioning of a marker buoy released at the source identifies the trajectory of its travel and will also identify the travel of pollutants and sediments transported in the same body of water. Method described in (15).

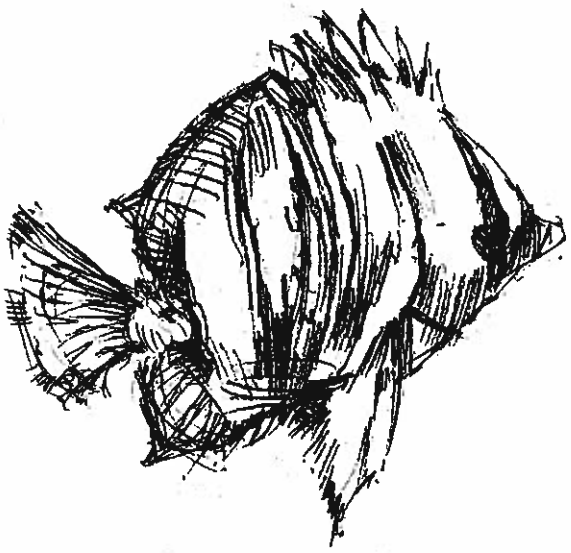
D - Methods for stimulating local conservation awareness:

11 - This aspect of the expedition will rely on local co-operation with the expedition. We will produce short informative leaflets to be distributed at tourist establishments aimed at raising conservation awareness. Many of our team members have experience working at summer camps or minding children and we intend to develop entertaining activities that relate to the topic of coral reef environments.

Post Expedition:

All members will take part in writing a preliminary report of the expeditions studies to be distributed before the expedition team departs from the study site. All members will also take part in writing a detailed report to be distributed to supporting and funding bodies, expedition contacts, and libraries.

Contact will be maintained with all involved with The Bazaruto Expedition.



Safety

Diving Safety

1 - Two of the expedition members are trained in dive specific first aid and accident awareness around the dive environment as components of their HSE part IV dive qualifications. Special care will be made to ensure that they do not dive together and that one will remain on board the dive boat to act as dive marshall whilst divers are in the water.
2 - No dives will be carried out deeper than 20 metres.
3 - All members will be trained to dive to a minimum depth of 30 metres and will be qualified sports divers (B.S.A.C.) or equivalent.
4 - All team members will have no less than 30 dives logged before the beginning of the expedition field work.
5 - Safety drills in diving rescue techniques will be conducted in accordance with B.S.A.C.
6 - All dives will be carried out using B.S.A.C. tables.
7 - Two members of the expedition are experienced in handling and maintaining dive equipment, and will be responsible for evaluating dive conditions.
8 - Members will dive together before departing the UK to ensure familiarity and confidence.
9 - The expedition will acquire its own oxygen administrating device. This will accompany all dive trips.
11- In case of a serious accident that leads to the use of a compression chamber there will be an evacuation route planned from the island of Bazaruto to the nearest chamber, which is in South Africa. For which we will make arrangements with local tourist organisations.
NOTE: the lodges on Bazaruto and Benguerra Islands offer the longest-established dive operations in Mozambique, including Dive Masters and the latest equipment and boats (16).

Insurance for the expedition:

The expedition has investigated insurance packages with "Alexander & Alexander", advised by the Royal Scottish Geographic Society. These packages pay special attention to the individual nature of this expedition and will cover medical evacuation (at a cost of up to £2,000,000 for the injured person) and travel/accommodation expenses for an accompanying escort (up to £ 25,000). The cost of such cover is valued at £1,900

General Safety

1 - Mozambique is a high risk area for malaria (worst Nov.-May); less severe along coastal areas.
2 - For the expedition fieldwork we shall be taking a Major Medical Kit in accordance with that advised by the Expedition Advisory Centre at the Royal Geographic Society (London).
3 - All team members will have a medical examination so that they are deemed fit enough by a physician to undertake the expedition.
4 - For the expedition fieldwork we shall be taking medical equipment (to be used if necessary by physicians in Mozambique) to eliminate any possibility of contamination and dependence upon local supplies.
5 - Previous to fieldwork all expedition members will have had the required inoculations advised for travel to the area of fieldwork.
6 - Medical information (blood groups, and other necessary considerations) will be supplied by all members to the first aid officer.
7 - The expedition has a qualified first aid officer, most members have basic first aid training, two members have dive specific first aid components of the HSE part IV dive qualification
8 - Two guards will be hired to remain at the expedition base for the duration of the expedition fieldwork.

Timetable

Pre-Expedition Activity	January	Feb.	March	April	May	June
Research	+	+	+	+	+	+
Proposal Production	+	-	-	-	-	-
Communication with Advisers	+	+	+	+	+	+
Communication with Local Counterparts	+	+	+	+	+	+
Fund-raising	+	+	+	+	+	-
Dive Training	-	+	+	+	+	+
Medical and Dental Checks	-	+	-	-	-	-
Reconnaissance	-	-	+	-	-	-
Inoculations	-	-	+	+		
Equipment Purchase	-	-	-	-	+	+
Training in Equipment Use	-	-	-	-	+	+

Expedition
Field work scheduled for a six day working week.
Arrive: Sunday 29th June

Week 1: Registration at Embassies. Meet with local counter parts. Purchase expedition consumables. Travel to study site. Training in fish and coral ID Begin social studies.
Week 2: Continue social studies. General marine habitat survey (manta tows). Begin habitat mapping and aerial photography.
Week 3: Continue social studies, habitat mapping and aerial photography. Establish and work on Baseline 1.
Week 4: Continue social studies and aerial photography. Establish and work on Baseline 2.
Week 5: Continue social studies and aerial photography. Establish and work on Baseline 3.
Week 6: Continue social studies and aerial photography. Establish and work on Baseline 4. Begin underwater photography.
Week 7: Continue social studies and underwater photography. Establish and work on Baseline 5. Begin beach shoreline mapping.
Week 8: Continue social studies, underwater photography and beach shoreline mapping. Begin educational and conservation awareness activities.
Week 9: Continue social studies, underwater photography and educational and conservation awareness activities. Begin species specific studies.
Week 10: Continue social studies, underwater photography educational and conservation awareness activities and species specific studies. Begin preliminary report.
Week 11: Contingency.
Week 12: Contingency.

Return: Sunday 12th Sept.

Post-Expedition
October - December: Interpretation of results and production of detailed written reports.
January: Contingency time and distribution of results.

Budget

Pre-expedition	
Flights and visas: [9 × (£713 + £15)]	£6552
Insurance:	£1935
Reconnaissance:	£900
Equipment:	
diving equipment: [7 sets]	£3640
aerial photograph:	£800
photographic film:	£950
Nautical binoculars: [2 × £200]	£400
portable computer and printer:	£700
Medical: supplies:	£200
Literature:	£200
Proposals:	£300
Expedition	
Travel in Mozambique:	£500
Boat hire (1 or 2 boats will be needed daily during weeks 2-10):	£2800
Survey consumables:	£200
2 Guards:	£100
Living expenses: [1064 man days]:	
camping:	£1596
sustenance:	£3192
Post-expedition	
Report production:	£500
Film developing:	£950
Contingency: [10%]	£2600
Total:	£28815
Non-funded	
Personal cash contributions: [9 × £500]	£4500
Personal dive equipment: [5 sets]	£2600
Non-personal equipment required:	
GPS:	
portable computer and printer:	£700
Total Fund-raising Objective:	**£21,015**

Budget estimates are based on standard quotations and communication with Mike Brewin.

Please make all donations payable to "THE BAZARUTO EXPEDITION"

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The Bazaruto Expedition is associated with H.E.L.P. (Scotland)
Registered Charity Number: SC018757

The Members

Expedition Leader (contact information on cover page):
Chico Birrell (21) British/Portuguese, is in his third year studying Ecological Sciences (Bsc Hons) at Edinburgh University under the direction of Dr. Colin Legg. He was member of "Project Utila" 1996, a coral reef survey, in Honduras. Worked for two months as a snorkel diver and deckhand on a "Beche de Mer" fishing boat on the Great Barrier Reef, Australia. Has various experience on boats and in the sea. Three years as monitor for children's summer camp. Extensive independent travel throughout Australasia, Asia and Eastern Europe. Photographer for the "University Alternative Prospectus 1996-7".
Languages: Portuguese and English both fluent, good Spanish.
First Aid: Red Cross first aid certificate.
Dive qualifications: P.A.D.I. Advanced

Dive officer:
Ian Campbell (26), British, has completed an undergraduate degree in Applied marine biology at Heriot-Watt University. Since his degree has worked on project to tag and release juvenile Lemon Sharks in the Bahamas. Is competent in the handling of small outboard motor boats and maintaining small boat engines. Also has experience with GPS locating devices and mapping of reef and lagoon complexes. Is experienced with the use of visual census identification tachniques of fish and has basic experience of underwater filming.
First aid: specific dive first aid situations, component of HSE part IV.
Dive qualifications: HSE part IV, BSAC sport diver for 6 years.

Team Medic:
Alan Edwards (22) British/Irish, is in his third year studying Physics (Bsc Hons) at Edinburgh University, specialising in applied statistical mathematics and computer programming. He has been actively involved in community work in Northern Ireland, working on a project to bring together people of different religious and cultural backgrounds. U-21 Army Rugby team. Top recruit of his class June 1993.
First Aid: First Aid, Team Medic Qualified (MoD).
Diving qualifications: Presently qualifying to dive (has been delayed due to illness, situation will be reassessed shortly according to severity of illness).

Photographer and Science Adviser:
Dr. Ramy Klein (35) Israeli, completed his Ph.D in Marine Biology in the Department of Zoology, Tel Aviv University, Israel in 1994, under the supervision of Prof. Y. Loya. During the past few years he has engaged himself in research and photography of coral reefs throughout the world. His main work was carried out in the Red Sea, the Australian Great Barrier Reef, Papua-New Guinea, and Loya. His scientific work was published in a variety of international journals. In 1995/6 he conducted a post-doctorate research at the Department of Geology & Geophysics in the University of Edinburgh, in collaboration with Dr. S. Tudhope.
Dive qualifications: CMAS World Underwater Federation.

Social Studies Officer
Gillian Leslie (21), Scottish, is in her fourth year studying Social anthropology with development at the University of Edinburgh. Previous anthropological fieldwork experience in Fiji working with a local NGO on a marine turtle conservation project. Works as a volunteer at the Student Advice Place, and Edinburgh Peace and Justice Centre. Has been active in student politics particularly the Welfare Committee for which she was the Acting Convenor.
At present (20th. Jan. 97) unable to dive due to moderate injury. Her participation in dive activities of the expedition will be reassessed at a later date.

Claire Norris (20) British, is studying Biology (BA Hons) at Oxford University, Pembroke College and has received numerous awards for academic excellence. She helped co-ordinate an expedition to the Seychelles in 1996 to study wetland biodiversity and establish a hierarchy of conservation priorities and organised a project to stabilise the loggerhead turtle population in Crete. She is also college captain for woman's rugby, vice-captain for woman's rowing and has worked part time as a life guard.
First Aid: Red Cross First Aid Certificate.
Dive qualifications: B.S.A.C. Sports Diver.

Treasurer:
Clair Tucker (21) British/Canadian, is in her third year studying Zoology (Bsc Hons) at Edinburgh University under the supervision of Dr. A. Manning, specialising in evolution and behaviour. She was part of a Raleigh International expedition to Guyana in 1993 and has since worked for foreign organisations such as Overland Horseback Safaris in Kenya, worked as a water sports instructor at an American summer camp and travelled extensively. She is an amateur painter/photographer and speaks conversational French and Spanish.
First Aid: American Red Cross.
Dive qualifications: P.A.D.I. Advanced

Dive officer:
Joanne Worrall (24), British, has completed, in 1996, an Msc in Marine Resource Development and Protection at Heriot-Watt University, and in 1995 completed a Bse Honours degree in Marine and Freshwater Biology at the University of London (QMWC). Was a member of Morant Cay Research expedition to the Caribbean in 1995. Working presently at Deep Sea World Scotland. Volunteer experience with a turtle nesting survey on the island of Zakynthos, Greece. Has worked on coast watch UK- survey of British coastlines for several years running. Travelled independently throughout Europe.
First aid: specific dive first aid situations, component of HSE part IV
Dive qualifications: HSE part IV, BSAC sport diver for 2 years.

Mozambican:
An agreement has been made with Dr. Almeida Guissamulo, of the Universidade Eduardo Mondlane in Maputo, the work with five of his students during the expedition fieldwork. Further arrangements will be made at Easter during the expedition leaders reconnaissance visit to Mozambique. These members are not expected to dive, this will only be reassessed if they are sufficiently qualified and insured.

Advertising and further interviews are still in progress, to find a back up experienced underwater photographer.

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