Scientific Exploration

of the
Nyika National Park,

Malawi,
Central Africa

2008

Edited by C. P. & M. J. Overton

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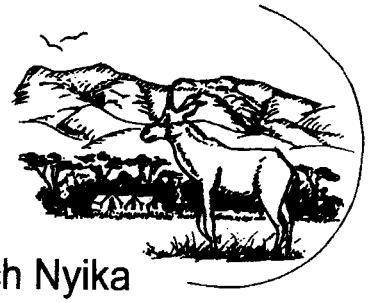

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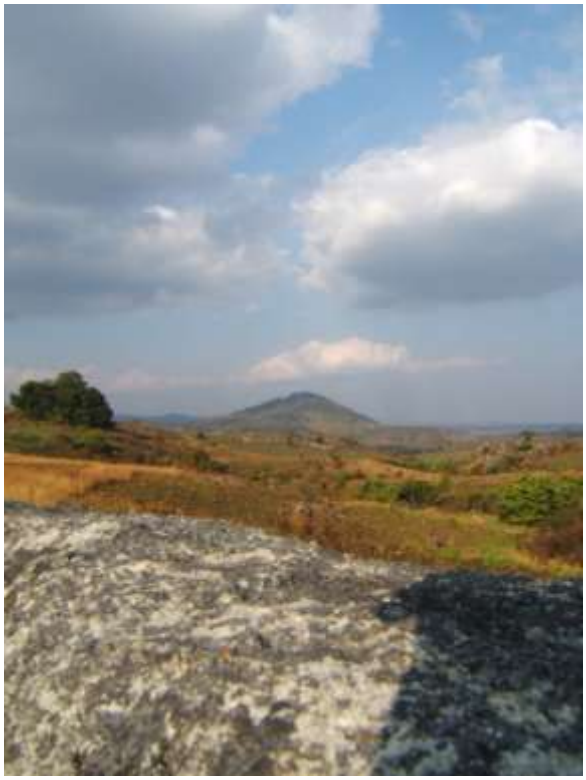
FOREWORD

Peter Overton

Biosearch Nyika

The 2008 Expedition was the latest in a series that has run since 1997. Each year we accumulate data on poaching activity, large mammal populations and plant life. We also survey other other biodiversity too, depending on the skills and interests available to us at the time. This year it was the turn of bats and herpetology to have their special study and what a fascinating opportunity this turned out to be! We are very grateful for the energetic input of our specialists and their desire to seize the opportunity to discover things wherever and whenever they occurred. There is so much to find in the Nyika National Park and Vwaza Game Reserve and a huge opportunity to work in parts that are never visited. Even the most unpromising areas seem to turn up something fascinating. Over more than ten years we have explored many parts of the park, especially the remoter areas, which are well away from the tracks network on the high plateau itself. We are very grateful to have had long-running support from the Department of National Parks and Wildlife in Malawi. Latterly we have also been able to work with the Millenium Seeds Bank to assist in collecting further seed for future plant conservation.

"The beauty of quietness, just the noises of nature"



Nyika landscape near Vitinthiza *Pippa Stubbs*

In the early years we concentrated mainly on the northern valleys, where we knew poaching activity was very high, with little patrolling taking place. This gave us a series of data that could be used for comparative purposes within an area of some 500 km^2. Later we moved to other parts of the park, including the western escarpment and the southern parts, around Fingira, Juniper Forest and Vitinthiza.

We made a major departure from our previous work pattern in 2008. We spent a full week in the north of Vwaza Marsh Game Reserve, in the area of and including the marsh itself. This was quite an experience and not always pleasant. Parts of the marsh are infested with very aggressive Tsetse flies and at times we were beaten into retreat. A bee keeper's protective suit might well be a useful piece of accessory equipment, at least to keep to hand for some of the worst localities. Walking in the marsh area, even in August when water levels are dropping, was hard work. There were 3m tall grasses. There were also many sumps, where it was easy to sink down to the knees if you fail to keep your feet firmly planted on the tenuous and spongy tussocks. Yet looking ahead you could aim for magical islands of vegetation, some of them formed on giant termite mounds and covered with perhaps the odd palm tree and at least a raised viewpoint to take a bearing through the next hour of boggy trekking.

Happily, those who ventured into the great swamp came out of it intact and apparently sufferend no lasting traumas. The small group who remained on drier ground at our base camp at Chelanya, two hours walk away, had their own problems; they had to decamp very

rapidly when a poacher-set fire raged towards them and threatened to destroy everything, including our vehicle. In the event the fire failed to engulf the camp in its clearing and they were able to set off on another bat hunt with yet another photo story to bring home.

Biosearch continues its programme of adventure, exploration and research. We have been able to provide continuity of work over the years and published a fascinating biodiversity inventory from one of Africa's great wilderness areas. Furthemore we have established a very close working relationship with many of the local wildlife staff, to the point where they are keen to take part in our future explorations and expectantly ask us to return as soon as we are able to assemble a further team. We have also given many people of all ages an opportunity to enjoy the wilderness area and contribute to our knowledge of it:

"The expedition experience I will treasure for the rest of my life. My, what an adventure!"

OUR RECORD

After over a decade of exploration it seems timely to summarise the parts of the Nyika National Park where we have worked (there were no expeditions in 2000 and 2002):

1997 March/April: Northern Valleys. Base camp at Nganda 7400ft. (928461), survey areas of plateau edge 7,500ft and above, Mondwe Valley around 6000ft, dropping into the Chipome valley at 4000ft and over the water shed ridge into the Sawi valley down to less than 4000ft.

1998 July: Northern valleys, similar area as 1997

1999 July: Northern valleys, similar area as 1997 followed by a second expedition team

1999 September: Juniper Forest area; base camp at 6850ft. (970115) and south to the edge of the Park.

2001 July: Northern valleys, similar area as 1997

2003 March/April Northern valleys, similar area as 1997 followed by a second team:

2003 July: Northern valleys, similar area as 1997

2004 July: Approached from Uledi in the far north of the park. Plot surveying from 3,500ft to Mpanda peak 6600 ft and the ridge to Kawozya up to 7200 ft. Basecamp on slopes enabled much study below 5000ft. Discovered Bleak House overlooking the Lake.

2005 July: Basecamp at Zungwara 6750ft on the west of the plateau, surveying the western escarpment down to 4,600ft on the North Rukuru River, including Chisanga Falls area at 6000ft.

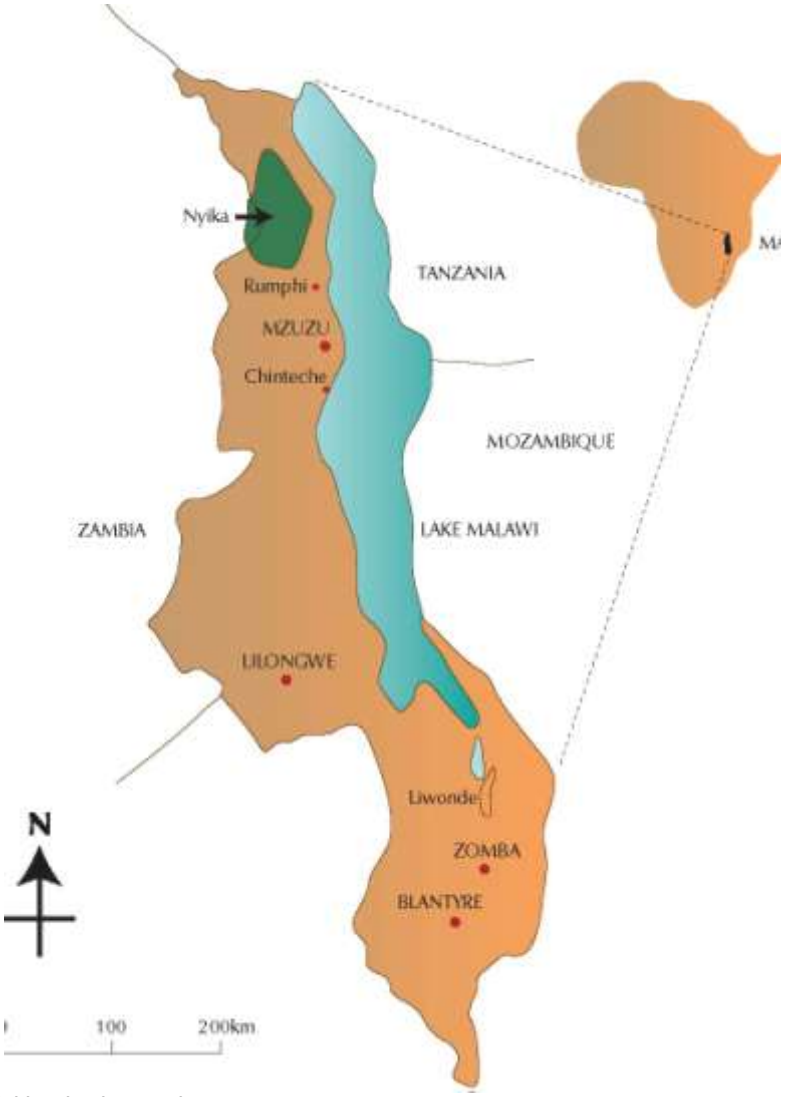
2006 July: Basecamp at Nyambwani on the Fingira road south of Chilinda, 6950ft (865148) surveying the southern part of the Park in the Fingira area. We then trekked across the Chilinda River to set up the Juniper Forest Camp at 6850ft. (970115). The third phase was a repeat of some 2005 plots near Zungwara. The fourth camp was on the Wovwe above Njalayankhunda at 4000ft (139436) to cover parts of the eastern escarpment.

2007 August: Base camp was at the Old horse camp at 6,500ft on the western side of the plateau 6,500ft (791377). Three groups surveyed the Mondwe and the Sawi Valleys and the Nganda plateau area at 7750ft (916482), to the west of the original 1997 base camp. In phase two, one group spent six days camped near Chisanga Falls (6000ft) and the other group trekked from Jalawi all the way to Uledi to inspect the new foot bridge over the North Rukuru.

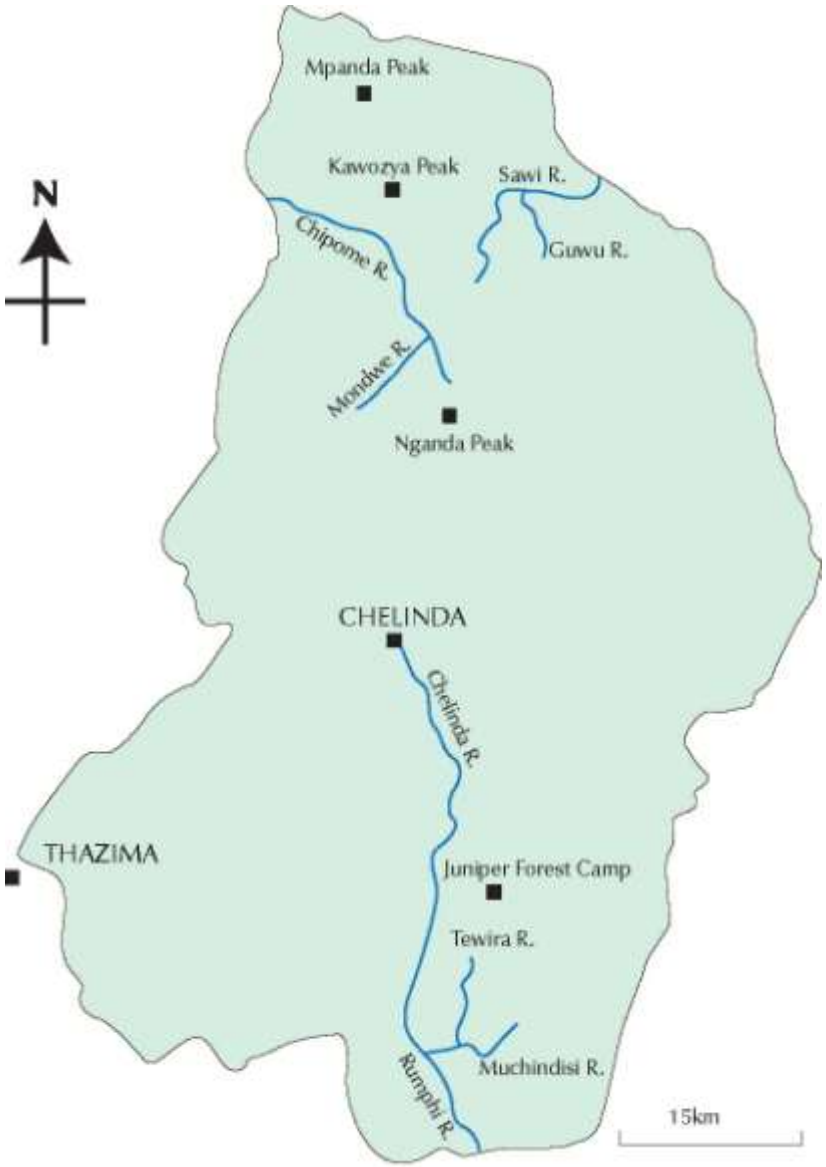
2008 August: Basecamp to the south of Vitinthiza at 6,000ft (723171). The second phase was a week in the north of Vwaza Marsh Game Reserve followed by three days in the south.

MALAWI

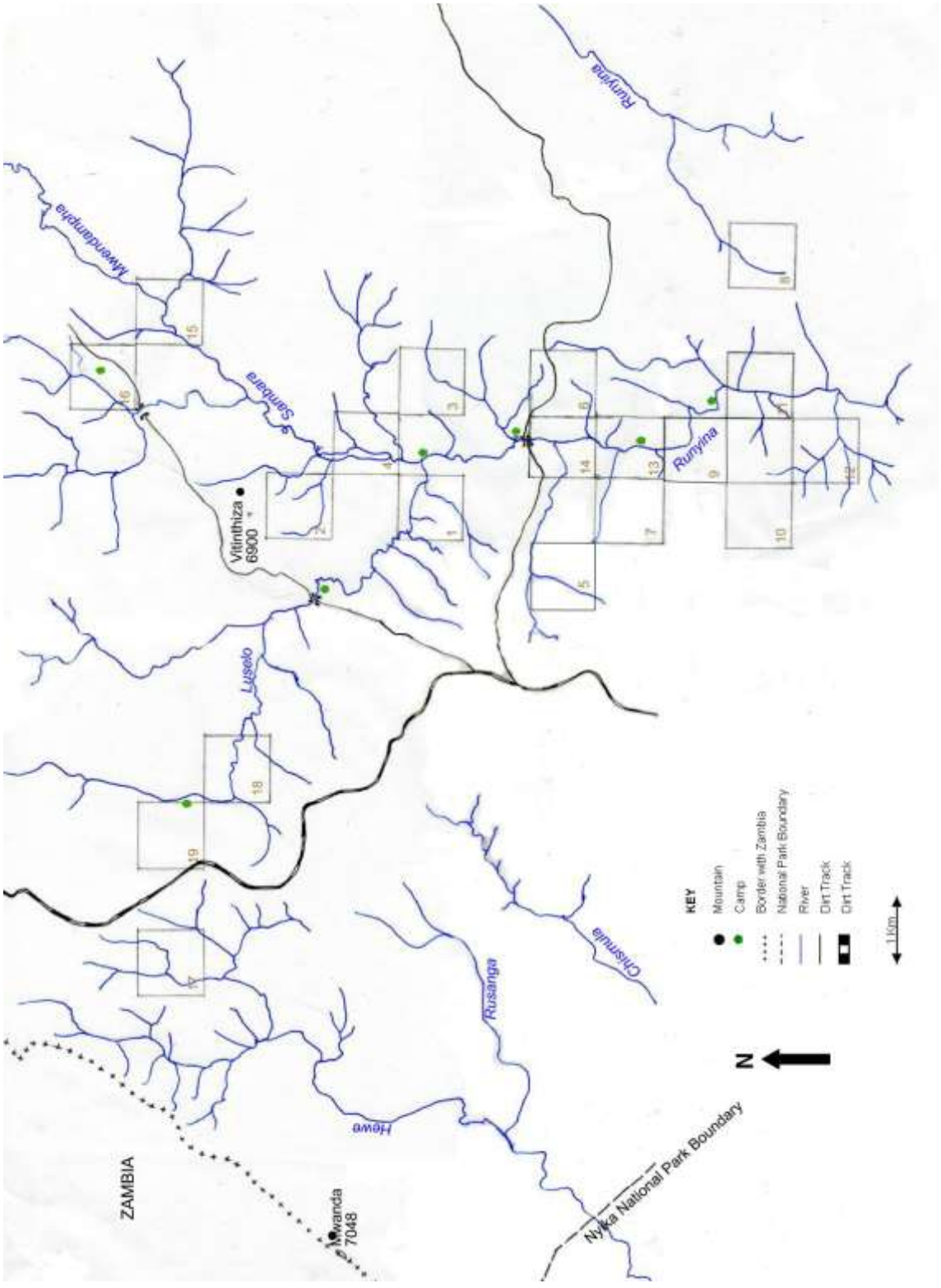
Landlocked Malawi lies at the southern end of the Great Rift Valley and is bounded by Mozambique, Zambia and Tanzania. It lies between 9° and 17° south of the equator. Its climate may be loosely described as sub-tropical but varies considerably, being much influenced by altitude and Lake Malawi, which forms much of the country's eastern border. The dry season is from May to November. Malawi has a rural economy based on subsistence farming and fishing on the lake but also with large tobacco and tea estates. The country is one of the world's poorest and is slightly smaller than England at 45,747 square miles. As more of the population migrates from the countryside, the towns are growing fast. The population, living mainly in the the south of the country, is around 13 million. The varied countryside is characterised by a string of high plateau regions from the north to the south of the country, of which Nyika is one, and isolated rocky intrusions which conspicuously stick out of the flat landscape.



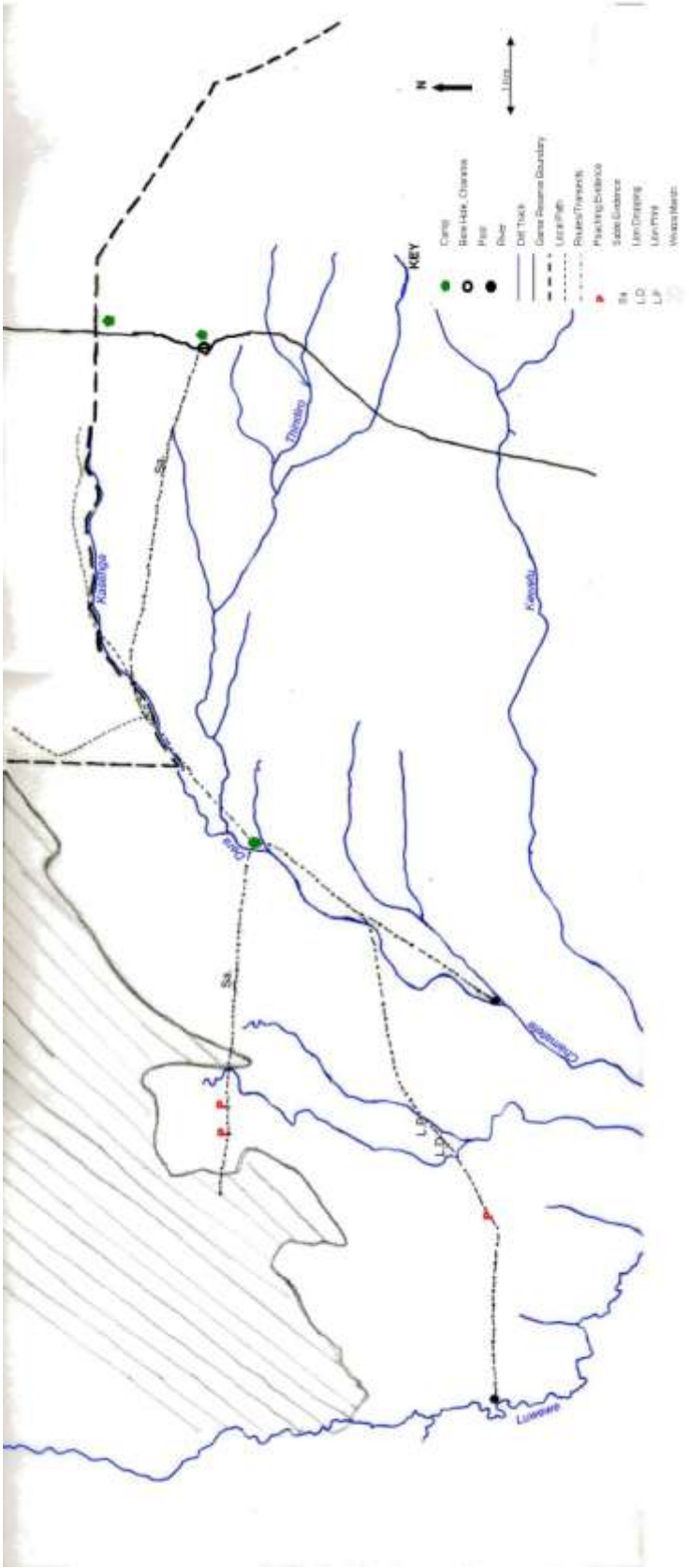
MAP OF NYIKA NATIONAL PARK



SURVEY AREA IN THE NYIKA NATIONALPARK



SURVEY AREA IN VWAZA MARSH RESERVE



LEADER REPORT

C Peter Overton, Expedition Leader

TRAINING PROGRAMME

Most of the UK team assembled for a training weekend on the early May Bank Holiday weekend. They arrived on the Saturday and departed on the Monday, completing a 48 hour programme of events, which are designed to help them to get to know each other better, learn about strengths and weaknesses and get to grips with some of the skills they will need in the bush during the expedition. We place special emphasis on camp organisation and on navigation. We also take a close look at their essential equipment to try and avoid inadequate kit being taken into the bush. Above all the weekend is designed to be a fun event; everyone who attended agreed that it had been useful and worthwhile. We have over recent years fine tuned this event considerably but we are always looking at ways to make it even better. Some of the team have asked that it could be extended to make an overnight hike possible but we are aware of the need to make it accessible to all the team and avoid forcing members to take extra time off work. The expedition itself is a full month, which we believe is ideal to achieve good value, without again putting up barriers to those who need to take work leave to join us.

Kale crossing a pond on our training weekend

There is no doubt that the realistic bush camp that we have set up in the UK and a careful attempt to mimic real bush conditions as far as possible, immediately shows dividends when we arrive in Malawi. The team does hit the ground running; there is very little wasted time since they know what they are doing before they arrive. This has contributed to our success in data gathering over the years and the strong support we always receive from the Department of National Parks and Wildlife. This great extra value is included in each team member's financial contribution, although it is costly in time and organisation. We are sure that, together with our annual reports, this sets us apart as a high quality expedition organisation offering excellent value to all the team members and to our partners in the Parks Department.

ARRIVAL OF THE TEAM

The team were advised to try and arrive early for the expedition; at least the day before our departure from Lilongwe to travel north to the Nyika National Park. Two members arrived on departure day and we held the provisions and baggage truck back for the last arrival to make sure that most of the team could arrive at their overnight lodgings, at Chikangawa, before dark. Some of the team arrived early in the week and enjoyed the delights of Lilongwe for a few days. We can report that this year we suffered no lost baggage on any of the three or four routings that different team members employed to get to Lilongwe. There was however, a very worrying moment for one of the team. When she arrived at the Korea Garden Lodge, expecting to find us there, she was told that our name was not on the list and we were not booked in. After some years of using this place as a staging post, because of its security, our name should be well known by now! A very worried team member had to wait some time before we turned up later in the afternoon and put her mind to rest. To fly thousands of miles for an expedition and lose the rest of your team before you start is not an ideal beginning. Although they have been improving of late, the organisation of bookings at KGL still has room for further improvement.

FOOD AND TRANSPORT PLANNING

All our camp hardware - pots, buckets, utensils etc, - had been left behind in 2007 and were waiting for our collection. Ray Murphy, who lives near Mzuzu, again helped us with this by providing storage space. This meant that pre-expedition work in Lilongwe was kept to a minimum, since a food purchase list was prepared from our experience in previous expeditions. We needed to allocate only a single day to its collection, substantially from the supermarket in Lilongwe and subsequently from Mzuzu markets on the journey north. Food was planned for everyone, including scout provisions. We purchased most of the required provision at the outset but allowed very little for contingency, since we knew we would have access to some fresh supplies in our transfer from Nyika to Vwaza. We again made use of a 26-seater bus to provide sufficient seats for the whole team from Lilongwe to Nyika. All the large rucksacks and equipment and food were transported in the same four ton truck as in the 2007. As a result of our experiences in previous years, when it was apparent that the Nyika roads were too much for the bus, we decided to keep the truck and send the bus back to Lilongwe, where it remained for the first part of the expedition. The truck was ideal for the rough tracks, giving plenty of space to transport the team on the odd occasion when we could assist to increase our square coverage within the Vintinthiza area. In fact the team much preferred to travel in the open on the back of the truck, from where they could get good views of the game and landscape, rather than within the confines of the bus. This returned for our journey to Kawiya camp in the north of Vwaza and for the remainder of the trip back to Lilongwe, via Kazuni camp and the lake shore. The bus also returned with a useful small two wheeled trailer. This not only carried all our baggage but also served at our two subsequent camps, as a secure food store, which was lockable. We constructed a grass roof for it at Chelanya camp, to keep it cool. This proved very successful. We sent the four ton truck back from our Nyika base camp, taking with it our botanist, Steven Mphamba, who had arranged to stay just for the Nyika stage of the expedition. He subsequently rejoined us for our last night in Lilongwe. The insecurity of fuel supply in Malawi is something we are now well prepared for. We had a reserve of 80 litres of diesel with us at all times, only needing to dip into it temporarily on one occasion to get the truck back out on its return to Lilongwe. On our way up country we drained one diesel tank at a fuel station in Mzuzu of its last few litres but had no other close calls during the trip. The bus tank held about 80 litres when full and the truck slightly more.

Manuel Ramos Gondwe (2003 Uledi) in Bolero assisting with provisions *Marianne Overton*

This year we avoided Chilinda, since we had no expectation of getting fuel supplies there and we were based some distance from the camp. The total distance covered by vehicle was thus reduced, which was useful in a year when prices had risen by over 30%. Running around on the Nyika plateau can be a very fuel-hungry activity. In the 2007 report, referring to the vagaries of fuel supply, we had commented on how different things are in a third world country and the likely consequences of a similar fuel shortage scenario in Britain. “Malawians take things in their stride much better, I feel. Long experience of the situation does help.”

We are again grateful to Land and Lake Safaris for acting as our vehicle agents and supporting the transport logistics, which is, of course, a crucial part of the whole expedition. Although we did yet again suffer from a broken leaf spring on the front of the bus and a dislodged exhaust pipe; these breakages were inconsequential compared to previous years. We managed adequate bush repairs to get us back out again without delays.

FROM LILONGWE INTERNATIONAL AIRPORT TO THAZIMA

We had our usual overnight stop at Kasito Lodge near Chikangawa on the Viphya plateau. It was fortunate that I had secured a phone number for the warden and had managed to ring ahead, since he informed me that there was no water there, due to an electricity failure caused by a tree being felled across a power line. With the time available and the size of group there was no easy alternative accommodation, so we took sufficient extra supplies of bottled water to get by for cooking and drinking. It was a grubby night for some though, although most of us had showered in Lilongwe in the morning. However we did eat and sleep well and were away by 7.45 to Mzuzu. The leader decided everyone needed some refreshment after a relatively water free night so we immediately headed for Mzuzu hotel, where we anticipated better services. However, the men's washrooms were out of order, being in the process if a complete refurbishment! Nevertheless, the fresh coffee and croissants that we all enjoyed for our second breakfast went down very well indeed. The truck again went ahead to collect the camp hardware and met up with the bus again in Rumphi. Meanwhile further fresh food supplies were collected from Mzuzu by various members of the team, each of whom was assigned particular items. It was a good exercise but rationing by committee has its drawbacks and it is probably better for all the shopping to be allocated to one experienced individual. The speed and efficiency with which we had set up our camp at the usual site down on the river at Thazima was impressive, particularly since we had spent some time at the office discussing plans with the senior staff there. It was after 4.30 pm when we started pitching tents - and food was cooked and served and washing up complete before dark. This is where proper training and briefing prior to the expedition really starts to show dividends. We even had time to find and photograph a Rhombic egg-eating snake on the track near the bus, much to the delight of our two herpetologists. Some of the team then went on a night walk to try and find some noisy but elusive amphibians.

SETTING UP BASE CAMP SOUTH OF VITINTHIZA

Our base was in place for 13 nights: Tuesday 29 July to Sunday 11 August

We had a further meeting at the office in Thazima the next morning, eventually arriving at our base camp around 11 am. We immediately unpacked the bus and sent the driver Knox on his 11 hour journey back to Lilongwe. By now we had Richard, Lewis, Benard and Adamson, our four early scouts, with us. The map indicates the river Luselo, besides which we made our base camp, as being an upper tributary of the Sambara, which it joins above the bridge on the old track to Chilinda at map reference 742157. However, the scouts referred to this main river as the Runyina throughout, so we have used the same name. The map does mark a river called Runyina but it originates further to the east and does not join the Sambara (our Runyina) until much further south, closer to Thazima. We referred to nomenclature issues in our last report and there are undoubtedly many place and river names on the ordnance survey maps which were misinterpreted in the early 1970s, when the maps were drawn, and remain a source of confusion today. However it is worth noting that the name Runyina means 'many rivers' so that may add to the confusion!

No two camps are ever the same. We had chosen this particular site, approximately, from a map in the office, prior to leaving the UK. The map, however, does not show the new track, which was constructed recently, crossing the Luselo River and winding its way round Vitinthiza and thence across to Chilinda. Happily, we were advised of an ideal camp, just off this track, which is some 4 km off the main park road. It turned out to be an excellent site for our main base camp, providing access for our truck, good river water supply and ready access for our predetermined survey areas to both the north and south. This time we decided to use the truck as our food store initially, until we had to take it all off and sheet it down on the ground to make some room for transporting the team. We later built a rustic table near the fire but

stopped short of going for our full bazaar, since our period of occupancy was to be shorter this year. It is time consuming to move camp. Most people prefer to travel very light and much of the equipment and supplies are not required for the forays, thus a good base camp is paramount even if the stay is to be only two weeks, as was the case in 2008.

THE FIRST DAY OUT IN THE BUSH

Just as our discovery of a fine snake specimen on arrival at the Thazima camp had set the herpetology on a great start, which was to be a marker for a great expedition to follow, so too was an unusual and exciting event for Extreme team on their first day's foray. They had been following fresh elephant signs for some time and had come across a patch of woodland with much evidence of recent elephant activity. Peter called for a drinks stop, which is the norm after an hour of trekking. It proved fortuitous. Just 60 yards ahead was heard a loud crack. Then a lone bull elephant appeared from the trees and detected our group with his trunk. He flapped his ears and made to see us off. We did not need a second invitation. The team slowly backed away. This was the closest encounter with elephant we had ever had in the Nyika National Park in the twelve years of these expeditions. The excitement lasted for days and was to be enhanced by further adventures and discoveries over the remainder of the expedition. A good start does make a difference; in 2007 we had also seen a herd of elephant across the landscape (at some distance). For many years such sightings have been absent so we were very much encouraged by the development. Another sighting was made on the day of our arrival in base camp; four of us took a short walk to the rocky knoll above and had a close encounter with a Porcupine in broad daylight. This is another first experience in the bush, although the animal itself is clearly very common, judging by the copious diggings that we find.

The team name *Extreme Team* was adopted to signify the speed and fitness of the, mainly younger, group. However, the other team, led by Lewis and Marianne, were not having any implied reduction in status, merely because they travelled more slowly, so immediately christened themselves 'The Quality Team'. This friendly rivalry is common in the bush when we split our expedition down into manageable groups and does service to a competitive spirit, which shows up in data collection and continued application to the task. Being able to return to camp and relate exciting finds to another group is good for team morale.

ACCLIMATISATION

The first three days of the expedition were spent working out from our base. On Friday night both teams went off to the Runinya Bridge for an overnight stay. The Quality team went upstream a little way to a lake near the river, the *Extreme* team spending one night near the bridge itself. This acclimatisation process and testing of methods and procedures has proved valuable. We collected data and covered some plots but with less walking required between plots, it gave everyone the chance to get used to the new environment and decide how they were going to handle the more difficult expedition treks later on. We also find that it is important to get the groups moving out of base camp as soon as possible to keep a feeling of progression going and the overall momentum of the expedition. It works and we do like to keep our teams busy during daylight hours.

A VISIT TO KAWIYA SCOUT CAMP

With both teams out for their first overnight foray, it was time to do a little foray of my own. I had agreed with the Director of Parks that we would spend more time in Vwaza Marsh Wildlife Reserve in 2008. Rarely does anyone other than a member of the Parks staff visit the north of this reserve and I had only ever visited the more popular Kazuni lake end in the south. I had arranged to visit the scout camp to get advice on where we should operate, in advance of

taking the whole team there. It was good that I had equipped myself with all the necessary maps, since I was soon to discover, that even if they had a map at Kawiya, which they did not, the tiny office was not big enough to spread it out and the walls could not have handled a single broad sheet map. However, I was delighted to find an old friend there in the form of Kennedy Chihana, who had been with us on our 1997 expedition. He and Edwin Zygambo were to accompany us for our week in the marsh. Both were very familiar with the territory, which was reassuring, since I was soon to find that the road was blocked with fallen trees, knocked down by the elephants. (They cannot keep the main track through the reserve open because the elephant herds are better staffed than the Parks department!) The area of operation also fell inconveniently on two maps, with the Chelanya base being just off the main marsh map. However, the landscape was so flat that a map was of little use anyway. We needed to know east and west and know that the former was usually the way home when we ventured into the featureless and sometimes very boggy 'true marsh'. Not being able to actually view our proposed base camp, I relied on the assurance of the Vwaza manager, Mutheta Ndhlamin, that he would organise the clearance of the track as far as Chelanya old camp, in time for our arrival in ten days. He was true to his word and the track was open in time. I was also assured that an old bore hole with an operational pump would provide us with fresh water. It actually provided us with a red rust solution but I have no reason to doubt its biological purity, although we did use purifying tablets as a matter of course. One thing that took us by surprise was the intensity of the attack from Tsetse flies that we would be subject to, especially in the woodland on the way to the true marsh. If I had known in advance it is doubtful if I would have pursued this particular adventure. Most of the team were badly bitten over a period of three days when we were working away from the Chelanya camp, which itself was relatively free of the pests. They proved aggressive and persistent (the flies not the team) but were much localised, preferring some of the more open grassy areas as well as clearings in the woodland. Our outlying camp adjacent to the Vwaza Marsh itself, next to the stream, proved to be a relatively safe haven. The team were instructed to avoid being out and about in the middle of the day and generally they were out of camp by soon after 6 o clock each morning. We organised our day approximately around two work periods, 6 am until 11 am and 3 pm until 6 pm, with the bat workers staying out until 8 pm.

View west across Vwaza towards the marsh *Peter Overton*

On the return from Kawiya, which is only about an hour's drive from Thazima, albeit along a steep and bumpy road, which again challenged the bus at a later stage, we called in at Hewe village, also called Katowo. I had hoped to pick up one or two fresh items of food for the camp but found the place poorly supplied. There were plenty of small shops, as is usual in Malawi, but they all seemed to have the same stock; mainly soap, salt, sugar and tea. Even ground maize ("ufa") could not be relied upon. The main store manager was having his head shaved when we arrived and said he would open his store in a few minutes. An hour later he turned up and I found the wait was largely futile. I was advised that a Wednesday was a better day to be there, when there was a good market. We did a detour to assist Patson, who had assisted Wellington, our driver and myself as our guide for the day. He wanted to collect some maize to take back to Thazima and told me it was a one kilometre detour. In fact it was much further along a difficult narrow track, which exasperated Wellington, the driver. However, when we did eventually arrive at the target village I could not have had a more friendly welcome; a senior elder offered me a seat in the shade. I gratefully accepted initially but then insisted that I would defer to a man who was clearly much older than me and in greater need. He

protested. I asked him how old he was. He said 47 so I said I would have the seat back since I was his senior! When I told him my age he was intrigued to know what they put in the water in the UK! I was more interested in what the water might contain in his village, since I was getting rather thirsty at this stage. It was the middle of the day and the promised maize seemed a long time in arriving.

I had made attempts to phone out from Thazima on our way out in the morning, to make some arrangements. Further efforts were made in the afternoon on the return trip. Although there is cell phone communication there, it was intermittent and often a short trip to a viewpoint overlooking the Bolero area can be helpful. In the event I was only partially successful but it is a useful development from previous years, when any communication, other than by radio within the Park, was not possible. Although George Numaxo kindly found me a short wave radio battery, to enable Richard Nyirenda to communicate from the bush, there does seem to be a perennial problem of both getting and holding charge for it, so it proved of no assistance. Since we were mainly located close to the main Park road during the Nyika phase of the expedition and rarely more than two hours from our base, I was not too concerned about this situation in 2008. However, it may have been more of a problem if we were working in more remote areas, as in previous years.

On return to camp I was to find an extra member of staff. Aubrey Mpelule had walked over to the team based at the Runyina bridge and thence on to our base camp. There were thus five of us in camp overnight, Adamson Banda having guarded the site while we were away for the day. We were also joined by a bushbuck. By the morning we had constructed a useful pole table to keep some of our provisions off the ground, although the majority remained sheeted down with the truck tarpaulin and kept in good condition that way, having no problem with bush rats or ants. We did put the two cold boxes in the river though, under the shade of the trees. This proved to be an excellent fridge and kept our fruit juices, margarine and cheese very well for the duration of our stay in the Nyika. At this time of year it is possible to keep almost anything in good condition, although we did find paw paws were vulnerable to quick ripening. After a cold start to the expedition, as is the norm, the weather had started to warm up a little, with a higher overnight temperature recorded and the midday sun appearing for longer spells from behind the cloud. The cool shade surrounding the river becomes very welcome at this time of the day and the fridge area doubled up usefully as a camp office!

Sunday 3rd August was a rest day. The team enjoyed the opportunity of making bread, pancakes and pizza, and swimming in a nearby pool near a waterfall on the river. Michael's guitar has proved a popular asset to the expedition and we now seemed to have a song for every occasion. The choral concert the previous night was amazing and was to be the fore-runner of many more, with wonderfully talented singers in our group. Michael even took his guitar on the following week's bush trek; a first for our expeditions.

Rest Day at last! *Peter Overton*

Playing Bau on rest day

Two teams headed off in different directions for the following week:
Extreme team
Richard, Laura, Katie, Michael, Bridget, Sophie, Pippa; Peter joined for the last two nights
Five nights: Monday 4 August to Saturday 9 August

Map references of all expedition camps are given at the end of the large mammal report.
The Extreme team made a good start to their week by coming across the very recent Eland poacher camp, marked by a persistently circling group of White backed vultures. We had been eying them for some hours whilst doing our plots but later in the afternoon decided to explore the river, down the slope some three hundred metres from our last position. It turned up trumps and we wondered whether if we had gone down there earlier we may have apprehended the intruders. Later on the honey gatherers informed us that they had heard gunfire in the valley over the ridge from our camp but by then the poachers were long gone. After two nights spent on rather a breezy old horse camp site, of which the main attraction was the level terrain and an existing toilet, the team moved on to climb Mwanda and explore the Park Boundary area, adjacent to the Zambia international border. It was here that there were some interesting herpetological finds at surprisingly high altitude. Five days after splitting off on their first major foray the Extreme team were reunited with the Quality team. Both were well satisfied with their week's exploration but very tired and well ready for party night and our Sunday rest day. During this week's excursion Laura wrote:

Woken by bee keepers early on the morning of the 6th we readily offered MK700 for the finest melt-in-your-mouth honey ever tasted. We then decamped, carrying all our provisions and camp equipment for the next five days; we hiked for the best part of five hours over hills and through harsh terrain. A spot of welcome relief and chance for photo opportunities on route came when the boys found and caught a large Chameleon.

Our camp site for the next few days was a burnt area, so after setting up we bathed and gave ourselves the afternoon off to dry off on the rocks, catch up on 'paperwork' and rest. Richard as ever was an impeccable host treating us all to a supper of nsima and tuna and around the camp fire we had a lively discussion about Malawian culture and healthcare. Richard taught us a few phrases in Tumbuka - "Zina lane ndine Laura!" Before bed the girls were joined by Richard and Michael in the nightly Team Extreme stretching programme.

Extreme Team half way up Mwanda *Bridget Starling*

In the following two days Team Extreme lived up to their name in both work and play. Having not done a plot the day before and wanting the next day free also – to climb the peak of Mwanda, a stunning 7000ft mountain on the border with Zambia – we had to hit a record of completing 2 squares – 10 plots – in one day. Morale ran unusually low as the heat rose towards

the end of the first square and it turned out that Katie had a thorn in her foot, putting a dent in her usual cheerfulness that we'd all come to rely on – but even this was no challenge for Team Extreme! Realising the thorn was set in pretty deep, a sleeping mat was laid out, a sharpened penknife was heated in the fire and washed with TCP; Katie was laid face down with Bridget and Michael holding her leg down whilst I performed minor surgery to retrieve the thorn! Thankfully all was a success and Katie's bravery was rewarded with an afternoon off to recover – we needed her full strength and smile back for the next days climb.

Early to rise on the third day we set straight off towards Mwanda. First crossing a scorched field where Pippa's eagle eyes prevented her stepping straight onto a sleeping puff adder that was in her path (the rest of us having already strolled straight past!). Shaun and Michael's excitement at the find was palpable and so our day's adventure had begun.
Being close to the Zambian border Richard was alert to Zambian poachers and on seeing an unoccupied illegal bee hive, he swiftly moved in to destroy it.

Climbing Mwanda took us through every terrain imaginable – Michael covered more than most by including the additional climbs up trees in hot pursuit of any skinks he may have spotted. The final few hundred metres were tough going as the midday sun was high and we were down to half a litre of water each – it had been three hours since we had last passed running water. But reach the summit we did and the view was worth every step – a breathtaking panoramic view of African scenery.

Our exhausted silence was broken with an act that I will always be grateful for – Bridget shared her secret stash of two Mars bars between us all; at no other point on the trip did I need chocolate more than at that moment. Bridget's patience and generosity were at the heart of my Team Extreme; along with Katie and Michael's excitement and enthusiasm, Shaun's knowledge, Pippa's singing, Sophie's art and Richard's outstanding care and guidance. We made it back to camp by dusk, exhilarated by the day's adventure.

Two days later on our return to base camp we met with the truck going to pick up the other team and passed a possible lion paw(!) in the sandy road. The Quality Team were welcomed back to the truck to a rousing chorus of "She'll be coming round the mountain" - adapted to our previous few days activities!

Quality Team
Lewis, Marianne, Benard, Ian, Kaele, Imran, Steven and Martin
Peter joined for the first two nights
Five nights: Monday 4 August to Saturday 9 August

This team covered the area to the south of the bridge over the Runyina River. I intended to join them for the last two nights and left base camp late in the afternoon of Thursday, with this in mind. Aubrey joined me, bringing only his rifle with him, since he had clear ambitions to return to his nsima at base camp before nightfall. Wellington gave us a lift in the truck to the bridge, with instructions to wait for Aubrey's return. It was a long wait. The Quality team had moved their camp and had left a written note as to where we would find them. Unfortunately it was getting dark and we had to abort the search for the night. We fired a couple of shots to see whether we could elicit a reply just before we turned back to their first camp. They heard them but decided not to reply in case it was poachers. Luckily I was better equipped than Aubrey, so I was able to

Quality Team heading out from camp for the day *Peter Overton*

feed both of us over a camp fire. I baked a couple of potatoes in the ashes and shared a can of baked beans. The empty can was useful for boiling water for a drink afterwards, since we had no cooking pot. I had a tent but we had to share the single sleeping bag I possessed, which fortunately opened out sufficiently to use as a top blanket. Annoyingly, it was only in the cold light of day that I remembered that I had with me a foil space blanket. This was the very thing that would have kept us warm overnight and stopped the two of us fighting over our corner of the sleeping bag! I was sleeping with it under my head in my safari jacket! Still, the story gave some amusement to the team in the morning, when we rapidly found them further down the river. Interestingly, Aubrey told me he had a similar experience with the leader of the 2005 expedition, Quincy Connell. I did not venture to ask which of the two nights he enjoyed the least!

Concurrently, Marianne was writing as follows:

We had a lovely swim in the Runyina in the evening sunshine. We washed our clothes, ate rice with onion, green pepper and carbonara source – a very welcome meal. Yet again more than any of us could eat. We then left camp at 5.15 pm to set up our bat detectors close to the marsh and watched for bats. It was then that we heard two gun shots. Bernard loaded his rifle and hared off into the bush, with the rest of us in close pursuit back to our camp, anticipating its dissolution by poachers. We shot up the slopes, not daring to turn on our torches, in order to maintain our invisibility to any poachers. We had expected to hear three shots ten seconds apart if it was friendly fire, so the adrenalin was flowing fast. The event was to cause much amusement to Peter and Aubrey the next morning. Peter said it was a training session to see how much ground we could cover in a short time in an emergency and anyway, we deserved it for hiding our cache of food at his overnight camp without telling him where we had put it!

Meanwhile Wellington had been waiting with the truck, a few kilometers upstream, with the instructions to await the return of Aubrey for two hours before returning to base if he did not turn up. Wellington is from Lilongwe. Being no bushman he found the company of seven elephants surrounding his truck disconcerting. The wilderness of the Nyika is beautiful and awe-inspiring but best enjoyed in the company of others!

Distant Black Crake *Peter Overton*

The next day we set off early to try and find what we thought was a Black Crake in a brief glimpse the previous day. Black Crakes are a common enough bird in Malawi but generally found at low levels in marshy areas. As far as we knew, there was no Nyika record of this species of bird, certainly not at this altitude. As we approached the nearby marsh, sure enough, there was the bird, chasing after frogs and insects, paddling through the shallow water with its red legs and greenish yellow beak. We took some long shots with the camera but could not approach too close without it disappearing back into the reeds.

After six days in the bush it was time to meet up with the Extreme team, who had been collected by Wellington from further up the Chilinda track. After some further plots and a foray back up to an earlier camp to explore a small oxbow lake on the river, we returned to the meeting place, somewhat tired. The other team, boisterous and elated was waiting for us, singing happily on the back of the truck. They had enjoyed a week of great achievements, finding a cat snake, probably a first for Malawi, hot poaching evidence and also had climbed the mountain Mwanda, which gives great views over towards Zambia, doing mammal plots on the way. The next day was Sunday, our allocated rest day and much needed you would think. However, some of the team left early to climb the top of Vitinthiza, which gives great views across the south of the Park towards Fingira Rock and beyond. Cold showers in the fast flowing river ensued in the afternoon. There is a magnificent area of waterfall rapids just downstream from our base camp

THE VWAZA MARSH EXPEDITION

Our bus had returned to base camp from Lilongwe just before dark on our final evening in the Nyika National Park. Our food supplies had now shrunk sufficiently for us to load them on the back of the bus, still retaining plenty of seating room for the team, leaving the trailer for the rucksacks. As we came out of our tents on the morning of departure we were all greeted with an egg in a carefully constructed nest, complete with appropriate inscription. Mine was 'not another bird!' capturing my enthusiasm for taking the team on any required detour in the bush to find something interesting in appropriate habitat. Imran's, I think, made some reference to his being 'back marker' when it came to getting off in the mornings. I even created a time formula for our required time of departure of (T-30 mins). T being the time when Imran expected to be ready! Ian and Kaele, the bat workers, had 'bat eggs' outside their tent doors. A trilogy of three beaming faces appeared out of one tent, which strangely did not have any nests and eggs, so the mystery was not long in being solved.

Bat egg for the batty people!

We left for Vwaza early on the morning of 11th August. However, the back of the truck was again more popular for the first 45 minutes to Thazima gate, prior to seating everyone for the trip down the hill. We said goodbye to Patson and Aubrey at the gate and Wellington took Steven back to Lilongwe in the truck, leaving us with the bus and trailer for the remainder of the expedition. We made a detour to Bolero to pick up some further fresh food supplies before returning to Kawiya along the very rough access road down to Hewe, before the track levels out and becomes smooth sand for the remainder of the route into Kawiya. The bus did not fare well on this trip despite great care being taken, so we had a repair job on one of the leaf springs to do, once we had arrived at our new base camp.

Having collected Kennedy and Edwin from the scout base at Kawiya we worked our way carefully along the track, now cleared of fallen trees but still shrouded in very tall elephant grass, reducing visibility to little more than a few metres. The last stretch of some 200 m had to be cleared of termite mounds to enable the bus to penetrate as far as the water pump at the now derelict old Chelanya scout camp. However, the terrain had been burned, which made the route more visible at this point. We pitched our tents in the tall grass, amongst a patch of trees and shrubbery, which gave us some shelter from the intense midday sun.

On the Nyika we start our day's trekking around 7.30 am and stay out for the day, returning to prepare food around 4 pm at the latest. For Vwaza Marsh, our day was adjusted to take account of the midday heat. We aimed to leave camp soon after six, taking water and biscuits for a mid morning snack and returning by late morning. After cooking in the middle of the day, we then went out again around 3 o clock, until dark. This enabled maximum effectiveness for all projects; birds and bats especially.

The moon was becoming full for this phase of the expedition and there was much sound from crickets and cicadas. Ray Murphy, our entomologist, who generally prefers the darker periods of the lunar month, spent three nights at our Chelanya camp and later said he had made some interesting collections on his trek. These are included in our entomological lists at the end of each report. He subsequently left to cut across the top of the reserve and back down the other side. Later, when we met him on our exit trip via Mzuzu he said he had suffered too from the Tsetse flies. This is a problem that we never face of course on our wilderness research in the Nyika National Park and it reinforces the attractions of working in the mountain areas, notwithstanding the cold nights.

Ray Murphy examining the nets at Vwaza

Exploring the River Dera

Most of the team spent three nights in the marsh itself. We set up a camp on the River Dera after a walk of some 2 hours to the west from our base camp. The flat, sparsely treed landscape had no navigational features and it would be easy to get lost. However, the hills to the east and just behind the camp at Chelanya are usually visible and a walk in their general direction means that you will sooner or later cross the the dirt road that cuts south through the reserve. Here you can turn left and will arrive back at Kawiya camp. Such snippets can be useful in a landscape, which in August is very hot and dry. Whilst water is never more than an hour away in a straight line, walking a straight line can be the challenge. The River Dera was fresh and clear, arising from a spring and not flowing through any settlements upstream. However, we took the usual precaution of sterilising all drinking supplies. The campsite was shady and known by our two local scouts, Kennedy and Edwin. There were large flocks of Guinea Fowl around and Purple Crested Loeries and Grey Lorries were also plentiful. A Hammerkop had constructed a nest nearby too. On the first day, after setting camp, the team set off to Chametete Pool with high hopes. Unfortunately it was nearly dry. Sitting on a large termite mound, in the hope of seeing evening visits by wildlife to what remained of the water, required patience and silence; the latter proved unattainable so the team contented themselves with a dried boomslang skin and a gorgeous rigid grey frog found in the marsh.

On the 15th of August Marianne offered our favourite chocolate malt drink, Milo, at 6 am and got silence for an answer. It seemed the first day of the marsh exploration had knocked some of the team out somewhat. By 7 am however, they were all on their way to the Luwewe River, some 5 km to the west of the camp. Sean and Michael went on a snake hunt with Edwin. They saw one but did not catch any. We paddled in search of frogs and then went round a bend in the river, to a shady spot where the river was deeper. We rested for a while, swimming in the river and having lunch, while the hated, marauding tsetse flies were active in the sunshine. As a cloud veil obscured the sun around one o clock we emerged to find two new species of frogs to add to our list, making five in total for this area. Edwin was very cautious since this was a prime resting spot for game – lion included. The fresh lion dropping that we had found earlier was uppermost in our minds. At Chamatete pool the late arriving party, who had remained at Chelanya for a further day, Peter, Imran, Bridget and Kennedy, joined the team and we all returned to camp together with a setting sun.

The following day we decided to penetrate the wet marsh to see if we could have some success with further amphibian finds. We left early and soon found the going very hard work. The reeds were well above our heads and it was almost like walking blind. The next step either took us onto a spongy mound or into a deep bog, with water over our boots and occasionally up to our knees. We ploughed our way steadily over two spongy grasslands and two woodland thickets. The furthest was called

Waluntchutchu and was where we discovered two fresh snares. The poaching season had commenced this week; for much of the year the area is almost inaccessible with the higher water table. The marsh seemed to stretch in all directions for miles as we surveyed the scene from a tiny island of palm trees, growing on a huge termite mound. In trying to reach the next mound the water was soon over ones boots. The scouts said it was easy to drown here so we headed back out of the swamp, as the sun became stronger and the flies became ever more active.

On our departure day back to Chelanya we travelled through a patch of burnt woodland that was exceptionally heavily infested with tsetse flies. This only served to speed us on our way out in record time! We discovered on arrival that the bat team and Martin had been forced to decamp in a hurry and retreat to the bus. A fire set by poachers had rapidly headed in our direction. Fortunately it extinguished itself before it entered the campsite but there was a period of high drama, with the height of the grass allowing rapid progress of the incendiary.

The bat group now started their most productive part of the expedition. They had remained at Chelanya and netted on the track leading to Kawiya and in the settlement itself, in the absence of the main team. We had known that we needed to work at lower altitude at this season to find a good level of bat activity and so this year was the first one in which we had allocated a substantial part of the Expedition to Vwaza reserve. The bat report summarises the details of the findings but they did find the human habitations of the scout camps a very productive area in which to work, whilst the more remote areas proved more difficult to trap in.

We departed from Chelanya on 18th August. Two magnificent Kudu, a male and a female leapt over the track on our way out, narrowly missing the bus. It was a fine exit! We allocated three nights to the final phase of our work around Lake Kazuni. This is an idyllic place and with so much open water it is clearly attractive to much wildlife as well. We again worked early and late and assembled a substantial list of birds, aided by a separate survey conducted by Heatherwycke Msiska and colleagues, focussing on water birds. We did some transect surveys on the large game, researched the herpetology further and of course had a very useful interaction with the local community regarding the substantial bat populations in the village. Our seed and plant collecting had been concluded at Nyika, after which Steven Mphamba had returned to Zomba.

There were many highlights at Vwaza and the extra time allocated there proved to be valuable. The elephant population around the lake is now substantial; we estimated that we encountered around 90 coming down to drink on our last afternoon there. We heard bush babies crying in the night, the hippo numbers are currently very high, with perhaps 250 around the lakeshore. We passed a voodoo tree, where a mad man had lived and died last year; gored by an elephant. Bernard showed us the spot where Hastings Banda had stood in 1968 to announce the creation of Vwaza Reserve to the local community and where Bernard had sat and listened as a small boy – until he was asked to stand for the president. Both Bernard and Lewis were based here at Kazuni so they proved to have an intimate knowledge of the area and many helpful friends and relatives, who assisted with the bat work and generally made us welcome.

EXIT TO RUMPHI AND THE LAKE SHORE

As usual, the team was generous with gifts for the scouts who had assisted us on the expedition. We donated all our remaining food supplies as well as some tents, sleeping bags, torches and other accessories on our final morning. Much handshaking and hugging ensued; most of the staff have now become old friends so there was a genuine feeling of expectation that we would meet up again at some stage.

At Rumphi we had arranged to meet the senior staff for a debriefing. The entire team was present for this and this proved to be a very worthwhile exercise, since each member could give their own summary of how their work had gone in the bush. The Parks staff were represented by the Regional Officer, Aubrey Mkandawire, Timothy Maseko (Nyika Park manager), Heatherwycke Msiska (Assistant Scientific Officer for the Nyika, Andrew Kataya (Scientific officer for Vwaza and a previous member of our expedition in 2006), Henry (extension officer) and finally Mutheta Ddhalamin (Vwaza Reserve Manager) to whom we are especially grateful for his active support in making the adventure into the northern part of Vwaza possible. Thanks were given all round and the request that we return next year emphasised as always.

The format for our return to Lilongwe was the same as recent years. First we needed to drop off camp equipment and any insect collections at the home of Ray Murphy north of Mzuzu, to enable his ever-expanding collection to be enlarged and the annual publication of his revised list in the Biosearch report. We find this is also an ideal lunch break, prior to the run down to the lakeshore. We then had two nights near Chinteche for complete relaxation on the lake – with warm showers and cold beer, as we describe it, before driving the six hours back to Lilongwe for the final night of the expedition. Here we were very pleased to welcome for a meal, as our guests, Leonard Sefu, Director of National Parks and Wildlife and his wife and Roy Bhima, Deputy Director and his wife. We were also pleased that Steven Mphamba from FRIM came up from Zomba to be with us (well supplied with his latest release on DVD).

SUMMARY

The expedition team comprised 19 members, including four scouts, with further assistance in the field from two extra scouts in the early stages. The UK contingent was 13, of whom six were working professionals and seven were university students. The balance of age, interest and ability was ideal for splitting the group into two for much of the field period. The team were a happy and focussed group for the entire expedition but there were inevitably some occasions when fatigue showed. Some days are quite challenging but the pre-planned structure of the expedition helps people to work through these. The two ‘rest days’ (usually Sundays) are known in advance and are much relished when they arrive; with the opportunity to cook something special for breakfast and take a cold shower in one of the fast flowing mountain streams. Nothing which did not rapidly biodegrade was left in the park. Our policy remains to refrain from taking any glass with us and removing all cans and non burnable containers when we leave. I thank the UK members of our magnificent team for undertaking such a challenging expedition and turning up so much valuable information. I also thank the Malawians who joined our team to show us their wildernesses of the Nyika National Park and Vwaza Wildlife Reserve and give us an experience that can only be appreciated by trekking and camping in remote areas. I hope that our continued run of discoveries will help them to conserve these areas and for future visitors to respect them by using their feet and not their vehicles to explore their treasures.

THE EXPEDITION TEAM

Our team included scouts, wildlife officers, young people for whom this was a career move, experienced field workers and adults on a first expedition experience. For some the priority was scientific success. Others were seeking challenge and adventure in this Central African wilderness, whilst making a useful contribution to wildlife conservation in this developing country. Below is listed the British and Malawian leadership of the team, followed by the rest of the team in alphabetical order and finally our two extra support scouts and two excellent drivers from Lilongwe.

C. PETER OVERTON BSc (Hons)

Project Director of Biosearch. Peter joined the Wye College Nyika Expedition (1972) to the northern extension of the Park (as it now is). He has long experience in project organisation and management in the UK, including nearly 30 years involvement with the wild game industry. For the British Trust for Ornithology, he co-ordinates a regional team of voluntary researchers, contributing to national records. He has now personally led the past three Biosearch expeditions, having organised all of them since 1996. “After the exceptional team of 2007 I wondered whether 2008 could achieve as much. I was not disappointed. The team atmosphere was once again exceptionally good and very focussed on the job in hand.”

MARIANNE J. OVERTON BSc (Hons) PGCE CBiol MIBiol FRGS

Marianne, our science co-ordinator, was raised in East and South Africa and enjoyed leading field research expeditions in the Amazonas, Kenya, Arctic Norway, Yukon, Queensland and a series of expeditions to Malawi with Biosearch Nyika. Each expedition involved a wide range of ecological surveys with various sized teams, the largest being 81 in the field! She is a fellow of the Royal Geographical Society and has twice been regional chairman for the Institute of Biology in the U.K. She is a governor on the Board of Trustees of the University of Lincoln.

STEVEN MPHAMBA

Steven is a herbarium assistant at Zomba for the Forestry Research Institute of Malawi (FRIM). Since 2003 he has been collecting seed for the International Seed Bank and worked with the Darwin Initiative in Mozambique. He joined our team in 2007 and was highly valued as a team member so we are very pleased to see him return in 2008. His involvement in a successful group also struck a chord with many of the team, who now have a souvenir of his latest DVD release.

LEWIS MMTUMBUKA
Senior Parks and Wildlife Scout

Lewis is married to Mynas and has six children between the ages of 3 and 28. He has worked with the DNPW for 29 years, being on the Nyika (8yrs), Kasungu (7yrs), Nkhota kota (1yr), Kasungu (1½yrs) and Vwaza (9yrs), where he is currently working on wildlife monitoring using aerial and roadside counts and transect walks 2km apart. He is interested in using the Biosearch monitoring techniques in other areas. He has now accompanied our team on four consecutive years and has proved an invaluable source of experience.

RICHARD NYIRENDA
Parks and Wildlife Scout

This was Richard's eighth expedition with us. This is a remarkable achievement and shows great enthusiasm by him to join the teams. His interest in birds is of significance, since it is of great importance in his role of supporting visitors to the Park and elsewhere in Malawi, which is noted for its abundance of bird life. Richard has been a scout since 1989 at Chilinda, Uledi and Thazima. He has specialized in birds and has developed considerable skills, enabling us to produce a more comprehensive bird list in this report than for some years.

SHAUN ALLINGHAM

Shaun is studying for a degree in Zoology at the University of Derby. He also works part time at an aquatics and reptile centre. He has travelled to Costa Rica to study amphibians and reptiles and showed immediate considerable skill in species identification on the expedition.

KENNEDY CHIHANA
Parks and Wildlife Assistant
Kennedy is married to Judith and has four children between 16 and 21 years old. He joined the staff in 1993 and joined us on our first expedition in 1997 at Nganda. It was good to work with him again after an 11 year break. He is based at Kawiya Camp in the north of Vwaza reserve. He is charge of planning patrols, monthly reports and care of government equipment as well as doing extension work in the villages.

KATIE COTTRELL

Katie is studying Biological Sciences and Ecology and Environmental Management at Nottingham Trent University. She has spent three months travelling to Australia, Fiji, Cook Island and America recently

LAURA HUMPHRIES

Laura works professionally as a Physiotherapist. She gained her Duke of Edinburgh Award so is no stranger to camping and trekking.

BENARD KUMWENDA

Parks and Wildlife Scout since 1997.
Based in Vwaza at Kazuni for 8 years and Kalinda Mawecamp for 7 years and Zavo camp for 2 years. Has been at Thazima in the management section for over two years. Benard is married to Rosemary Chilumba and has five children from 2-15years old. “It is my first expedition and I have really enjoyed myself” The expeditions have been good because they have contributed to patrols in the Nyika Park for many years and covered a very big area. In addition we have identified illegal activity and I wish to continue with this project until further notice!”

IMRAN KHAN

Imran is a qualified football referee, a talent which unfortunately we did not use on this expedition, although in 2007 it may have proved useful, when the expedition team had a match at Uledi, in the north of the Nyika National Park. He is studying Physiology and Pharmacology at Nottingham Trent University. He is particularly interested in the medicinal uses of plants in Malawi.

SOPHIE MARTIN

2006-2009 Ba. Visual Theories, University of East London
With an ongoing interest on conservation and the environment, the expedition provided me with the opportunity for practical conservation work assisting in the surveying and tracking of large mammals on the Nykia plateaux. In addition I was also able to assist in the finding and identification of reptiles and amphibians. I was able to bring my knowledge of art to the project, producing drawings and paintings of scenes we encountered as well as studies of reptiles and amphibians made by close observation. Finally the expedition awarded me the experience of living within a camp and participating in domestic tasks such as food preparation and cooking.
2007 Educational development project, Moshi, Tanzania, ChildReach
2004-2006 RSPB Junior leader West Kesteven and Belton.

PATSON MUKISI

Patson is from Chitipa District in the extreme north of Malawi. He has been with the DNPW for 15 years and has joined our expeditions in four years during that period. He was a member of the first 1997 expedition too. He says “Thank you for accompanying me again this year. We have shared skills concerning wildlife conservation, birds, flowers and many other things. I shall be happy to see the team in 2009; we welcome visitors to the Nyika and Vwaza”

MICHAEL OVERTON

Michael has been on eight expeditions to the Nyika National Park. He is especially interested in herpetology and would welcome the opportunity to work alongside a Malawian herpetologist when possible. He hopes 2008 will provide this chance. He is currently studying for exams in the UK, with Geography being his strongest forte.

IAN PILCHER

Ian was a chef in the Royal Air Force and has spent time in the Falkland Islands and South Georgia in the South Atlantic, where he extended his experience with small boats and mountain travel. He has also been a light house keeper and done residential care for children. He completed a Science Foundation course at University. His interest in bats goes back many years and he is well known, with Kaele his wife, for his expertise in this field.

KAELE PILCHER

BSc(Hons) Natural science with Biology
Kaele has worked on various biological projects for the Open University and like Ian has spent time in mountains, orienteering and camping. She currently works with a financial services company

MARTIN PRESTON

2006 – 2009 BSc(Hons) Ecology & Environmental Management
Martin's main interest in this field of work is in the conservation and protection of habitats and especially the plant life in these areas. His aim was to gain more practical skills and knowledge of an environment that is very different to those found in the U.K. His main aim is to work in the area of conservation management either here in the U.K or abroad.

BRIDGET STARLING

Bridget is a Chartered Accountant and joined the team primarily for the adventure of living in a remote wilderness. Her disciplined approach to her professional carried over well into expeditioning. She consistently got things moving in the morning when others were trying to squeeze the last five minutes in their warm sleeping bags.

PHILIPPA STUBBS

Pippa discovered at the end of the expedition that she had gained her place at St Andrew's University in Scotland to study Zoology. She was able to get a mobile phone signal at Bolero to confirm the results of her A levels and a celebration party ensued in a local bar, somewhat different to what she was familiar with at home.

EDWIN ZGAMBO Senior Parks and Wildlife Scout

Edwin is based at Kawiya Camp in the north of the Vwaza reserve. He is married to Harriet and has three daughters, aged between 2 and 18. He specialises in mammals and is involved with law enforcement and management but also does extension work in schools as well as dealing with problem animal control.

ADAMSON BANDA

Has spent five years at Chilinda and worked for five years as a scout. He helped man our base camp for a week in 2007, when the whole team was away and walked much of the way from Chilinda to get there! He supported us in the early stage of this expedition at the Vitinthiz base camp

AUBREY MPELULE Parks and Wildlife Assistant

Aubrey joined the staff in 2004 and is based at Chilinda, which is his first posting. He is working on research with Paston Simkoko. He was a member of our 2005 team based at Zungwara. “I would like to join future expeditions to learn more”, he says.

WELLINGTON CHIMTENGO BANDA

Wellington was our truck driver for the first two weeks of the expedition, prior to changing over with Knox when we departed for Vwaza. He is married with one daughter. He assisted with transport for the Imperial College Bridge Building project at Uledi with which Biosearch Expeditions was associated.

KNOX KAIPA

Knox drove the bus to take us up to the Nyika and later to do the trip to Vwaza and the return to Lilongwe. He was a popular member of our group who drove with great care, having ten years experience in the job.

PROVISIONS

Peter Overton

SUMMARY

We have below our standard list for a team of 25 including game scouts. It is a useful working document when assembling provisions at the start of the expedition. It incorporates an adequate safety margin to make sure that we do not run low in remote areas – *provided that the supplies are properly managed.* It is too easy to 'cherry pick' favoured items and create the impression that stores have run low when in reality there is plenty to spare. It is essential that a responsible person is given the task of store management and in general other members of the team should not access these stores without instructions.

Laura and Katie preparing food *Marianne*

This year our list was scaled down to provide for 20. Also, since the expedition was in a position to top up at Bolero in transit to Vwaza, we were able to purchase less contingency food, allowing for more fresh food input towards the end of the expedition. This meant that overall our ration was less reliant on expensive packaged items and more on the local markets, making for a more enjoyable experience for all at the end of the expedition period. Since no two teams are ever the same, there is always the odd item which appears to be short or in surplus but we are now getting good at fine-tuning our rations. Topping up with bread, tomatoes and fish from the market was popular. We needed to add more orange squash to the list because of the extra time spent in Vwaza, where conditions were hotter. Hot sauces are always popular to enhance rice dishes and our increasing use of cheese persuaded us to consider adding preserved pickles to the list, although tomato and onion makes for a sensible fresh replacement. Since Malawi tea is good and readily available we will substitute loose leaf for tea bags, which tend to become unsightly and are not very environmentally friendly. This means a tea strainer is added to the hardware list. Although Milo is a very popular malt chocolate drink, many people seem to prefer tea more frequently so we can reduce our purchase of the former. Paw paw is delicious but has poor keeping quality, hence we have reduced the recommended purchase. Grapefruit, however, was very popular and kept extremely well throughout the expedition. Rations can be effectively preserved whilst we are operating in relatively cool conditions; this is done by keeping vulnerable supplies in a cold box and submerging that in a river in the shade and keeping everything covered to protect it from the midday sun. We pride ourselves in wasting virtually nothing, thereby making sure that most of our contingency food can be distributed to our Malawian colleagues and their families at the end of the expedition.

Mzuzu market *Marianne Overton*

It is not essential to bring anything from the UK but some items are difficult to secure in Malawi. We store our hardware near Mzuzu and have built up good catering equipment over the past three years. Quality vegetable knives can be purchased very cheaply in the UK and are recommended in preference to local knives. Dried yeast can be purchased in smaller quantities than in Malawi, where it is usual to find a block which exceeds our requirements. Dried potato and flavoured sauces are cheap to purchase and easy to take out on a plane. Dried fruit has been difficult to find in Malawi and we usually distribute this to the team at the training weekend for them to individually pack. Porridge oats is our staple breakfast diet. This is not a tradional Malawian food, being replaced by nsima (maize porridge) but it is usually available in Lilongwe. However, supplies can be erratic, so we usually take some out with us. Generally speaking, apart from local fruit and vegetables, foods preferred by our non-Malawian team are more expensive in Lilongwe than the equivalent item purchased in the UK. Most tinned food for example is imported from South Africa and can cost up to three times the price.

Fish market *Marianne*

The list below, then, is recommended purchasing for a maximum team of 25 and can be scaled down to suit either lower numbers, or shorter period in the bush with no guaranteed resupply. It has proved to supply an excellent diet; the old days of dried ratpacks are now over and the interest of the diet is only limited by the ingenuity of the chef of the day.

TRADITIONAL MALAWIAN FOOD

Cakes of dried flies *Marianne*

One of the fascinations of the local markets is being able to view some of the more traditional Malawian food, some of which is less popular with the visitor's palates.

Lake Malawi is well known for its abundance of Cichlid fish. Most of the harvest is dried and cured in the sun before being sold inland in the markets. The game scouts particularly like this and it does make excellent high protein bush tucker, which we are happy to supply as part of their ration when they join us in the field. It is also very light to carry of course. Most of the team prefer to get their protein from beans,when our early beef supply is finished. However, the photograph shows an interesting alternative – the cakes are made of squashed flies. A highly logical biological control, particularly if they include Tsetses, which presumably have a good blood meal included! As far as we are aware none of our group elected to try this original dish but it is probably best added to a soup for flavour.

LIST OF PROVISIONS

Provisions for 24 people x 25 days (to be adjusted according to actual number on team)

Food

Item	Quantity
Apples	10 kg
Avocados	40
Bananas	120
Cabbages	30
Carrots	15 kg
Grapefruit	100
Green beans	15 kg
Green peppers	10
Papaya	4
Pineapples	15
Baked beans	60 tins
Biscuits (sweet)	40 packs x200g
Bread	20 loaves
Bread Rolls	1000
Cooking oil	15 litres
Cheese - cheddar	60 packs x 400g
Chilli hot sauce	1 bottle
Chocolate drink - Milo	40 x 250g cartons
Coffee	1 x 500g
Spam	50 tins
Instant custard powder	15 packs
Drink – fruit	8 x 5 litres
Eggs	150
Fish -kapenta	15 kg
Flour for bread	5 x 2.5kg
Fruit – dried mixed	6 x 1 kg
Fruit cocktail	60 tins
Herb mixture	2 small shakers
Orange squash	15 x 2l bottles
Juice - grenadilla	8x 2 litres
Juice – guava	8 x 2 litres
Macaroni	15 x 500g packs
Maize flour	15 kg
Margarine	25 x 500g tubs
Marsh Mallows	10 packs
Matches	2 x 6 box
Meat - canned	25
Meatballs in gravy	35 tins
Milk – liquid sterilised	70 bottles
Milk powder – NIDO	4 x 900g tubs
Onions	20 kg
Orange squash-Sobo	4 x 2l bottles
Oranges	12 kg
Peanut butter	20 pots
Peanuts	2kg
Pepper	1 x 100ml pot
Pickle for cheese	5 pots
Porridge oats - Jungle	25 x 500g bags
Potato dried	25 packs
Potatoes	75kg
Provita biscuits	60 packs
Rice	5 x 5kg bags
Rusks	30 x 500g boxes
Salt	5 x 100g
Sardines/tom	30 tins
Sauce - Bolognese	5 packs
Sauce - Cheese	5 packs
Sauce - Pepper	5 packs
Sauce - Peri Peri/chilli	5 bottle
Sauce - Sweet & sour	5 packs
Sauce - white	5 packs
Soup – vegetable	24 packs
Soya – tomato & onion	6 packs
Spaghetti	15 x 500g packs
Sugar - brown	3 kg
Sugar – white	42 x 1kg

Hardware

Item	Quantity
Candles	4
Bowl plastic large red	1
Bowl plastic large blue	1
Bowl plastic small red	1
Bucket – green plastic	1
Bucket – red plastic	1
Grill /Mesh for fire	1
Trays – plastic	3
Machetes	3
Hoe	1
Ladle	1
Large platters for base camp	2
Birthday candles	1 box
Cheese Grater	1
Tinfoil	2
Cutting boards	2
Knives	3
Food bags reseal	2 packs
Fish slice	1
Frying Pan	1
Insulated box	1
Potato Peeler	2
Tea strainer	1
Colander spoon	1
Omo powder	3
Pan scrubber	20 pack
Nest of Cooking pans	1x6
Mosquito net	1
Fire gloves	1 pr
AA batteries	Pack of 20
AAA batteries	4x2
Disinfectant - Dettol	1
Bin Liners	1 roll
Wire wool for pans	8
Bucket – 5 gallon for water	1
Base camp tin opener	1
Hessian sacking	1 roll
Potato Masher	1

CAMERAS IN THE FIELD

Ian Pilcher

INTRODUCTION

A wise man once said, “Kill nothing but time, take nothing but pictures and leave nothing but footprints”. This phrase sums up the environmental impact that a Biosearch Expedition aims to have on the habitats it visits and the approach undertaken by everyone on expedition.

Photographs are the embodiment of the memories that we take away, to remind ourselves of the time we spent in the bush. These are used to educate, inform and impress our friends, families, colleagues and the wider world. While not all of us have the skill and talent to draw a picture like Sophie (my drawings look like the aimless wanderings of a snail on a garden path), we can all point a camera and press a shutter release.

In the last 10 to 15 years technology has changed the face of photography. The development and refinement of digital photography and proliferation of the personal computer has suplanted film, chemistry and photo-labs. Today’s cameras are available in two distinct types: the professional/serious amateur single lens reflex (SLR) camera, with its interchangeable lenses and various ‘bolt-on accesories’ and the camera of the people, the compact camera. It does everything a SLR does but in a package little larger than a cigarette packet.

So what cameras did we take and how did they fare in the field? Both types of camera were taken including a slide film SLR.

COMPACT DIGITAL CAMERAS

Fujifilm Finepix E550

- Zoom 4 x optical (32.5mm – 130mm equivalent); 6.3 x digital
- ISO 80/100/200/400/800
- 6.3 Megapixels resolution
- Image stabilisation
- Exposure modes:
  - Auto record - Point-and-shoot, some menu items locked up
  - Program mode - Still point-and-shoot but with full menu access; a Program Shift feature lets you select from several aperture/shutter speed combinations
  - Shutter priority mode - You choose the shutter speed, camera chooses the aperture; shutter speed range is 3 - 1/1000 sec
  - Aperture priority mode - You choose the aperture, camera chooses appropriate shutter speed; aperture range is F2.8 - F8
  - Full manual (M) mode - You choose both the shutter speed and aperture; shutter speed range expands to 3 - 1/2000 sec
- Movie 640 x 480 pixels with sound (30 f/s) not used)
- 2.0" TFT LCD monitor
- Built in pop-up flash
- Powered by AA batteries

Comments from owner
It seemed temperamental, but in the end I think it just needed frequent battery changes. But didn't always tell me that was the problem. Basically it was more competent than I am.

Towards the end it started taking much lower resolution pictures. I have no idea why, but it was probably my fault. Overall I have more and better pictures than I expected.

Panasonic Lumix DMC-LZ5

- Zoom 6 x optical (37mm – 222mm equivalent)
- ISO 80/100/200/400/800/1600
- 6.0 Megapixels resolution
- Image stabilisation
- Exposure modes:
  Movie mode
  Macro mode - For close-up shooting
  Economy mode - Same as auto mode, but with lower power consumption (through lower LCD brightness, faster sleep, etc)
  Auto mode - For everyday shooting
  Simple mode - So easy, even my cat uses it!
  Scene mode 1/2 - You pick the scene and the camera uses the appropriate settings; choose from portrait, soft skin, scenery, sports, night portrait, night scenery, food, party, candlelight, fireworks, starry sky, snow, baby, high sensitivity
- Movie 640 x 480 pixels with sound (30 f/s)
- 2.0" TFT LCD monitor
- Built in pop-up flash
- Powered by AA batteries

Comments from owner
I took two memory cards of 525mB. It was ample, using almost no video and full density pictures. One spare battery was enough, as long as very little editing was done in the field and only infrequent reviewing of pictures.

This was this camera's third expedition, purchased early in 2006 for just over £200. Excellent on close-ups and a good zoom. Sadly I lost the case just before departure from the UK, which put it at risk. When I was taking a picture in long grass, I stepped forward to get a slightly improved view and fell down a large hole, getting dust in the camera, from which it never quite recovered! It also got dropped in water, very briefly, an accident from which it did recover, after it had a day lying open in the tent to dry. This is an excellent camera, with good size vision screen and *relatively* robust. Unfortunately I have been told it is not worth repairing and a replacement is in the region of £180.

Panasonic Lumix DMC-LZ5

- Zoom 3.7 x optical (36mm – 133mm equivalent)
- ISO Auto/80/100/200/400/800/1600
- 8.0 Megapixels resolution
- Image stabilisation
- Exposure modes:
  Auto mode - For everyday shooting
  Manual – For those who like to fiddle
  Digital Macro
  Colour Accent
  Colour Swap
  Stitch Assist – For those panorama shots you take overlapping each other
  Special Scene – Portrait, Night Snapshot, Kids & Pets, Indoor, Creative Light Effect, Foliage, Snow, Beach, Fireworks, Aquarium, Underwater
  Movie mode
- 2.5" TFT LCD monitor
- Built in flash
- Powered by Li-Ion battery pack

Comments from owner
I took a 4 GB memory card which was enough for 1000 photos. I also took two fully-charged batteries, which gave out on our penultimate day in Vwaza, there being nowhere to plug in a charger in the bush.

This was a new camera and it was fairly easy to use, but being a bit of a technophobe I didn't explore all its functions. It did take excellent photos: the zoom was great, the macro was difficult to use as focusing was hard to get right but when you did the photos were good. It was reliable and was always ready at a moment's notice.

All in all this was a camera that did what it said on the tin, take out of pocket, point and shoot, put back in pocket.

SINGLE LENS REFLEX CAMERAS

Canon EOS 350D (Digital)

- 8 megapixel
- DIGIC II image processor (better image quality, faster processing, less power consumption)
- Instant power-on time, faster shutter release, shorter blackout time
- Continuous shooting speed 3.0 fps
- Buffer 14 JPEG frames
- Flash pop-up
- E-TTL II flash
- Nine custom functions
- Exposure modes:
  - Full auto mode - For everyday shooting
  - Program mode
  - Aperture priority mode – Control of aperture, shutter speed auto
  - Shutter priority mode – Control of shutter speed, aperture auto
  - Manual – For those who like to fiddle
- Control noise reduction
- Flash sync speed in Av mode
- Shutter button / AE button
- AF-assist beam control
- Selectable 0.3 or 0.5 EV exposure steps
- E-TTL II mode
- Flash shutter curtain sync (1st or 2nd)
- Selectable Metering mode
- Selectable AF mode
- Flash exposure compensation
- Powered by Li-Ion battery pack

Comments from owner
I also took: an OEM battery grip equivalent to three battery packs, a spare backup battery, a Canon EF-S 18 - 55 mm II lens, a Sigma's 70-300mm f4-5.6 APO DG Macro lens and a Canon Speedlite 430EX flashgun, 1 x 2 GB, 1 x 1 GB and 1 x 512 MB memory cards.

The biggest problem with the camera in the bush is its weight and size; you cannot call a SLR 'point and shoot'. That said, in a planned photo-shoot the quality of photographs are second to none. Care was needed when changing lenses not to get dust into the works. I tended to put a lens on in the morning and leave it on all day. I love the Sigma lens as it is pin-sharp and a jack of all trades: great portrait shots with a useable depth of field, great for telephoto and a usable macro, but it is heavy. The Canon lens is light, but I dislike it as pictures taken with it can be soft (not sharp). I would leave this back home next time in favor of a dedicated macro lens.

Other than its weight and size the camera and accessories performed faultlessly. I took about 800 photos, the battery grip didn't run out of power and I never needed to use the backup battery.

Minolta Dynax 7000i 35mm Film Camera

- 35 mm Film
- Continuous shooting speed 3.0 fps
- Flash pop-up
- TTL metering
- Exposure modes:
  - Full auto mode - For everyday shooting
  - Program mode
  - Aperture priority mode – Control of aperture, shutter speed auto
  - Shutter priority mode – Control of shutter speed, aperture auto
  - Manual – For those who like to fiddle
- Shutter speed up to 1/4000s
- Selectable 1/3 or 1/2 EV exposure steps
- AF-assist beam control
- Flash shutter curtain sync
- Selectable Metering mode
- Selectable Auto Focus mode

Comments from owner
We took a 28-80 mm lens and a 75-300mm zoom lens. We used 5 colour slide films in the field and on return, scanned in the best slides at 4800dpi to get excellent quality. Spare batteries taken.
This old-fashioned faithful has done about eight expeditions without fail and regular use over a good many years. Very reliable, takes excellent pictures, but rather heavy so one is inclined to pack it carefully in a rucksack, making it inaccessible for those instant magic moments, but great for planned photo-days.

Historic note
Launched in 1988 this was the world's first auto focus camera. In its day it was a top end amateur camera, and even now produces quality results.

CONCULSION
Digital or film? Purists will argue that film is superior to digital and in the early days of digital that would have been true, but digital has come of age. In the field of the modern compact and SLR camera, film is now equaled or even bettered by digital. No longer do you have to expose reels of film not knowing if you have got that shot or not until it has been developed or, horror of horrors, the film not winding on and getting no photos at all. Digital photos can be reviewed and deleted and retaken if needs be, immediately. Hundreds of pictures can be stored on one memory card and you retain only what you require.

Which type of camera to take? Having lugged my much loved SLR around Nyika and Vwaza the answer is simple, the digital compact camera. The latest compacts do everything you want them to do to a good standard; they are small, always to hand and easy to use. There is no setting up required just point and shoot. They do start to fall down when they are required to do specialist work eg photographing fast moving objects, macro photography, where there is low contrast or light levels; auto everything does not always work well in these conditions. This is where an SLR comes into its own with the ability to use manual focus, specialist lenses, adjustable shutter speeds and apertures. There will always be a need for a SLR on scientific expeditions. But my advice is to take a compact and plenty of batteries, keep it in your pocket ready to snap that leopard that is stalking you.

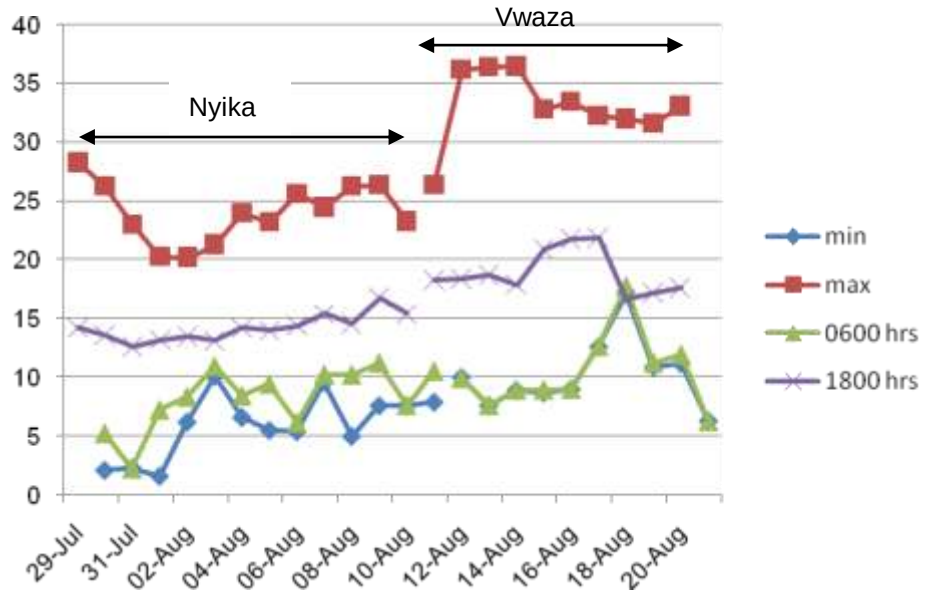
TEMPERATURE

Kaele Pilcher

Temperatures were recorded using a Technoline Remote Thermo Temperature Station WS-9117-IT. Recordings were taken at 0600 hours and 1800 hours for the actual temperature, the maximum and minimum temperature in the previous 12 hours. This provided a daily maximum and minimum temperature.

RESULTS

Figure 1 Daily temperature readings in ° Celsius during the expedition



There are two striking features noted from the graph, one is the size of the temperature fluctuation. In Nyika (29th July – 11th August) the difference in maximum and minimum temperatures ranged from 11.2ºC to 24.2ºC with an average difference of 17.9ºC. Whilst in Vwaza (12th – 21st August), the difference in maximum and minimum temperatures ranged from 14.9ºC to 28.8ºC with an average difference of 23.5ºC.

The other striking feature is that the minimum temperature recorded in any 24 hour period was not that different from the recording taken at 0600 hours daily. This can be seen particularly well in the data gathered in Vwasa.

CONCLUSION

Daily temperature range is much greater that experienced in the United Kingdom and the night time temperatures often falling uncomfortably low. It was noted that often the scouts did not have suitable clothing/camping equipment to keep them comfortably warm. Over a prolonged period this could have an adverse effect on their efficiency and health.

THE ROLE OF WOMEN IN MALAWIAN CULTURE

Laura Humphries

Malawian culture is deep in tradition and respect. It is an amalgamation of several sub-cultures or tribes, with family at the heart of all and women at the heart of every family. Women in Malawi account for over half of the population. They are legally and constitutionally entitled to equal rights, but are strongly entrenched into traditional stereotypes that affect every aspect of their daily living.

Birth in Malawi is a well-celebrated event with equal joy over the healthy arrival of either a male or female child. Skilled birth attendance is extremely low, with medical help at a little over 50% of births. Most women deliver in their rural homes, often owing to the vast distance of the nearest hospital. Where they are able to go into hospital, the pregnant woman may do so for three weeks prior to the delivery, thereby allowing the mother to prepare for her new arrival. Large families are common in Malawi, where there is a firmly held responsibility of looking after kin. With a fertility rate of approximately 6.7 children per woman, the large number of children is related to the hoped-for maintenance of the parents in later life. Family planning services, introduced from 1982, have attempted to increase spacing between children, but have struggled against deep-rooted cultural beliefs on the importance of reproduction. Contraception is only very slowly gaining acceptance. Abortion is widely disapproved of by Malawians and only legal as a last resort to save the mother's life. Maternal mortality rates are as high, with 1 in 15 women dying from birthing complications. Infant mortality is also exceptionally high at nearly 100 in every 1000 live births.

Following a successful delivery, different ethnic groups have important rituals to announce the birth of a child and publicly present them. One such ceremony *(kukuruta chikutsa)* is celebrated when the infant is 8 days old and involves handing the baby across a fire from east to west and then north to south to ward off evil influences. A family feast then occurs.

Babies through their infancy are rarely separated from their mothers and will be carried on the mother's back whilst she goes about her daily routine. Out of every 10 surviving infants up to another 3 will not live past the age of 5 and a further third of those will not live beyond 10 years of age. For the children that survive life is led as a consuming mixture of responsibility and fun. From an early age the boys and girls are trained in their gender-specific responsibilities. Girls learn to collect water, cook meals, clean and carry their younger siblings. When not completing chores with their mother young girls have the same freedom as

boys to roam and explore the close knit communities and local countryside to quench their childhood curiosity. Malawian children enjoy hide and seek *(kalondolondo)* rope jumping and, for the girls, playing 'house' and carrying stones on their backs in practice for carrying babies.

Co-educational primary schools start at 6 years of age. Increasing numbers of boys and girls have enrolled since the onset of free primary education. Families need children to work at home or for money, however, and this leads to a very high drop out rate, with 75% of girls dropping out of primary school. Child labour is common on both a formal and informal scale, with UNICEF reporting a near 37% engagement of child labour between 5 and 14 years of age. With education such a low priority amongst girls, the 2003 literacy rate was only 49.1%, though this had thankfully risen to 71% by 2006.

For Malawian girls 'coming of age' is often celebrated by a ritual dictated by the ethnic group that they belong to. It mainly involves dancing and singing to instruct the girl on her coming role as a wife and mother. The rituals still sometimes involve a sexual initiation. The Chewa girls may still expect to be sexually initiated by a village elder. Such a rite of passage is worrying in view of the increasing rate of HIV. It lends to the common practice of pre-marital and unsafe sex. Unplanned pregnancies are a regular problem among Malawian women, with the associated risk of sexually transmitted diseases and serious complications from the traditional (and medically unsound) termination methods.

The legal age of marriage in Malawi is 18, although marriage is permitted from the age of 15 with family approval. The man and the woman wishing to marry will strike up their own relationship, but for this to become formal the man will approach the woman's maternal uncle for approval. If the maternal uncle provides sanction for the union then the “bridal price” is agreed. The wedding is then usually a large family affair with the couple being counselled on marriage and familial obligations. Marriage partners are required to respect and render help to kin on both sides. Variance between tribes dictates if the newly married couple move in with the groom’s or bride’s parents or move in to a house on their own.

Extra-marital affairs are common, a significant contributor to the spread of HIV. In the southern and northern regions, where polygamy is practised, the husband is required to create a separate household for each wife and her children. Women are allowed to initiate divorce in Malawi, but the reason given for the divorce and the presence of children dictates the proportion of the bridal price that is returned to the husband. In the event of a divorce the woman, though legally equal, is often heavily discriminated against. Property rights are traditionally weighted against the woman and a mother is rarely granted custody of any children. Widows are also discriminated against in relation to inheritance and welfare. Without a will that specifically details what she is to inherit, a widow will receive nothing.

Within a marriage husbands and wives assume strongly defined gender roles. Women work around the house, raise children, cook and make hand-crafted items. Women undertake much heavy work, such as collecting water and firewood. Carrying heavy loads is also appropriate female work – if a man were to accompany his wife to a market or to gather wood he would lead the way whilst she carries whatever they may collect, as well as any infant that they have with them.

Only half of Malawian women are formally employed. In keeping with the gender stereotypes, those in rural areas are likely to be employed in farm work – including tobacco leaf collecting. In urban areas women are most likely found in teaching and nursing posts. Woman are prohibited from working at night or underground. Familial and community networks are heavily relied upon for childcare whilst a mother is at work. A wife that works will not be relieved of her domestic duties.

Malawian women can be inspired by women like Joyce Banda, a prominent business woman, government minister, activist and founder of the NABW, and Roselyn Lois Mankhwala, Director of Ntonya Private Schools and founder of Women in Partnership against HIV/AIDS.

The elderly in Malawi are revered and children are morally bound to provide for their parents. The extended family is also called on to care for orphaned grandchildren, but with the rise of

HIV there is an undermining of the traditional support system. Community childcare centres are only now beginning to develop to help counteract the severe strain on grandparents.

The Chewas believe that God sent a blue-headed lizard as the messenger of death and a chameleon as the messenger of life. The lizard went first and informed the people at the graveside of God's message and the people accepted it. The chameleon that came bearing the message that people could return to life after their death came too late and that is how the Chewas lost the chance to attain immortality.

Death carries it own variance of rituals amongst the tribes of Malawi. During the death ceremonies the women sleep in the same room where the dead body is laid before burial. The women are well supported by other women who have suffered bereavement. In the Yao culture a man will keep watch over the body of a woman and a woman will keep watch over the body of a man. The rituals of the Chewas involve the women brewing a maize beer that requires a strict sexual abstinence during the process of fermentation. When the beer is ready, masked dancers begin a celebration in which the beer is drunk by both the dancers and audience before a thanksgiving ritual is performed by dedicating a big tree to the ancestors.

The role of women in Malawi, although restricted by gender, is one that commands great respect and increasing support whilst modernisation is gradually taking place, for example in the field of education.

BIRD REPORT

Peter Overton and Richard Nyirenda

INTRODUCTION

Over the past ten years bird reports have been presented in the Biosearch Expedition report sporadically, depending on the available expertise. This year both authors were actively working together in the three week period to make a checklist of birds in the two areas of the expedition. The area covered on the Nyika was more or less restricted to the country around Vitinthiza in the south west of the Park and mostly around the 6000 ft contour. Since this is an approximate transition zone for many upland species it was interesting to note, not just what was present but what was actually absent, which we may have expected to see. Conditions for viewing were generally quite good compared to 2007; cloud generally dispersed during the day and the second of the two weeks at the Vitinthiza base camp was quite sunny. As would be expected Vwaza provided no problems with visibility at this season but we were rather grateful for some cloud cover during our stay, when it became very hot in the middle part of the day.

METHOD

All observations were done on an opportunistic or random basis, tying in with the large mammal survey work on the Nyika but focussing more on birds at Vwaza when the team splits made this more practical. This meant that on the Nyika observations were made throughout the day but at Vwaza we did early morning and late afternoon transects along lines of suitable habitat. These were not timed or standardised, although in practise the morning surveys lasted from around 6.30 to 10.30 and the afternoons from 3.30 to 5.30. On the Nyika the two authors worked independently and collated records later; in Vwaza more time was spent working together.

AWARDS

In recognition of the great support given to Biosearch Expedition teams over several years, both Lewis MMtumbuka and Richard Nyirenda were given new pairs of quality binoculars, on which two team members, Pippa and Sophie, kindly embroidered their names. Richard in particular will now finally be able to increase his already considerable expertise on the bird fauna of the Nyika National Park and both will be properly equipped for game and poaching assessments at all times.

A CHECKLIST OF BIRDS RECORDED ON THE EXPEDITION

Common name	Species name	BOM	Vwaza	Nyika	Notes
Dabchick	*Tachybaptus ruficollis*	1		N	
Little Egret	*Egretta garzetta*	19	V	N	1
Grey Heron	*Ardea cinerea*	20	V		
Hamerkop	*Scopus umbretta*	24	V		
Yellow billed Stork	*Mycteria ibis*	32	V		
Sacred Ibis	*Threskiornis aethiopicus*	33	V		
Glossy Ibis	*Plegadis falcinellus*	35	V		
Egyptian Goose	*Alopochen aegyptiacus*	41	V		
Knob billed Duck	*Sarkidiornis melanotos*	43	V		
Steppe Buzzard	*Buteo buteo*	44	V		
Yellow-Billed Duck	*Anas undulata*	46		N	
White-Backed Vulture	*Gyps africanus*	57		N	2
Bataleur	*Terathropius ecaudatus*	64	V		
Brown Snake Eagle	*Circaetus cinereus*	66		N	
African Goshawk	*Accipiter tachiro*	71		N	
Little Sparrowhawk	*Accipiter minullus*	73			Bolero
Gabar Goshawk	*Micronisus gabar*	75		N	
Long crested Eagle	*Lophaetus occipitalis*	79		N	
Martial Eagle	*Polemaetus bellicosus*	81	V		
Lesser Spotted Eagle	*Aquila pomarina*	88	V		3
African Fish Eagle	*Haliaeetus vocifer*	90	V		
Yellow Billed Kite	*Milvus migrans parasitus*	91		N	
Black Kite	*Milvus migrans migrans*	91	V		4
Black Shouldered Kite	*Elanus caeruleus*	94		N	5
Bat Hawk	*Macheiramphus*	95		N	
Lanner Falcon	*Falco biamicus*	97		N	
Red necked Falcon	*Falco chicquera*	101	V		6
Dickinson's Kestrel	*Falco dickinsoni*	102		N	5
Rock Kestrel	*Falco tinnunculus*	106		N	
Shelley's Francolin	*Francolinus shelleyi*	109	V		
Red-Winged Francolin	*Francolinus levaillantii*	110		N	
Red necked Francolin	*Francolinus afer*	112	V		
Common Quail	*Coturnix coturnix*	115		N	
Helmeted Guineafowl	*Numida meleagris*	118	V	N	
Black Crake	*Amaurornis flavirostris*	130		N	7
Denham's Bustard (Stanley's)	*Neotis denhami*	141		N	
Blacksmith Plover	*Vanellus armatus*	146	V		
Crowned Plover	*Vanellus coronatus*	148	V		8
Wattled Plover	*Vanellus senegallus*	150	V		
Three banded Plover	*Charadrius tricollaris*	153	V		
Killitz's Plover	*Charadrius pecuarius*	154	V		
Greenshank	*Tringa nebularia*	161	V		
Common Sandpiper	*Tringa hypoleucos*	165	V	N	
Little Stint	*Calidris minuta*	174	V		
Black Winged Stilt	*Himantopus himantopus*	178	V		
Water Dikkop	*Burhinus vermiculatus*	181	V		
Temminck's Courser	*Cursorius temminckii*	182		N	
Redwinged Pratincole	*Glareola pratincola*	184	V		
Rameron Pigeon	*Columba arquatrix*	194		N	
Red Eyed Dove	*Streptopelia semitorquata*	197	V		

Common name	Species name	BOM	Vwaza	Nyika	Notes
Cape Turtle Dove	*Streptopelia capicola*	199	V	N	
Laughing Dove	*Streptopelia senegalensis*	200	v		
Blue Spotted Wood Dove	*Turtur afer*	203	V		
Green Spotted Wood-Dove	*Turtur chalcospilos*	204	V		
Green Pigeon	*Treron calva*	206	V		
Meyer's Parrot	*Poicephalus meyeri*	209	V		
Purple-Crested Lourie	*Tauraco porphyreolophus*	212	V	N	
Grey Lourie	*Corythaxoides concolor*	213	V		
Burchell's Coucal	*Centropus burchellii*	231A	V		9
White faced Owl	*Otus leucotis*	235		N	
Verreaux's (Giant) Eagle-Owl	*Bubo lacteus*	238	V		
Marsh Owl	*Asio capensis*	243		N	
Fiery necked Nightjar	*Caprimulgus pectoralis*	245	V		
Mountain Nightjar	*Caprimulgus poliocephalus*	246		N	
Freckled Nightjar	*Caprimulgus tristigma*	247		N	
Palm Swift	*Cypsiurus parvus*	253	V		
Speckled Mousebird	*Colius striatus*	261		N	
Bartailed Trogon	*Apaloderma vittatum*	264		N	
Giant Kingfisher	*Ceryle maxima*	265		N	10
Pied Kingfisher	*Ceryle rudis*	266	V	N	
Malachite Kingfisher	*Alcedo cristata*	268			
Woodland Kingfisher	*Halcyon senegalensis*	270		N	
Striped Kingfisher	*Halcyon chelicuti*	271	V		
Little Bee-eater	*Merops pucillius*	278	V	N	
Swallow-tailed Bee-eater	*Merops hirundineus*	280	V		
Lilacbreasted Roller	*Coracias cordata*	282	V		
Hoopoe	*Upupa africana*	286	V	N	
Red Billed Woodhoopoe	*Phoeniculus purpureus*	287	V		
Scimitarbilled Woodhoopoe	*Phoeniculus cyanomelas*	288	V		
Grey Hornbill	*Tockus nasutus*	289	V		
Yellow Billed Hornbill	*Tochus flavirostris*	291	V	N	
Trumpeter Hornbill	*Bycanistes bucinator*	294	V		
Blackcollared Barbet	*Lybius minor*	299	V		
Greater Honeyguide	*Indicator indicator*	310	V	N	
Bennett's Woodpecker	*Campethera bennetti*	316	V		
Wire tailed Swallow	*Hirundo smithii*	337	V		
Greyrumped Swallow	*Pseudhirundo griseopyga*	345		N	11
Black Saw-wing	*Psalidoprocne holomelas*	348a	V		
Fork-Tailed Drongo	*Dicrurus adsimilis*	352	V	N	
Black-Headed (Eastern) Oriole	*Oriolus larvatus*	355	V	N	
White-Necked Raven	*Corvus albicollis*	358		N	
Southern Black Tit	*Parus niger*	360	V		
Arrowmarked Babbler	*Turdoides jadineii*	367	V		
Black-Eyed Bulbul	*Pycnonotus tricolor*	371	V	N	
Common Stonechat	*Saxicola torquata*	384		N	
Arnot's Chat	*Thamnolaea arnoti*	388		N	
Starred Robin	*Pogonostichla stellata*				
Heuglins's Robin	*Cossypha heuglini*	403		N	
Kurrichane Thrush	*Turdus libonyanus*	407		N	
Tawny flanked Prinia	*Prinia subflava*	434	V		
Bleating Bush Warbler	*Camaroptera brachyura*	442		N	
Bleating Bush Warbler	*Camaroptera brachyura*	442		N	
Stierling's Barred Warbler	*Camaroptera sterlingi*	443		N	

Common name	Species name	BOM	Vwaza	Nyika	Notes
Green capped Eremomela	*Eremomela scotops*	446		N	
Mountain Cisticola	*Cisticola nigriloris*	456		N	
Ashy Flycatcher	*Muscicapa coerulescens*	471	V		
Fantailed Flycatcher	*Myioparus plumbeus*	473	N		
Chinspot Batis	*Batis molitor*	479	V		
Puffback	*Dryoscopus cubla*	489		N	
Black-Headed Tchagra	*Tchagra senegala*	492	V	N	
Southern Boubou	*Laniarius ferrugineus*	493		N	
Grey Headed Bush Shrike	*Melaconotus blanchoti*	498		N	
African Pied Wagtail	*Motacilla aguimp*	503	V		
Grassveld Pipit	*Anthus cinnamomeus*	505		N	
Fiscal Shrike	*Lanius collaris*	517		N	
White Helmet Shrike	*Prionops plumatus*	519		N	
Red billed Helmet Shrike	*Prionops retzii*	520		N	
Redwinged Starling	*Onchognathus morio*	522		N	
Greater Glossy Blue-eared Starling	*Lamprotornis chalybaeus*	525	V		
Yellow Billed Oxpecker	*Buphagus africanus*	530	V		
Olive Sunbird	*Nectarinia olivacea*	535		N	
Black Sunbird	*Nectarinia amethystina*	537		N	
Greater Double Collared Sunbird	*Nectarinia afra*	541		N	
Bronze Sunbird	*Nectarinia kilimensis*	549		N	
African Yellow White-Eye	*Zosterops senegalensis*	550		N	
Redbilled Quelea	*Quelea quelea*	566	V		
Yellowrumped Widow	*Euplectes capensis*	569			
Mountain Marsh Widow	*Euplectes psammocromius*	572		N	
House Sparrow	*Passer domesticus*	578			12
Jameson's Firefinch	*Lagonosticta rhodopareia*	595		N	
Blue Waxbill	*Uraeginthus angolensis*	596	V		
Common Waxbill	*Estrilda astrild*	600		N	
Rock Bunting	*Emberiza tahapisi*	610		N	
Yellow-eyed Canary	*Serinus mozambicus*	612	V		
Bully Canary	*Serinus sulphuratus*	614		N	

Notes

1. A Little Egret flew over our camp near Vitinthiza and is clearly frequenting the upland pools at 6000ft on the Runyina river nearby
2. 10 White backed Vultures circling over the recent poacher kill, which enabled us to locate it
3. Immature L S Eagle was feeding on the shoreline of Lake Kazuni
4. *M. migrans migrans* (an apparently scarce sub species) was clearly identified in Vwaza cf. *M. migrans parasitus* on the Nyika
5. A fascinating mid-air battle between these two species was witnessed Ref 756205 Aug 5th
6. Red necked Falcon seen in the northern Vwaza Marsh at 470910 Aug 15th
7. The Black Crake was seen on two consecutive days and appears to be a new Nyika Record 750105 Aug 8th, which is somewhat surprising for a fairly widespread species, albeit in lowland marsh.
8. Crowned Plover were feeding on dry burnt grassland near our Chelanya camp
9. Coucals were heard in the dry Vwaza bush but we could not confirm which species, with no sight records
10. Giant Kingfisher are known to penetrate well up into the Nyika along the river systems
11. Greyrumped Swallow was, surprisingly, the only species of Swallow recorded during our two weeks in our selected Nyika survey area
12. House Sparrows have now colonized Rumphi and Bolero and may eventually reach the Nyika via Thazima, where we have not as yet seen them

THE ABSENTEES

Of the species that we might have expected to find on the Nyika but failed to locate, the Nyika Lark *Mirafra africana nyikae* and the Churring Cisticola *Cisticola njombe* are perhaps the most notable. We found both of these species to be common above 7000 ft but our expedition did not cover this altitude, except for a brief walk up Mwanda Mountain on one day. Although we did not find the Large Golden Weaver, *Ploceus xanthops* we did find nests that may belong to this species or possibly the Baglefecht Weaver, *Ploceus baglafecht.* The photo would indicate recent construction but the large entrance hole suggests it is not complete for breeding purposes.

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HERPETOLOGICAL SURVEY

Shaun Allingham

ABSTRACT

Our study focused on the poorly known reptile and amphibian fauna of Nyika National Park, situated in northern Malawi. Of approximately 33 species of amphibian, 18 were found on this survey and out of approximately 46 species of reptile, 17 species were found. This survey will provide additional information on the poorly known geographical distribution of the herpetofauna of the Nyika National Park.

INTRODUCTION

The herpetofauna of the Nyika National Park remains one of the most poorly known in Africa. This is a consequence of the inaccessibility of the area. Its fauna has been dealt with in few reviews.

At the beginning of the 19th century Whyte collected samples of the herpetofauna (Boulenger 1897). An extensive field survey was also done in 1948 by Loveridge. The area was also visited by the Department of Veterinary and Tsetse Control Services focusing studies on the reptile fauna of the adjacent Zambian portion of the park between 1962 to 1964.

Complete data concerning Nyika National Park has not been written for 40 years. The most comprehensive field studies and data have been collected in the 1960's (Stewart 1966). A single book (Stewart 1967) has been written, that describes the indigenous amphibian species. The two mentioned publications were published in the 1960's and contain very scarce data regarding the distribution and composition of herpetofauna in the Nyika.

The most recent comprehensive work was 2003 (Mazibuko 2003) and 1999 (Martin A 2000), both working on Biosearch Exepeditions, using similar methods and spending a similar amount of time in the field. From 1997 to present Biosearch has organised annual expeditions to the park, with the aim of collecting data for population analysis but only the two mentioned above have covered the herpetology. With so little survey work in the area, it is possible that many species remain undiscovered. Therefore we now aim to improve on this situation and to contribute to knowledge of the distribution, abundance of species and to promote their conservation.

STUDY SITE

The Nyika National Park is situated in northern Malawi between 10°15'-10°50'S and 33°35'-34°05'E and occupies an area of approximately 1,800km^2
An area about 70km^2 occupies Zambia. About 60% of the central plateau consists of rolling montane grassland. The highest point of Nyika is Nganda Hill at 2,607m in the north and Kasaramba hill rises to 2,460m in the southeast. The lowest point is at 580m near Ruwile River (Johnson 1996) .The surface of the plateau is gently undulating with valleys sloping at 10-15°. Many of these valleys are partially filled with a variety of sediment and have poorly drained acidic marshlands or *dambos.* In 1978 the Nyika National Park was extended from 940 km^2 to its current size of 3142km^2 and includes all of the escarpments and most of the northern hill zones.

The vegetation of the park is complex; *miombo* woodland covers approximately 60%. Montane dambos and grassland occupy about 37% of the park and evergreen forest patches cover around 3%. Nyika receives most of its rainfall in the east (above 1500m). These areas are extensively forested. Above 2200m the plateau receives less rainfall averaging 1,000-1,200 mm per annum. The prevailing winds are easterly however most of the rain comes from the west. From June to September the eastern side of the plateau is covered by low cloud. Minimum monthly temperatures range from 11°C (June) 16°C (November). Temperatures of up to 26 °C are recorded during September-November.

METHODOLOGY

Field sites

This study was conducted between July 27th and August 22nd. Six selected sites were chosen to collect data on the reptiles and amphibians. Four of those sites in Nyika, include Luselo Vitinthiza, upper Luselo and the Rutete, Runyina river. Two sites were in northern Vwaza, including Chelanya camp and the Dera river area and one in southern Vwaza; Lake Kazuni.

The vegetation in Luselo and Rutete includes rolling hills, burnt russet grass and dry to mesic *Brachystegia* woodland with sandy, nutrient-poor soils. The landscape is mostly gently undulating plateau, rising to a high plateau. We worked at altitudes that ranged from 6100-6400ft. Streams in the area feed permanent, freshwater marshes and pools low in pH. Runyina River lies approximately S 10° 59' E 33° 44' and is one of the main tributaries flowing out of the south of the park. The field study site in this area was carried out at an altitude of 5750ft. The vegetation surrounding the area includes marginal plants and scrub. The Vwaza Marsh game reserve covers an area of about 1,000 km². Much of the reserve is low laying flat ground, around 3-3500ft above sea level and is characterised by *mopane* woodland and open ground. Due to the altitude, the vegetation, climate and species composition is clearly different to the higher Nyika, where we operated beforehand.

Sampling Reptiles

Specimens were mainly located opportunistically during visual surveys by up to four people. These were undertaken during the daytime - and during the evening, using torches and head lamps. Our survey was often added to by additional collections during bird and mammal surveys. To supplement opportunistic surveys pitfall traps were set when possible. However, due to the topography of the Nyika, this was difficult. Randomly chosen plots were searched for periods of between 30 and 60 minutes. A range of different habitats was searched, including the banks of streams, temporary ponds and marshes. Trees and bushes were searched, logs and stones were rolled over, leaf litter was disturbed, bark and the insides of tree holes were examined, as well as rocky crevices, termite mounds and small burrows.

Sampling Amphibians

Amphibians were collected during the day and night in various habitats, including permanent rivers, streams, creeks, bogs, marshes, swamps, fens, peat lands and dry savannah. Capture methods included free-handed capture as well as netting. All species were photographed and determined by their morphological and chromatic characteristics, the determination being made after main features and measurements were indicated in the scientific literature. Specimens were subsequently released after capture.

REPTILES SPECIES ACCOUNTS

During our research 17 species of reptile were found, which include:

Acanthocercus articolis (Smith 1949)
Agama hispida (Kaup 1827)
Bitis arietans (Merrem 1820)
Chamaeleo dilepis, (Leach 1819)
Chamaeleo goetzei (Tornier 1899)
Cordylus tropidosternum,(Cope 1869)
Crocodylus niloticus (Laurenti 1768)
Crotaphopeltis tornieri (Laurenti 1768)
Dasypeltis scabra (Linnaeus 1758)
Hemidactylus platycephalus (Peters 1854)
Hemirhagerrhis Nototaeniata (Gunther 1864)
Latastia johnstonii (Boulenger 1907)
Lygodactylus *angularis* (Gunther, 1893)
Philothamnus angolensis, (Bocage 1882)
Psammophylax variabilis (Gunther 1893)
Trachylepis quinquetaeniata, (Lichtenstein1823)
Trachylepis striata (Peters 1844)
Trachylepis varia (Peters 1867).

Acanthocercus articolis (Smith 1949) An arboreal, diurnal species living on rocky outcrops and termite mounds. Known to occur at altitudes of up to 2400m (Spawls,S 2001). A single large, vividly coloured male was found around a forest clearing near Chelanya.

A*gama hispida hispida*

Agama hispida hispida (Kaup 1827) The most common Agama in Malawi found from mid to high altitudes. Up to 5 specimens ranging from 10 to 15cm were collected in one morning in Kauu, Vwaza Marsh Wildlife reserve at 1219m and one adult male was captured in a tree on the Mwanda ridge at an altitude of 1936m. The colour depended on the habitat they were found in. Crossbars on the head and one distinctive crossbar on the head, as well as one pale vertebral stripe are very typical for this species.

Puff Adder *Bitis arietans arietans*

Bitis arietans arietans, (Merrem 1820). The colour of this species can be very variable, depending on the habitat. A single specimen was found in Rutete at 1943m.Grey in colour, with a series of V-shapes along the back.

Chamaeleo dilepis, (Leach 1819). Two specimens were caught on this expedition. A large male 25cm in length was captured from a mango tree in the Kawiya camp, Vwaza Marsh, showing unusually dark coloration. The species was determined by its morphological characteristics, prominent gular crest and absence of tarsal spurs. A second female was captured near Lake Kazuni during the day. On previous expeditions these have been found at the Mondwe and Mgundanjiwa rivers (Mazibuko C.J. 2004)

Flap-necked chamaeleon
Chamaeleo dilepsis
Marianne Overton and author

Chamaeleo goetzei nyikae
Bridget Starling and author

Chamaeleo goetzei nyikae, (Loveridge 1953). A poorly known species found in Tanzania's Uzungwe Mts., Poroto Mts., Rungwe Mts., Ubena Mts., Ukinga Mts., Uzungwe Mts and this particular subspecies found in the Nyika plateau (Loveridge, A. 1953). A single female specimen 20cm, determined by their sexually dimorphic coloration was found in Rutete wooded savannah at an altitude of 1881m.

Cordylus tropidosternum

Cordylus tropidosternum, (Cope, 1869). Two specimens where collected at the Kazuni Lake Vwaza Marsh wildlife reserve in the early morning basking on *Acacia* trees. Boulenger was the first to collect the first specimen in 1891. This species can be determined by having less then 10 enlarged scales on the thigh and a nostril pierced in the lower posterior corner of the nasal scale.

Crocodylus niloticus, (Laurenti 1768). Two juveniles were observed on the banks of Kazuni Lake. These have only been reported during the occasional sightings by tourists in the area.

Crocodiles in Lilongwe *Crocodylus niloticus*

Crotaphopeltis hotamboeia, (Laurenti, 1768). Red lipped snake was observed prior to this study by Overton (2006). On this survey a single specimen was found basking at an altitude of 1958m in montane savannah. A very common species found at altitudes up to 2500m.

Rhombic egg-eating snake
Dasypeltis scabra scabra

Dasypeltis scabra scabra, (Linnaeus, 1758). The rhombic egg eating snake has been observed on prior expeditions by MazibukoC.J.(2004) and collected around many neighbouring areas of the plateau. One specimen was captured at the Thazima camp 58cm in length, typically rhombic patterning.

Hemidactylus platycephalus, (Peters 1854). This species is common around human habitation and around Miombo woodland. Six were captured in one night at the kawiya camp around local houses. When captured they let out a series of up to 19 clicks. It was distinguished from *Hemidactylus mabouia* from having enlarged tubercles of back arranged in 10 more or less regular longitudinal rows and having 45-50 femoral pores in a continuous row.

Flathead Leaf-toed Gecko *Hemidactylus platycephalus*

Hemirhagerrhis nototaenia, (Günther 1864). One specimen was found during the day in Kauu, Vwaza Marsh. Known to occur at altitudes of 1200-1600m.

Latastia johnstonii .(Boulenger 1907). First described in the Nyika national park by Boulenger (1907) and by Loveridge (1953). An adult was collected in the long grass at Kazuni. The specimen showed pale blue flank spots , several bright yellow ocelli on the anterior flanks. Known to occur from 330 to 1000m.

Lygodactylus angularis. (Günther 1893). Known to occur mostly from mid to high altitudes from 1600-2200m. All specimens recorded in this survey were found at much lower altitude then expected, (1350m). The species were determined by having a series of faint crossbars on the back and having small granular scales.

Philothamnus angolensis, (Bocage 1882). The species has been recorded in Malawi (Spawls, S, 2001).Known to occur at altitudes of 2000m and usually found near water. A single specimen was observed near a slow flowing stream at Rutete at 1905m.

Psammophylax variabilis. (Günther 1893). This species is known to live from mid to high altitude. One specimen was seen near Chamatete pool in Vwaza.

Trachylepis varia (Peters 1867).This species has been recorded in previous expeditions. Almost all specimens collected at high altitude had a yellow or orange tail with uniform speckling and longitudinal stripes. It was collected at every field site in a range of habitats from woodland to savannah.

Trachylepis striata, (Peters 1844) This is one of the most common reptiles on the plateau, and known to occur up to 2300m. Specimens were mostly recorded at lower altitude in a range of habitats from forest clearings to urban areas. This species was collected at altitudes that ranged from 1200m to 1950m.

Eastern striped Skink *Trachylepis striata*

Pelusios rhodesianus, Zambian Mud Turtle, with hinged shell was found at a dried pool in the Vwaza Marsh Reserve. It is distinguished from *Pelusios castanoides*, as it does not have a yellow underside.

Zambian Mud Turtle *Pelusios rhodesianus*

AMPHIBIANS Species accounts

During this survey 18 species of Amphibians was recorded.

Arthroleptis francei, (Loveridge 1953). This species was first recorded in the Nyika by Mazibuko C.J. (2000).This species is a significant find in the park, it was once thought to live only around Mount Mulanje in southern Malawi. A single specimen was found among leaf litter near Chametete pool.

*Arthroleptis stenodactylus (*Pfeffer 1893). This species has been recorded in prior expeditions. Found in many habitats including forest, savannah woodland, thickets, wasteland, and suburban areas. Several species were caught in Rutete, Runyina River, Lusero and Chametete. This species can be determined for possessing a large fingerlike inner metatarsal tubercle.

Arthroleptis xenochirus, (Boulenger 1905). This species generally occurs in upland areas ranging up to 2,500m a.s.l. in Malawi. Several specimens were collected around a small pool in upper Luselo 1859m

Amietophrynus garmani, (Meek 1897). This species generally occurs in dry savannah and agricultural areas. Three specimens were collected near Lake Kazuni, measuring 7 to 10cm.

Garman's Toad *Amietophrynus garmani*

Amietophrynus maculatus, (Hallowell 1855). Several of these toads were collected at lower altitude around Chamatete and Luwewe in Vwaza. It is one of the most common species of toad in Africa.

Flat-backed Toad
Amietophrynus maculatus

Mertensophryne nyikae (Loveridge 1953). This species is associated with montane woodland. Its altitudinal range is not known.The single specimen collected on this expedition was found in *miombo* woodland at 1890m. This is an endemic species to the national park and a significant find.

Mertensophryne taitana (Peters 1878). This species is usually found in sandy habitats in woodland, grassland, open savannah. A single specimen was caught in upper Luselo. It is often confused with the Nyika Dwarf Toad the pectoral markings form a trident in this species.

Afrixalus fornasinii (Bianconi 1849). A single specimen was found near Chametete pool. This species is generally a lowland species.

Hyperolius nasutus, (Gunther 1865). Several specimens were collected around the emergent vegetation at the margins of swamps in many of the studied locations.

Hyperolius quiquevittatus mertensi, (Bocage 1866) This subspecies is found in the montane grassland and is an endemic species to the park. Many specimens were collected around the fringes of marshlands in Lutete and Upper Luselo.

Hyperolius tuberilinguis, (Smith 1849) This lowland species was caught around chametete pool.

Xenopus laevis (Daudin 1802) Four of this water dependent species was observed in a series of pool at Luselo, Vintinthiza at an altitude of 1934m.This is an extremely common species in eutrophic pools and can be found at altitudes up to 3000m a.s.l.

Xenopus muelleri, (Peters, 1844). This species is similar to *X. laevis* but occurs at lower altitude (2000 ASL). Two were collected from a dam at the Chelanya base camp.

Xenopus muelleri

Phrynobatrachus acridoides, (Cope 1867). This species is common around lowland swamps. In this survey several specimens were collected from a swamp near the Kawiya camp in Vwaza.

Eastern Puddle Frog
Phrynobatrachus acridoides

Phrynobatrachus natalensis, (Smith 1849). This species was collected around the Luwewe river. This species is around the margins of shallow marshes and ponds; it has been recorded at altitudes of up to 2200m a.s.l.

Natal Puddle Frog
Phrynobatrachus natalensis

Ptychadena mascareniensis, (Dumeril and Bibron, 1841). This is another widely distributed species that occurs near large lakes, rivers and other wetland habitats. Several specimens were collected near Chametete pool in the Vwaza marsh reserve. It occurs at altitudes to 2000m.

Mascarene Grassland Frog
Ptychadena mascareniesis

Strongylopus fuelleborni, (Nieden, 1911). Two of this species was recorded at Chametete pool during the day. It is a montane grassland frog that can be found quite far from water.

Chiromantis xerampelina, (Peters, 1854). This very adaptable species occurs in savannah, shrubland, disturbed forests and grassland. A large female was found at the Kawiya camp. A second specimen was found at Lake Kazuni. This species occurs at lower altitude.

African Grey Treefrog
Chiromantis xerampelina

DISCUSSION

The reptile and amphibian fauna of the Nyika National Park was first explored by Whyte at the beginning of the 19th century, when faunal studies of the area were still in its infancy. Large areas of the park were unexplored and this remains the situation. However the reptile fauna of the park was reviewed by Loveridge (1953) and Stewart (1966). Since then Martin, A.(1999) and Mazibuko (2003) have provided data on species recorded in the park. Broadley & Howell (1991) reviewed the reptile fauna of Tanzania which give an indication of species that may extend into the Nyika National Park. An integration of the above publications indicates that approximately 47 species of reptiles and 34 species of Amphibians live in the park. Six species are endemic to the park.

Our survey assessed only a small fraction of the Nyika National Park in just over three weeks and during a period of low faunal activity due to the dry season. Nevertheless, we recorded diverse herpetological activity; 17 species of reptiles and 18 species of amphibians. Many have not been recorded in recent times. These findings reconfirm the presence of many of these species to the park.

Further work would be useful in assessing intra- and inter-specific changes in populations. In future surveys a range of sampling and monitoring techniques, which could give information on species richness, relative abundance and density should be used; such as the use of pitfall traps and drift fences. Transect sampling has been the general method used in the Nyika in recent surveys. It has worked well in montane areas. Transect sampling measures density. Using this method in conjunction with straight line drift fences or round drift fences around amphibian breeding sites would give more results based on abundance.

Six endemic species occur in the Nyika National Park (Appendix 1). More work should be carried out to asses the status of such important species as well as help promote and conserve the fauna of Nyika national park.

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APPENDIX 1 Checklist of Amphibians from Nyika National Park, modified from Mazibuko

	Scientific name	English name
Class Amphibia		
Order Anura		
Family *Arthroleptidae*	*Arthroleptis francei*	France's Squeaker
	Arthroleptis stenodactylus	Common Squeaker
	Arthroleptis xenochirus	Plain Squeaker
	Arthroleptis xenodactyloides nyikae	Nyika Squeaker
Brevicipitidae	*Breviceps mossambicus*	Mozambique Rain Frog
Bufonidae	*Amietophrynus gutturalis*	Guttural Toad
	Amietophrynus maculatus	Flat-backed Toad
	Amietophrynus garmani	Garman's Toad
	Mertensophryne nyikae	Nyika Dwarf Toad (Endemic)
	Mertensophryne taitana	Taita Toad
	Schismaderma carens	Red Toad
Hemisotidae	*Hemisus marmoratus*	Marbled Snout-burrower
Hyperoliidae	*Afrixalus fornasinii*	Fornasini's Spiny Reed Frog
	Hyperolius marmoratus	Marbled Reed Frog
	Hyperolius nasutus	Long-nosed Reed frog
	Hyperolius pictus	Variable Reed Frog
	Hyperolius puncticulatus	Golden sedge frog
	Hyperolius pusillus	Water Lily Reed Frog
	Hyperolius quiquevittatus mertensi	Black-striped Sedge Frog (Endemic)
	Hyperolius tuberilinguis	Tinker Reed Frog
Pipidae	*Xenopus laevis*	Common Platanna
Ranidae	*Afrana angolensis*	Angola River Frog
Phrynobatrachidae	*Phrynobatrachus acridoides*	Eastern Puddle Frog
	Phrynobatrachus mababiensis	Mababi Puddle Frog
	Phrynobatrachus natalensis	Natal Puddle Frog
	Phrynobatrachus rungwensis	Rungwe Puddle Frog
	Phrynobatrachus parvulus	Dwarf Puddle Frog
Ptychadenidae	*Ptychadena anchietae*	Anchieta's Ridged Frog
	Ptychadena guibei	Guibe's Ridged Frog
	Ptychadena mascareniensis	Mascarene Grassland Frog
	Ptychadena oxyrhynchus	Sharp-nosed Rocket Frog
	Ptychadena porosissima	Grassland Ridged Frog
	Stronglylopus fuelleborni	Stream Frog
Rhacophoridae	*Chiromantis xerampelina*	African Gray Treefrog

APPENDIX 2 Checklist of Reptiles from Nyika National Park, modified from Mazibuko (2004)

	Scientific name	English name
Class Reptilia		
Family Agamidae	*Agama hispida*	Common Spiny Agama
Chamaeleonidae	*Chamaeleo dilepis dilepis*	Flapneck Chameleon
	Chamaeleo goetzei nyikae	Nyika chameleon (Endemic)
	Rhampholeon nschisiensis	Stumptail Chameleon (Endemic)
Cordylidae	*Chamaesaura macrolepis miopropus*	Large-scale Snake Lizard
	Cordylus nyikae	Nyika Girdled Lizard
	Cordylus tropidosternum	Tropical Girdled Lizard
Gekkonidae	*Hemidactylus mabouia*	House Gecko
	Hemidactylus platycephalus	Flathead Leaf-toed Gecko
	Lygodactylus angularis	Angulate dwarf gecko
	Lygodactylus bernardi	Fitzsimons' Dwarf Gecko
Gerrhosauridae	*Gerrhosaurus flavigularis*	Yellow-throated Plated Lizard
Pelusoidae	*Pelusios castanoides,*	Yellowbelly Mud Turtle
	Pelusios rhodesianus	Zambian Mud Turtle
Scincidae	*Eumecia johnstonei*	Legless skink
	Proscelotes arnoldi	Arnold's Montane Skink
	Scelotes mirus	Montane Burrowing Skink
	Trachylepis capensis	Cape Skink
	Trachylepis hildae	Hilda’s Skink (Endemic)
	Trachylepis quinquetaeniata	Rainbow Skink
	Trachylepis striata	Eastern Striped Skink
	Trachylepis varia	Variable Skink
Varanidae	*Varanus niloticus*	Nile Monitor
Boidae	*Python sebae*	African Rock Python
Colubridae	*Crotaphopeltis hotamboeia*	Red-lipped Snake
	Crotaphopeltis tornieri	Werner's Water Snake
	Dasypeltis scabra	Rhombic Egg Eater
	Dispholidus typus typus	Boomslang
	Dromophis lineatus	Striped Swamp Snake
	Duberria lutrix	Common Slug Eater
	Hemirhagerrhis nototaenia	Eastern Bark Snake
	Lycophidion capense	Cape Wolf Snake
	Natriciteres variegate	Variable Marsh Snake
	Philothamnus angolensis	Western green snake
	Philothamnus semivariegatus	Spotted bush snake
	Psammophis brevirostris	Short-snouted Grass Snake
	Psammophis subtaeniatus	Stripe-bellied Sand Snake
	Psammophylax tritaeniatus	Striped Skaapsteker
	Psammophylax variabilis	Grey-bellied grass Snake
	Pseudaspis cana	Mole Snake
	Rhamphiophis oxyrhynchus	Rufous Beaked Snake
	Telescopus semiannulatus semiannulatus	Tiger Cat Snake
	Thelotornis capensis	Twig Snake
Viperidae	*Atheris nitschei*	Great Lakes Bush Viper
	Bitis arietans	Puff Adder
	Causus rhombeatus	Rhombic Night Adder
Typhlopidae	*Rhinotyphlops schlegelii*	Schlegel's Giant Blind Snake

PHOTO PAGES

Photos all by Marianne and Peter Overton unless stated otherwise:

1 Waterfall on the Runyina River
2 Katie Cottrell flying on the top of Vitinthiza *Pippa Stubbs*
3 Quality team in the ox bow lake part of Runyina near camp

4 Sophie Martin playing guitar at base camp
5 Sunrise at Lake Kazuni
6 Steven Mphamba with plant presses
7 Sophie and Pippa examining a bat at Vwaza camp

8 Atop Vitinthiza
9 Mwanda in sight *Pippa Stubbs*
10 Laura collating large mammal results *Pippa Stubbs*
11 Peter river crossing

12 Michael assisting Laura with descent from Vitinthiza *Pippa Stubbs*
13 Martin river crossing
14 The herpetologists Shaun and Michael
15 Malawians chatting in Chichewa as beekeepers visit *Kaele Pilcher*

16 Kaele cooking
17 Marianne exploring, sampling in Vwaza Marsh stream
18 Team tracking in Vwaza; confirmation of the presence of Sable

19 “Jewel beetles” on *Faurea sp.*
20 Fruit and Flower
21 Colours (Seed of *combretum zeheri*)

22 Asteraceae seed head
23 *Crotolaria goetzei*
24 Butterfly
25 Picasso beetle
26 Camouflaged butterfly
27 Flap-necked Chamaeleon *Chamaeleo dilepsis*

28 Princely frog *Ptychadena mascareniensis* at Chamatete Pool, Vwaza
29 Flap-necked Chamaeleon in Vwaza *Chamaeleo dilepsis*

30 Baboon with young
31 Baboon
32 Young elephant leaning on tree
33 Elephant in bush *Ian Pilcher*
34 Kudu female *Ian Pilcher*

35 Mwanda, Nyika *Sophie Martin*
36 Stalking crocodile at Lake Kazuni
37 Hippos *Kaele Pilcher*
38 Curious young elephant *Kaele Pilcher*

39 Netting bats near the borehole at Chelanya, Vwaza
40 Sheild bugs
41 Marianne with fish traps in the marsh
42 Sunset at Vwaza *Pippa Stubbs*
43 Dawn at our lowest camp on the Runyina, Nyika

44 Lake Kazuni with crocodile, hippo and elephant all in one picture
45 Richard and Imran – successful retrieval of binoculars

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BATS

Kaele and Ian Pilcher

ABSTRACT
Bat echolocation calls were recorded using an AnaBat SDI Bat Detector in Nyika National Park. Whilst in Vwaza Wildlife Reserve bats were caught leaving roost sites and recorded on release in order to obtain identifiable sonograms for the bat species present. Analysis is on going for the recording taken and a list of species present will be sent to the Park Department when available. Further study work has been identified to be under taken.

INTRODUCTION
To capture, measure, identify and record echolocation calls of a number of species of bat in Nyika National Park and Vwaza Wildlife Reserve in order to establish base line data for the remote identification of bats using sonograms.

Preparatory work before expedition
A spreadsheet was complied of all at species known to occur in Malawi showing their distribution, status, measurements and roosting habitats. This information was extracted from several reports published by Dr. D.C.D. Happold and Mrs M Happold, and East African Mammals by Jonathan Kingdom. The spreadsheet was by no means complete but acted as a guide.

For identification purposes the paper The Bats (Chiroptera) of Malawi, Central Africa: Checklist and Keys for Identification by D.C.D. Happold and M Happold (1989) was used.

Kaele and Ian Pilcher undertook mist net training with a bird ringer in the UK prior to their departure to Malawi.

The Bat Team
Kaele and Ian Pilcher (Project Leaders)
Bridget Starling
Marianne Overton
Kennedy Chihana (Scout)
Edwin Dellings (Scout)
Lewis MMtumbuka (Scout)

Equipment
2 x Avinet CH9 Mist Net
2 x Mist Net Repair Kit
1 x Lab Scale 50g
1 x Pesola LightLine Scale 100g (not used)
1 x Pesola LightLine Scale 300g (not used)
1 x 150mm Avian wing ruler
1 x AnaBat SDI Bat Detector with PDA Package
1 x Bat Box III Bat Detector
1 x Garmin eTrex Vista C GPS

BATS IN NYIKA NATIONAL PARK
Due to the absence of any Malawi Museum staff with mist net experience it was decided to only record bats in Nyika and to analyse the sonograms back in the United Kingdom.

28 July 2008 – 10° 50' 10" S, 33° 36' 10" E, altitude 5164 ft
Camp was approximately 1km away from Thazima Gate. A number of bats recorded feeding along the forest edge.

29 July 2008 – 10° 42' 18" S, 33° 39' 41" E, altitude 6009 ft
Nil recorded

30 July 2008 – 10° 42' 18" S, 33° 39' 41" E, altitude 6009 ft
Bat(s) recorded feeding by forest edge near base camp

31 July 2008 – 10° 42' 18" S, 33° 39' 41" E, altitude 6009 ft
Bat(s) recorded near bridge at base camp

1 August 2008 – 10° 43' 0.3" S, 33° 40' 50" E, altitude 5890 ft
A number of different species of bat recorded feeding over marshy area at the junction of river and lake.

2 August 2008
Nil recorded

3 August 2008 – 10° 42' 18" S, 33° 39' 41" E, altitude 6009 ft
1 bat recorded feeding by forest edge at base camp

4 August 2008 – 10° 44' 43" S, 33° 40' 53" E, altitude 5815 ft
3 bats recorded feeding over the camp fires; marshy ground was 20m away.

5 August 2008 – 10° 44' 43" S, 33° 40' 53" E, altitude 5815 ft
Nil recorded

6 August 2008 – 10° 45' 28" S, 33° 41' 26" E, altitude 5700 ft
1 bat in travelling mode, not recorded.

7 August 2008 – 10° 45' 28" S, 33° 41' 26" E, altitude 5700 ft
Bat survey interrupted by gun fire, returned to camp and scouts went to investigate.

Figure 1 *Area where the bats fed Kaele*

8 August 2008 – 10° 44' 43" S, 33° 40' 53" E, altitude 5815 ft
Same as 4 August but bats not recorded.

BATS IN VWAZA WILDLIFE RESERVE
Still no Malawi Museum staff but it was decided to use the mist nets and cut the bats out of nets if it was necessary.

12 August 2008 – Kawiya Camp – 10° 52' 44" S, 33° 30' 42" E, altitude 4110 ft
2 mist nets set up in scout camp. (9 net-hours)
Net 1 – 5 bats caught ; all Little Free Tailed Bats *Tadarida pumila*. (*Figure 2*)
Net was set parallel to and about 9 ft from the end of one of the scouts houses – brick built with corrugated iron roof.

TABLE 1 Measurements of bats caught in Net 1

Bat	Species	Tail Length mm	Forearm mm	Head & Body mm	Weight g
1	Little Free Tailed	32	40	58	13
2*	Little Free Tailed				
3	Little Free Tailed	32	40	57	10.5
4	Little Free Tailed	36	39	59	13
5	Little Free Tailed	29	39	56	10

*Bat 2 escaped before measurements could be taken.
All bats captured were male.

Net 2 where nothing was caught, was situated outside Kennedy's toilet, (brick built with grass thatch). However the bat still managed to enter the toilet and avoid the net. A recording has been taken but the bat avoided capture. From the description the species is either a Rhinolophidae (Horseshoe Bat) or Hipposideridae (Old World Leafnosed Bat).

We hope that Kennedy Chihana and Edwin Zgambo will be able to identify this species in due course. Until then it is colloquially know as "Kennedy's Toilet Bat". Edwin also had bats in his toilet. It was noted that at night cockroaches were seen on the walls and floors of the toilets. It is assumed that the bats are coming to feed.

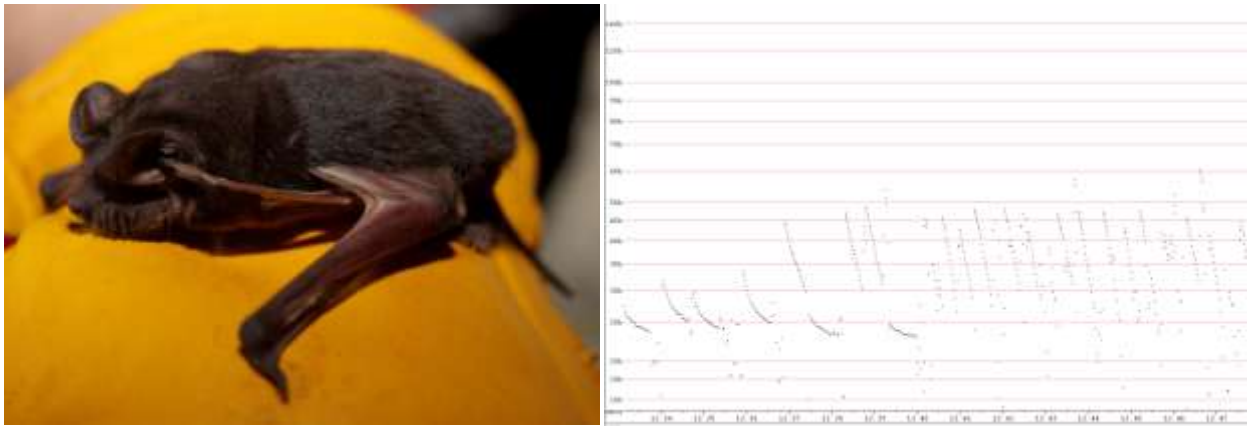


Figure 2 *Tadarida pumila* *Ian Pilcher* *Sonogram of Little Free-tailed Bat 12 Aug '08*

13 August 2008 – base camp - 10^{o} 54' 41" S, 33^{o} 30' 29" E, altitude 4030 ft.
Bats seen flying near the trees and the camp fire, 1 net set but nil bats caught. (2.5 net-hours)

14 August 2008 – 10^{0} 54' 16" S, 33^{o} 30' 32" E, altitude 4000 ft
1 net set, a number of bats recorded at dusk but all avoided the net. No activity once it was dark. (2.5 net-hours)
2 days later this area was burnt by a bush fire set by poachers.

15 August 2008 – 10^{o} 54' 38" S, 33^{o} 30' 31" E, altitude 4025 ft
1 Net set but nil caught and nil recorded (3.5 net-hours)

16 August 2008
No survey carried out due to bush fire started by poachers which was near our base camp.

17 August 2008 – Kawiya Camp – 10^{o} 52' 44" S, 33^{o} 30' 42" E, altitude 4110 ft
2 nets set, 1 each across Kennedy's and Edwin's toilets, all other exits and entrances blocked with fabric. No bats caught but there were high winds.
Bats recorded early evening feeding around the trees. (9 net-hours)

18 August 2008 – Vwaza Marsh base camp 2 – 11° 08' 01" S, 33° 39' 07" E, altitude 3537 ft
1 bat heard but not recorded.

19 August 2008 – Kazuni Camp
4 bats roosting in the porch of Lewis Mtumbuka's house. Roosting in gap between two wooden roof supports with a corrugated iron roof. Two bats caught by hand.

The first bat weighed 4.5g with forearm 29mm. Unfortunately the bat escaped before any other measurements could be taken but it was recorded as it flew off. (possible Kuhl's Pipistrelle *Pipistrellus kuhlii)* Second bat escaped capture, third and fourth bats moved to a gap on top of the wooden roof support, between wood and iron roof, so we were unable to extract them.

There had also been bat activity in a tree outside Lewis's house (bat droppings were found at the bottom of a hollow in the tree) although no bats were seen to exit this roost.

A net was set parallel to and 2 ft away from the back wall of Andrew Kataya's house. Brick built with corrugated iron roof. Five Little Free Tailed Bats *Tadarida pumila* caught. (1 net-hour)

TABLE 2 Measurements of bats caught in net

Bat	Species	Tail Length mm	Forearm mm	Head & Body mm	Weight g
1	Little Free Tailed	34	37	54	13
2	Little Free Tailed	33	39	55	12
3	Little Free Tailed	32	39	54	12
4	Little Free Tailed	33	39	56	13
5	Little Free Tailed	31	39	53	13

All bats captured were male.

20 August 2008
Two bats brought from Kazuni Camp Office for identification.

Figure 3 *Hiipposideros sundervalli Marianne Overton*

TABLE 3 Measurements of bats from Kazuni Camp Office

Bat	Species	Tail Length mm	Forearm mm	Head & Body mm	Weight g
1	Little Free Tailed	30	39	56	12
2	Sundervall's Leafnosed Bat (moribund)	27	49	46	7.5

Two nets set. Net 1 outside one of the huts at the bottom of Kazuni Camp. (Brick built with grass roof)

5/6 Little Free Tailed bats caught as they exited their roost, all released without measurements being taken.

Net 2 outside the Office at Kazuni Camp. (Brick built with corrugated iron roof)

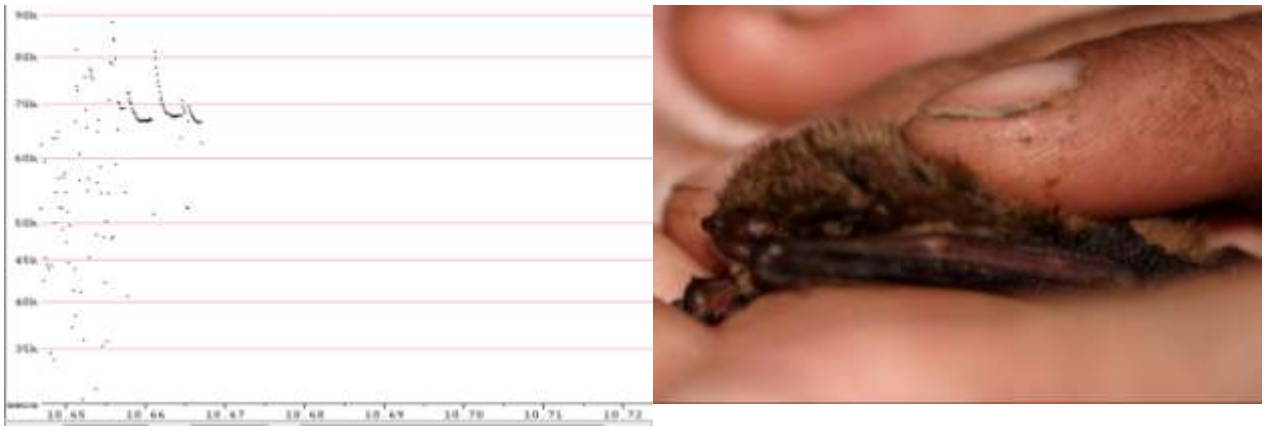
A number of Little Free Tailed bats caught and released without measurements being taken, (2 mist net hours).

TABLE 4 Measurements of pipistrelles caught in Net 2

Bat	Species	Tail Length mm	Forearm mm	Head & Body mm	Weight g
1*	Possible Banana Pip				
2	Banana Pipistrelle	18	29	37	3

* Bat 1 escaped from net before measurements could be taken but appeared to be similar to Bat 2 (*Figure 4*).

Bat 2 recorded and released.



Sonogram taken of a Pipistrellus nanus on 20 August 2008 **Figure 4** *Pipistrellus nanus* *Ian Pilcher*

A number of Little Free Tailed bats were brought to us that had been caught in a mosquito net by Brown Banda and Gilbert Kamanga from Mr Kamanga's house, Kazuni Camp. All were examined and released, without measurements being taken.

RESULTS

It is believed that all species of echolocating bats have unique calls that will produce identifiable sonograms. However, bats can modify their calls depending on the environment in which the call is being made i.e. deep foliage or open areas. Bats also have different calls for different circumstances i.e. foraging, socialising and travelling. To be able to produce a useful base line data base it may be necessary to obtain a number of recordings of each species in a variety of habitats. From this information a reference call can be established, however, the final determination of a bat species from it echolocation call patterns can be quite subjective. (Herr, 1997)

TABLE 5 Distribution of sonogram call patterns

	Nyika National Park						Vwaza Wildlife Reserve				
Call Pattern	28/7	30/7	31/7	1/8	3/8	4/8	12/8	14/8	17/8	19/8	20/8
1				✓							
2							✓				
3							✓			✓	
4	✓										
5	✓			✓							
6	✓										
7	✓										
8	✓										
9	✓	✓					✓				
10			✓								

	Nyika National Park			Vwaza Wildlife Reserve				
11		✓		✓		✓		
12			✓					
13					✓			
14	✓		✓					
15	✓		✓	✓				
16					✓			
17		✓						
18							✓	
19	✓							
20								✓
21							✓	

Analysis of the distribution of call patterns shows us that certain calls were recorded on more than one night and that some calls, 9 and 11, were recorded in both Nyika National Park and Vwaza Wildlife Reserve.

The number of call patterns recorded does not directly correlate to the number of bat species present, two or more call patterns may relate to one bat specie. It is also possible that not all the call patterns have been produced by bats.

Confirmation of individual species names make take some time as this requires obtaining a reliable reference call for each species.

CONCLUSION

The greatest concentrations of bats were in or close to human settlements, as man-made structures can be used as roost sites and are also easier to find and identify than roots in the wild.

In July/August the night time temperatures above 6000ft were still too low to support a varied and substantial population of insects and therefore, individual bat numbers were low although there may be a number of different species present. As linked areas of trees around base camp were very sparse and some species of bat do not travel across open areas, as risk of predation is increased, only individual bats were seen or recorded. However, in areas of greater tree cover and/or open water/marsh the number of bats present and feeding were much higher.

All the bats were caught early in emergence and all the *Tadarida pumila* caught were male. Harem males usually emerge first, this is could reflect the risk of attacks associated with first emergence (Bouchard, 1998).

Further work on capture, record and release needs to be carried out in order to obtain reference calls for each species. Initially this work could be carried out in and around the permanent scout camps as catching bats as they leave the roost site provides a high number of individuals to record. However, not all species roost in manmade structures so catching bats in the field is also required.

This would be a long term project as many mist net hours are required to catch bats in the field. During this expedition we had a total of 29.5 mist net hours. The weather can also cause problems because any slight breeze causes the mist nets to move which allows the nets to become visible to the bats, which then evade capture.

The practicalities of dealing with technology in the field had an impact on the efficiency and effectiveness of our work. It was thought that using a PDA (palmtop computer) would provide a small light-weight solution to the efficient labelling, organising and initial analysis of recorded calls. In practice, by the time we arrived in the field all the batteries including the spares had lost charge and were of no use. We have had to rely on the AnaBat detector date and time stamping its files, which it does well, but two months later back in the United Kingdom does make analysis difficult. When we return to do further work we will use a laptop

computer connected to the AnaBat and do real-time recording, analysis and organising of files. Backup batteries will be recharged through the day with a portable solar charger.

OTHER RECORDS OF BATS CAUGHT IN NYIKA NATIONAL PARK AND VWAZA WILDLIFE RESERVE

Bats were caught at Chilinda (10^o 35' S, 33^o 49' E altitude 2300m) and in a Juniper Forest (10^o 45' S, 33^o 55' E altitude 2300m) in Nyika National Park between 28 April and 7 May 1985. There are no endemic species of bats in Malawi.

Rhinolophus blasii – 1 female caught in Juniper Forest
Rhinolophus clivosus - 1 male and 1 female caught in Juniper Forest
Pipistrellus kuhllii – 7 males and 3 females caught at Chelinda (Happold, 1987)
Epomophorus anselli – 1 pair caught in the Mondwe Valley 1997 (Biosearch, 1998)
Epomophorus crypturus has been recorded from the Zambian part of the Nyika Plateau (c 10^o 34' S, 33^o 42' E altitude c2300m) (Ansell, 1973)
Epomophorus wahlbergi has been recorded from the Zambian part of the Nyika Plateau (c 10^o 34' S, 33^o 42' E altitude c2300m) (Ansell, 1978)
Eidolon helvum has been recorded from the Zambian part of the Nyika Plateau (c 10^o 34' S, 33^o 42' E altitude c2300m) (Ansell, 1978)
Rhinolophus hildebrandtii has been recorded from the Zambian part of the Nyika Plateau (c 10^o 34' S, 33^o 42' E altitude c2300m) (Clarke, 1983)
Miniopterus schreibersii has been recorded from the Zambian part of the Nyika Plateau (c 10^o 34' S, 33^o 42' E altitude c2300m) (Ansell, 1978)

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POACHING REPORT

Bridget Starling

SUMMARY

As in the past, poaching observations were recorded wherever the expedition found evidence. Signs were sought out and followed, sometimes resulting in some hours spent on investigative work carried out by the scouts with the full support of the team members. Plot surveys were carried out as previously planned but routes to plots and the order in which they were surveyed was adjusted to assist these investigations.

Biosearch tries to vary the areas covered from year to year, with repeat coverage at intervals. Therefore, care must be taken when results are compared across the years (see Appendices 2 and 3). Trends of activity levels must be treated with caution. On the other hand, it is clear that poaching activity has been found wherever the expeditions gone over the years. This year there was a small area of concentrated activity and a slight increase in finds near the Zambian border.

Figure 1 Probable poacher footprint

The co-operation and support of the local population is critical to the Department of National Parks and Wildlife. Recognising the importance of both the Nyika and Vwaza to the people, the authorities have licensed certain farming and harvesting of the natural resources to qualifying groups. As long as these activities are in balance with the environment, they will contribute positively to the ecosystem. In theory, these people become allies of the Parks and help with anti-poaching work and education. It would be of great interest to know where the general public's sympathies lie and how much they all do contribute.

INTRODUCTION

Each year the Poaching Report includes a list of evidence of poaching activity found during the course of the expedition, with some analysis of the problem. Richard Collins (2006) considered methods and tactics used by the poachers and compared this with the counter-strategy of the scouts and the Park authorities. He stressed the difficulties of covering a large area of rugged terrain with limited manpower and resources, but concluded that whilst poaching could be expected to be an ongoing problem, the level of activity had substantially reduced from earlier years.

Amanda Jones (2007) repeated the observation that work to control the problem will need to be sustained: the poaching problem will not go away. She also observed that in the area surveyed the level of activity did appear to have reduced, or become less established (shelters being less well-built and of a more temporary nature, fewer snares found). The 2007 expedition spent some time in lower areas, which are more difficult to access and less patrolled. There appeared to be more poaching in these areas.

During discussions in preparation for the 2008 Expedition the Authorities asked that work again include lower areas, and reach towards the Zambian border.The latter is also thought to be vulnerable to poachers, being again less regularly patrolled.

This report considers whether the optimism expressed in the previous two years was well-founded and opens a discussion on a coherent strategy for the future. The list of finds is presented in a table at Appendix 1 and a comparative summary with the previous two years at Appendix 2. Areas visited by the expedition are mapped at Appendix 3 (Nyika) and Appendix 4 (Vwaza).

THE NATURE OF THE PROBLEM

The team were concerned to understand the problem of balancing the protection of the Parks and Wildlife against the needs of the local population.

Both the Nyika and Vwaza have compelling countryside for those who enjoy walking and in the past horse-riding safaris have operated within the Nyika. If the animal populations can be nurtured, then guided treks and safari-type tourism are feasible. The Parks might one day bring much more significant investment and tourist cash into the local economy. However the direct enjoyment of such tourism will only ever be available as a luxury to very few fortunate people and the potential benefit of the increased wealth is at best a long way off.

Some people ask why local people should not exploit this resource for their own immediate good. Working with the Scouts helped us to see this in more depth. The illegal poaching of wildlife and destruction of the habitat, by burning and felling of mature trees, threatens the survival of the animal populations and of the Parks. The livelihoods of the scouts themselves, as well as management and associated trades depend on the continued existence of the Parks. The game is not so abundant that populations can withstand any but the most carefully managed fishing (in Vwaza) and harvesting of honey and thatching grasses. While the scouts themselves hold this belief, it is not known how far it is shared by the general population.

Currently a few poachers make some extra wealth for themselves and their immediate families, to the detriment of the majority, as this hinders the development of any tourism. If the game populations are low, either because the poachers gain the upper hand or restriction is removed and game is over-hunted, then the potential for the greater gain will be lost.

The disproportionate effect of a few poachers is starkly demonstrated by the effects of fires started in order to drive game in a particular direction. Such a fire was witnessed by the expedition; for the sake of a few kills, the poachers left behind a wide area of destruction.

Figure 2
Poachers' fire raging near the Expedition camp; Vwaza (Ref 1.17)
Kaele Pilcher

TYPES OF POACHING

There are several levels of poaching,

which need to be addressed in different ways.

Casual poaching

This requires little planning or equipment and is carried out by an individual or a couple of people. It would include stealing of wild honey and catching of occasional small prey (including fish). In fact, particularly in the Nyika, even casual poaching is not easy, as the park is not easily accessible from below, with steep escarpments to the central plateau, where much game tends to congregate. Nonetheless such raids are common, as shown by the evidence found each year. Malawi suffers from high levels of unemployment, which means that many people have the time available to undertake raids lasting several days. In Vwaza, the climate is such that for part of the year overnight shelter is not necessary, but by the end of the dry season scarcity of water will restrict this activity and during the rains it is more difficult because of widespread flooding.

The “casual” stealing of honey may involve serious destruction, such as the felling of mature trees.

Figure 3 Tree felled for honey; Nyika (Ref 1.11)

Allied to the poaching and honey stealing is illegal gathering of resources such as wood for burning and reeds or grasses for thatching. Wood and grasses can be carried in only limited quantity, but repeated raids can easily be made.

Excursions & Farming

Snares and traps require more planning as they must be set and revisited at a later date. The snares found by the team this year were designed for warthog or bushpig as well as rock hare. Such an animal could be quite a load for a single person to carry. The poacher may be apprehended whilst he is in the Park setting or visiting his traps, but also risks the traps themselves being found and removed.

Fishing nets are used to set traps for guineau fowl. The net is laid out on the ground and the birds become entangled. The equipment requires some outlay and care and if set as a snare it must be revisited. Net fishing itself is of course very exposed, but although this year’s expedition did catch a fisherman “in the act”, he was not actually apprehended. We can assume that the scout was hampered by his responsibility to the team members. This occurred in the headwaters of Kazuni Lake. The

Figure 4 *Warthog snare, Vwaza (Ref 1.16) Marianne*

fisherman was not unduly disturbed and simply climbed out on the opposite shore after insisting he had a licence. It was later confirmed to us that all net fishing is illegal.

Honey is also collected from illegal hives. The problems of snares are multiplied several times. The hives must be left in place for long periods and repeat visits made. All of this increases the risk of detection. On the other hand the outlay is small and an individual can operate alone. The honey can easily be sold without attracting attention once it has been recovered.

Professional poaching

Larger game is shot and requires several men to carry it out of the Park, after preparation and drying for some time to reduce weight. Poachers operate in teams of four or more, one acting as lookout when necessary. With the threat of a prison term if caught, these raids are not trivial exercises. Furthermore the meat can only be sold furtively and could easily be traced, incriminating the poacher after the event. Yet each year, in each area of the Nyika visited, the team has found fresh evidence of professional operations.

Figure 5 The team encounters the reality of poaching (Ref 1.2)

Equipment

At present, there is a precarious balance between the protection of the Parks and the poaching. Efforts must continue to avoid the balance tipping the wrong way and to establish the Parks more securely. As Amanda Jones pointed out in the 2007 Report, this will involve increased access to the Park – inevitably by those who threaten the environment as much as by those seeking to protect it.

In the short term, the Scouts' hand can be strengthened by ensuring they are well equipped for their work and appropriately supported in the field. Richard Collins (2006) observed that the Scouts' equipment and training gave them the upper hand. According to the experience of the 2008 team, the expertise of the senior Scouts in particular is impressive, but the equipment and resources available are inadequate to the conditions of work.

Figure 6 Lewis Mtumbuka on poachers' bridge – in town shoes (Ref 1.5) *Marianne Overton*

- Scouts travel long distances on foot over rugged country in inappropriate or worn-out footwear. This daily discomfort is a continual reminder that for whatever reason their needs are not given priority. Good qualilty boots help to prevent accident and injury and provide moral as well as practical support.

- Longer trips involve camping in the Park.The Expedition experienced overnight temperatures of only 6^{o}C even in Vwaza on one night and barely above freezing each night at only 6,000ft in Nyika. Our Malawian colleagues were not able to sleep due to the cold. To improve performance immediately, with longer term benefits for morale and health, improvements in the standard of camping equipment are recommended.

- Tents should be double skinned for warmth and capable of keeping out rain and mosquitoes.

Figure 7 Bernard Kumwenda "sheltering" in his tent

- Thermal mats are of great benefit in keeping warm as well as comfortable.
- Sleeping bags will help staff to rest properly.
- Binoculars help to avoid time wasted checking out possible incidents by enabling a patrol to determine whether it is necessary to make a detour. They will also enable scouts to study and record wildlife and in particular birds. This will increase their knowledge and assist the Park greatly in attracting visitors.
- Cameras could assist in recording evidence.
- GPS systems give certainty and authority to recording locations but seem to be few in number, particularly in the Vwaza National Park.
- Radios are crucial for safety and would greatly increase efficiency in combatting the poachers if they were plentiful and in constant and consistent use (requiring a supply of batteries).
- Scouting work is restricted due to the physical features of the land but also because fuel is in such short supply so that vehicles to help cover distance are not consistently available.

Infrastructure

An area of intensive poaching activity was uncovered in Nyika following the discovery of a bridge (Appendix 1 ref 1.5 et seq). This in turn came about because the Expedition team needed to cross a larger watercourse in order to reach a planned survey plot.

The construction of a bridge involves work not only on the bridge itself but also in camouflage. It will only be done if the poachers calculate that the area is rich enough – and safe enough – to provide a return on this investment. If this is so there will be repeated visits to the area and the bridge will facilitate access.

Figure 8 Poacher bridge and nearby camp, Nyika (Ref 1.5) *Marianne Overton*

If the operation is worth such an investment by the poachers, it must be worth an equivalent effort by the Park to undermine it. Patrols could be designed specifically to seek such bridges. Currently routes will often follow a watercourse, but without seeking to cross it. For those streams which are big enough to make crossing difficult, the patrol could actively seek bridges.

Figure 9 Remnants of poacher camp (Ref 1.6)

Figure 10 (Right) Bernard with top of prop cut for scaling the tree to take honey (Ref 1.7) *Marianne Overton*

Repeat visits

It appeared that the area under discussion would be visited repeatedly for the casual and excursion type poaching. Snares and traps will always require repeat visits.

In each case a choice must be made between watching the area in order to catch the poachers and destroying the bridge or trap to ensure that the return trip will be more difficult if not futile and the poachers will know they have been spotted. Clearly the former involves significantly more work for the scouts as well as being more likely to lead to confrontation. Whilst arrests are rare - poachers dodge around the patrols – attitudes will remain comparatively relaxed. As the Park has adopted a policy of pursuing arrests with determination, the poachers' risk has increased and tensions are heightened.

Such a policy will require investment in supporting the stake-outs. How successful are these operations likely to be? How far will the number of arrests increase? To what extent will poaching raids be deterred?

Timing

Timing is also significant and we found that on August 16th in Vwaza the waters had receded enough for poaching to begin in the Waluntchutchu area, known for its rich game. Scouts responded with an increase in anti-poaching patrols, of which our group was the vanguard. At this time, stakeouts were held at the remaining waterholes and river sections that were not dry.

Professional Poachers

The teams hunting the largest game are already risking long prison terms. They will also be armed and therefore must be approached with extreme caution. The scouts can only expect to combat these operators with communications and mobility. The game is scattered so that it cannot be guarded easily and the poachers are unlikely to revisit the same areas. Perhaps the best intelligence is sighting vultures circling, which might indicate a drying rack. The patrols need to be able to respond to this by investigating immediately. Communications and

transport are vital. Radios have already been mentioned. Suitable vehicles (and fuel) would give the Scouts an advantage over the poachers.

Education

Extension workers talk to schools and communities about the Parks. This work is vital in forming attitudes towards these areas and helping people to see the longer term future with the Parks as a valued international resource.

POSSIBLE RESOURCE ALLOCATION

Scouts

Funds applied in employing and training Scouts do not simply combat poaching. They provide employment, which is desperately needed. Every Scout has family and friends who are more likely to be sympathetic because of that relationship.

When the Scouts are seen to be properly supported and respected, their work and their cause will also gain support and respect from the wider community.

Field Equipment

Equipment will make a direct contribution to Scouts' effectiveness in the field. The indirect impact of good equipment on the Scouts' own morale and on the perceptions of the Parks and public respect for Scouts and their work is also important.

Vehicles and fuel

These are expensive and will not always help, due to conditions of weather and terrain. Much of the vulnerable area is well off the track anyway. It is however, important to make the best use of what is available to get the scouts to a suitable drop off point.

Allies

Every person benefitting legally from the Park is an ambassador. The relationship with the bee-keepers, the fishermen and other licenced gatherers is important. Liaising with them and supporting their expeditions into the Park should continue to be given priority. There may be other opportunities for interactions with nearby communities.

Figure 11 Allies: Scouts, beekeepers, Expedition team, Nyika. *Pippa Stubbs*

APPENDIX 1: POACHING RELATED FINDS IN 2008

Date of find	Position & altitude	Map Ref	Description	Age	Ref
31/07/08	6,000ft	733159 Vitinthiza	Bush Buck horns & part skull showing traces of axe	> 1yr old	**1.1**
04/08/08	S10°41.49' E33°41.17' 6,214ft	752182 Vitinthiza	Drying Rack with remains of Eland lower legs of one animal, scraps of skin and entrails, shoulder blade Sole of football boot. Richard Nyirenda and Patson Mukisi found by tracking footprints. Uphill a short distance were signs of trees cut to construct the rack. Professional group of at least 4 poachers.	1 or 2 days old	**1.2**
05/08/08	S10°40.15' E33°40.03' 6,493ft	730207 Vitinthiza	Tracks of a different group 5 men. Richard Nyirenda and Patson Mukisi found following up reports from Bee-keepers and Scout of gun shot heard early in the morning	< 1 day old	**1.3**
06/08/08	S10°40'46" E33°39'08" 6,119ft		More Tracks Probably the same group as ref 1.3 above	1 day	**1.3a**
06/08/08	S10°45.32' E33°41.17' 5,900ft	750110 Katumbi	Bush Buck skin remnant Neatly skinned (since chewed)	Approx 1month old	**1.4**
06/08/08	S10°45.87' E33°41.40' 5,640ft	754101 Katumbi	Bridge 5 cut trees laid from tree to tree across river, well above water level. Supporting trees bent over. The whole disguised using cut trees (still green). Considerable trouble taken to build this bridge, suggesting expected to be of ongoing use. Trails to and from bridge not obvious – precautions taken by poachers. Lewis Mtumbuka notes this was known crossing point in past. Bernard Kumwenda that bridge not found by recent patrols.	Current	**1.5**
06/08/08	S10°45.83' E33°41.47' 5,660ft	755101 Katumbi	Rainy season shelter & fireplace (remains) Having crossed bridge found this vantage point commanding area of much animal activity (many paths); riverine vegetation Human damage to vegetation (broken sapling) Above shelter, cut forked tree used as ladder to raid bee hive and bark damage	Last rainy season	**1.6**
06/08/08	S10°45.87' E33°41.35' 5,640ft	753101 Katumbi	Honey gatherer's stick Consider all finds on this day linked: bridge provides access to chosen area of operations.		**1.7**
07/08/08		759099 Katumbi	Night hunter fire + broken torch		**1.8**

08/08/08	S10°45'29" E33°41'06" 5,820ft	749108 Katumbi	Honey gatherer's stick + damage		**1.9**
08/08/08			Poachers' den Cut wood and a fireplace beside a stream at crossing on route to Mwanda	Used < 1 week ago	**1.10**
08/08/08			Poachers' Ladder Forked branch cut to lean against a second tree to give access to bees' nest and honey		
08/08/08	S10°39.93' E33°36.25' 6,2400ft	663210 Vitinthiza	Wild honey poaching Mature tree felled and smoked to drive away bees and steal honey Illegal hive nearby	< 1 month old	**1.11**
08/08/08		620169 Vitinthiza	Snares for rock hare on summit of Mwanda. More illegal hives were seen during the ascent of the mountain. This area seems to be accessed on a casual basis.		**1.12**
08/08/08		Vitinthiza	Poachers' highway Followed this route down from summit. Well used path; again a rest place at stream crossing		**1.13**
12/08/08	S10°55.67' E53°30.52' 4,080ft	556920 Katumbi	Remains of warthog snare Remains of a second from previous season	Early 2008	**1.14**
15/08/08	S10°55.25' E33°24.88' 3,723ft	455928 Vwaza	Honey poaching Tree damage		**1.15**
16/08/08	S10°53.70' E33°25.69' 3,757ft	468956 Vwaza	New snare Set on path, possibly for warthog Waluntchutchu Woodland		**1.16**
16/08/08	S10°53.67' E33°25.61' 3,765ft	467957	New warthog snare Second of 2; 200m apart; both on trails Waluntchutchu Woodland	In use	**1.16a**
16/08/08		From 570973est almost to camp 557962 Katumbi	Fire set to drive game Smoke observed by Away Team. Wind form NE drove fire for approx 1.5km between camp (bore hole ref 557962) and village across front of approx 1km. Road made firebreak. Team at Base Camp struck all tents and prepared to retreat.		**1.17**
19/08/08		693678 Kazuni	Net fisherman Headwaters of lake by Kazuni camp. All net fishing is illegal.		**1.18**

20/08/08		708677 Kazuni	Poaching nets Used either for fishing or laid on ground, baited with grain to catch guineau fowl. Nets stored near lake shore.		**1.19**
20/08/08		708677 Kazuni	Young hippo remains		**1.20**

LARGE MAMMALS

Katie Cottrell and Philippa Stubbs

ABSTRACT

As a break with the tradition of past Biosearch Expeditions in the Nyika National Park was not the sole area of the groups' attentions. In contrast to the high altitude plateau of Nyika, a week was spent in Vwaza Marsh. With these two different landscapes, it can be expected that the range of large mammals recorded is much greater than it has been in previous years. The different environments give a broader indication of what species Malawi has to offer and what needs to be preserved.

For the two different areas, two different survey methods were employed. In the undulating and varied vegetation of north Nyika, plots of 100m^2 were covered, expedition members recording signs of large mammal activity. These signs included droppings, prints, and diggings, grazed or damaged vegetation and shed quills.

In the flatter and more densely vegetated land of Vwaza Marsh, transect lines were drawn out on maps and followed. Although signs were still noted, the aim of these 'walks' was to record sightings in order to compare and contrast results with those that scouts had collected in the past, on their own patrols. An animal was sighted and its estimated distance from our transect line was recorded. Special attention was paid in the search for any signs of Buffalo, Sable and Lion as they had been scarce in recent history in this area.

Large mammal species, for this expedition, were defined as animals 2kg or over. Thirty species of large mammal were identified, from the African Elephant to the Scrub Hare. Molerats and some other small mammals were also recorded, as they had been the subject of previous expedition studies.

An increase in large mammal activity was seen in most species, with the exception of Zebra, Warthog and Reedbuck on the plateau. Kudu and Grysbok were also absent from the slopes. It is possible that this is the result of the choice of area surveyed this year, and close monitoring will be needed in future.

The excellent work of the Parks staff is highly praised and needs to be maintained.

INTRODUCTION

The expedition's main purpose was to investigate record and assess the large mammal populations within the Park, by identifying the patterns and changes in the populations over time. Biosearch Expeditions have been working in the same area for over 12 years now, accumulating a significant amount of data. A summary of expedition locations in each year is given in the Foreword.
Over three weeks was spent out in the field: 13 days in Nyika, seven in north of Vwaza, and three in the south of Vwaza (Lake Kazuni area), the precise locations are noted in Table 1. Because of its size the expedition team was able to cover a significant amount of terrain. The team divided in two, studying different areas. On some occasions the teams were further split and assigned different studies, such as one half tackling transect squares and the other looking for signs of herpetology nearby. A study of the local flora was done to present a more detailed picture of the community as a whole, helping to indicate and explain the population patterns of herbivorous mammals and in turn, their predators.

LOCATION

Three main areas were studied. The first study area was in the Nyika National Park, just south of the Vitinthiza peak (6900ft). The second basecamp at Chelanya borehole was only 20km as the Raven flies, southwest of our southern-most plots on the Nyika, but an altitude drop from around 6000ft to 4000ft. The third area at Lake Kazuni is about 30km to the southeast, across the Vwaza Marsh Reserve. There has been a desire to create a game corridor in the 12km between the two Parks, but currently this area is populated with people, making traditional migration more difficult between the marshy lowlands and cooler uplands, away from tsetse fly. Local people say that a few animals still use this route, mainly at night.

The detailed locations, including kilometre squares surveyed and the transect lines, are illustrated on the maps at the front of this book and listed in the results tables in the appendices. The study areas of the Nyika National Park are on ordinance survey maps Vitinthiza Sheet 10 33 D1 and Katumbi 10 33 D3. The latter map and Vwaza 10 33 C4 covers the study areas of the Vwaza Marsh Game Reserve. The eleven camp locations with dates are listed in Table 1.

The Nyika National Park

The Park may well have got its name from the Swahili word describing the extensive grassy wilderness. The protected area covers 3146km². This expedition included two weeks on the plateau in the Nyika National Park before moving down to the Vwaza Marsh Game Reserve for ten days.

The plateau is largely above 6000ft, dominated by grassland and forest patches, with many small streams. The slopes below 6000ft are wooded with grassland continuing under the trees. The vegetation of our survey areas was recorded and is analysed below.

Vwaza Marsh Game Reserve

The reserve covers 986km² between approximately 3500ft rising to hills in the east of over 5000ft (1,100m and 1,600m). The Park is mainly covered by open Mopane woodland and mixed Miombo woodland. The marsh itself in the northwest of the reserve is an extensive flood plain of the Luwele River, which becomes the South Rukuru River. This is dammed in the south to create Lake Kazuni. Survey work included both woodland and marsh areas. Isolated scrub patches with palm trees have formed on islands of termite mounds projecting from the marsh itself.

Survey areas

The areas within Nyika where our survey took place were selected after discussion with the local staff of the Department of National Parks and Wildlife as has been the procedure each year.

The first base camp, situated on the Luselo River served as a site for acclimatisation and training as well as a suitable area for patrol. The various sub camps were established in different areas as the two groups split up to do their surveys. Areas of more remote location and more difficult access were tackled by 'Extreme Team', which was also joined by studies which could be carried out at a distance, such as ornithology. 'Quality Team' specialized in the lower ground and were joined by studies which required a steadier pace, the botany and bat study. These sub camps acted as a hub from which the teams could work, surveying locations within reach. These sub-camp areas were carefully selected with the ability of the group and practicality in mind. Both the plots and the squares were chosen at random by means of a lottery draw.

Photo 1 Nyika habitat

Table 1 Detailed camp locations

Date	Latitude	Longitude	Altitude ft	Map ref
Nyika basecamp on Luselo River, tributary of the Runyina				
29 July -11 Aug	10º 42.30'S	33º 39.70'E	6009	723171
Lake subcamp Quality team				
01-Aug	10º 43.0'S	33º 40'.83'E	5890	743157
Extreme Team at Bridge on Runyina				
01-Aug	10º 43.72'S	33 40.82'E	5850	745141
Quality Team subcamp on Upper Runyina				
4, 5, 8 Aug	10º 44.72'S	33º 40.88'E	5800	745124
Quality team subcamp on Lower Runyina				
6, 7 Aug	10º 45.47'S	33º 41.43'E	5700	753111
Extreme Team on Lutete River				
4, 5 Aug	10º 40.19'S	33º 41.44'E	6250	756205
Extreme Team on Luselo River				
6, 7, 8 Aug	10º 40.82'S	33º 37.83'E	6250	690194
North Vwaza basecamp at Chelanya borehole				
11 - 17 Aug	10º 54.68'S	33º 30.47'E	4000	557962
River Dera Subcamp				
14, 15, 16 Aug	10º 53.80'S	33º 27.26'E	3780	497955
Kawiya Scout Camp				
12, 18 Aug	10º 52.44'S	33º 30.42'E	4110	560974
South Vwaza basecamp at Kasuni				
18, 19, 20 Aug	11º 8.02'S	33º 39.11'E	3531	703685

Table 2 Number of sites surveyed at different altitudes in Nyika National Park

Survey Area	Average Altitude (ft.)	Number of plots
Base Camp	6091	28
Runyina	5843	29
Mwanda, near Border	6266	22
Total		89

VEGETATION OF THE PLOTS SURVEYED IN THE NYIKA NATIONAL PARK

The nature of the vegetation varied with the changing altitude and topography. Table 3 and Figure 4 represent the changes in habitat with altitude.

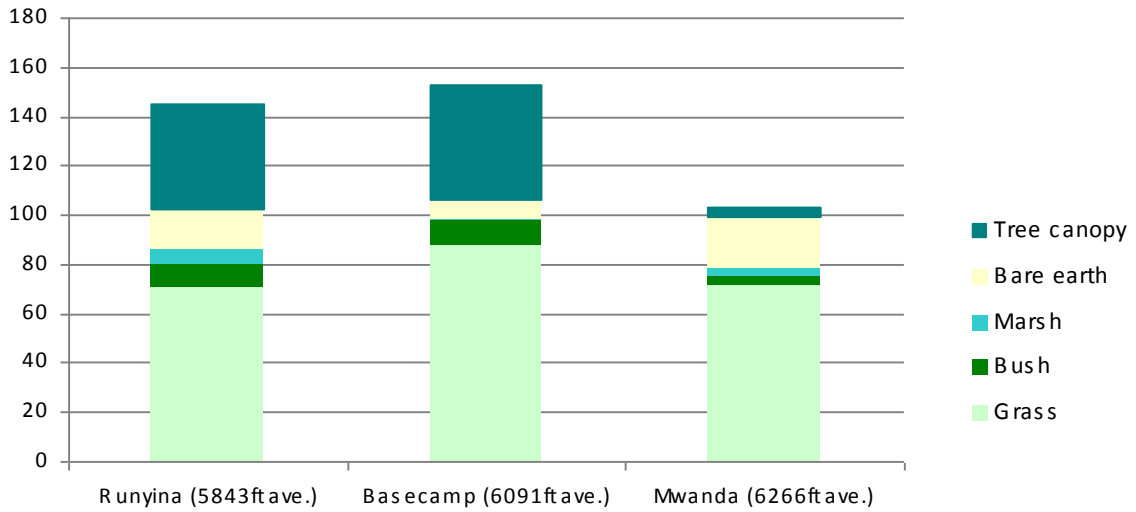
The cover given by tree canopy shows the greatest variance with altitude, decreasing sharply over 6000ft from 47% cover at the base camp at around 6091ft, to only 4% on the plateau in the area of the Zambian border area. The different patches of forest which were investigated varied in size and occurred most frequently in sheltered areas with abundant water supply, such as at the heads of the valleys and in dips on the slopes. Where the tree canopy diminished, the percentage of burnt ground increased, as might be expected. The cause and effect of these two habitat types has been discussed at length over the years and there remains the suggestion that the trees are reduced by excessive burning, whether natural or man made.

Grass is the dominant habitat type with the highest percentage cover at all altitudes. The percentage cover of grass changed little over the altitude variations. Grass covers such a large area because it occupies the ground under the open tree canopy at lower altitudes and dominates the habitat at higher altitudes. The higher altitudes are probably less suitable for natural tree growth and they are inhibited by persistent dry season fires, although damp hollows support forest patches on the plateau.

The type of vegetation influences the distribution and abundance of animal life directly. The various forms of vegetation provide different diets for the herbivores, and a hunting ground for the carnivores. The habitats offer cover and camouflage for the hunter as well as cover for the hunted.

Table 3 and Figure 4 Percentage (%) of ground covered by vegetation types in different areas of study.

Site	Average Altitude (ft)	Burnt	Tree Canopy	Grass	Bush	Marsh	Bare Earth
Runyina	5843	14	43	71	10	6	17
Basecamp	6091	21	47	88	10	1	8
Mwanda	6266	43	4	72	3	3	21



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The lowest altitudes surveyed were in the Runyina Valley, 5650ft up to 5950ft. The base camp survey area ranged around the 6000ft mark, from 5950ft to 6350ft. The range in altitude and habitat between the Basecamp area and the Runyina was not very significant. The Mwanda area, all above 6000ft and up to 6450ft had significantly less tree cover and more burnt grass, more characteristic of plateau habitat.

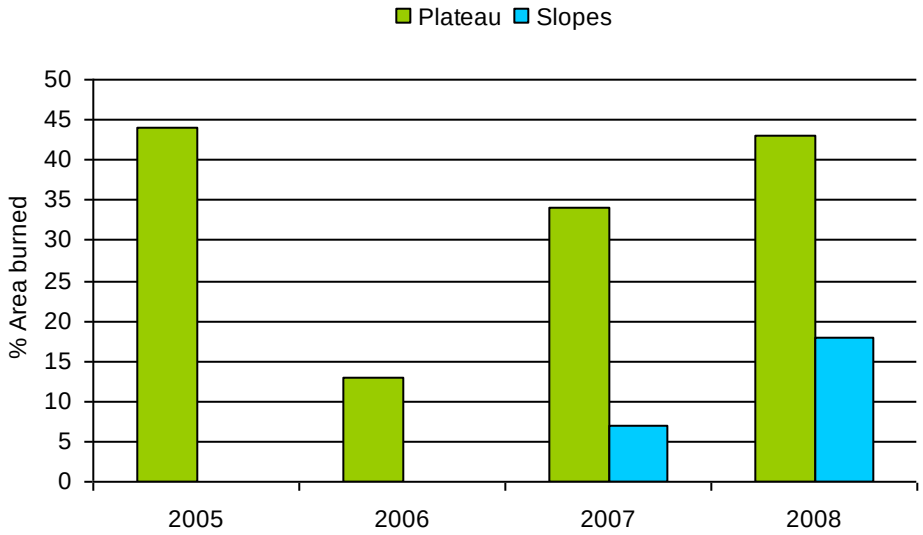
BURNING

The Nyika National Park management has a policy of early burning of grassland areas to avoid more damaging late season fires. This is supported by the Nyika Vwaza Trust. There was much evidence of recent burning on the central plateau, reducing towards the wooded edges. The poachers also start fires to make the game more visible in the open plateau. This is discussed in the poaching report.

Biosearch has annually recorded the percentage burning in each randomly selected plot, as it influences the visibility of signs of game. The percentage of burning each year is shown in figure 5. The low figure for percentage burning in 2006 was because the expedition spent time in Juniper Forest area, which was not burnt that year and the Wovwe Valley, which is rather steep and wet. In 2006, the burning was mainly at Zungwara, where the expedition spent only three days.

Photo 2 Bushfire set by poachers in Vwaza Marsh Reserve. The lowland area is not suitable for regular burning, but local villagers are encouraged to gather thatching grass.

Figure 2 Percentage of surveyed area that has been burned by July/August



METHODS

In the Nyika National Park

The undulating terrain and varying vegetation meant that, although there were some reliable sightings, they were few and far between. There are several flaws in the method of recording only sightings on the Nyika plateau. The most obvious is that the landscape doesn't allow an easy sight line and the vegetation cover is good, which many of the mammals exploit. Also, our approach is easily detected, often from a significant distance. This means that on occasion, identification was unsure. By relying on daytime sightings, we would also miss out on the many species which are active during the hours of darkness.

By identifying tracks and signs we could determine the presence of the species in the area. This method also allows for direct comparison as it is the same method which has been deployed in past years. The varying conditions of the ground which we were examining can only be overcome by doing enough plots to be representative of each area. Previous work has shown that the results were little changed between 35 and 50 plots, suggesting that 35 plots are enough in plateau or woodland, but we aimed to do 50. Our squares took us through areas of marsh and bogs as well as areas experiencing erosion, resulting in the signs being harder to spot and identify. We recorded prints, droppings, diggings, quills and signs of feeding.

The identification of the tracks and signs was based on the knowledge and instruction of the trained scouts, backed up by moderation sessions and two recently published books of field signs. Towards the end of the expedition, all the expedition members achieved a degree of confidence.

Field Procedure

In essence, for each plot, ten members of the expedition start in a line, standing 10m apart. They then proceed, walking 100m in a straight line, looking 5m to either side of their transect and record all sightings and evidence of mammal presence. This method can be altered to accommodate the number of people present in the group. For example, if eight people are available to walk the square, the route would be increased to 125 m to maintain the cover area at 100m².

It was important to take a compass reading at the start to pin point the most distant object within view that is on the transect line. Otherwise one risks losing one's direction, especially if meandering to and fro in long grass searching the strip.

If any member of the group found a piece of evidence that was either unclear to the recorder or he hadn't come across before, the scouts were always happy to offer their professional knowledge for identification.

Handling the data
In order to have data which can be analysed and evaluated easily, the recordings were converted using the Relative Abundance (RA) system which has been used on previous Biosearch expeditions. By using this method, this makes for easy comparison with past expeditions. Scoring a maximum of 3 for prints and signs in any one plot prevents one busy plot from skewing the results of the area as a whole.

In each plot, a total was recorded of the signs for each species. A 'scribe' would record everyone's findings in the plot. At the end of each day, back in camp the data for each plot was transferred to a pre-printed data table. Any unusual findings within the plots, which didn't quite fit the 'large mammal' bracket were recorded and mentioned separately. These included herpetology and bird records, which were relayed back to the appropriate researchers.

In the Vwaza Marsh Game Reserve
In Vwaza, the methods deployed were transect lines and stake-outs. We would walk the line, ideally 10m apart, observing the land either side of us. When recording a sighting, the animal was identified and the distance from the transect line recorded. Evidence on the transect line was also recorded by a single 'scribe', as in the Nyika and an estimate of the distance of visibility from the transect line. Whilst in Vwaza, we were asked to look specifically for evidence of Sable, Lion and Buffalo on our movements within the reserve, as these species had become very scarce.

Photos 3,4 and 5 Vwaza Marshland (left) and bush (top right) and Lake Kazuni (below)

RESULTS AND DISCUSSION

Over the course of the expedition, 30 different species of large mammal were identified as listed in Table 4. The most abundantly recorded species are shown in Figure 3. Common Duiker was the most abundant species recorded in the plots. Bushpig, Bushbuck, Porcupine and Reedbuck were also common. In comparison to the results of the previous year, numbers of Porcupine and Bushbuck were higher but numbers of Roan Antelope and Eland were lower, falling out of the top five most commonly recorded species. Habitat and burning are similar in 2007 and 2008 both for plateau above 6000ft and slopes below. There were signs of less common mammals in the plots, including Leopard, Buffalo, Serval, Small-Clawed Otter and Honey Badger.The total signs of activity per fifty plots in each area are shown in Figure 4.

Table 4 Biosearch Species List for Nyika National Park and Vwaza Marsh Game Reserve
* denotes not recorded in 2008

English Name	Latin Name		
Aardvark	*Ocycteropus afer*	Lion	*Leo panthera*
African Buffalo	*Syncerus caffer*	Leopard	*Panthera pardus*
African Elephant	*Loxodonta africanus*	Mongoose	*Galerella spp*
Baboon	*Papio hamadryas*	Otter	*Lutra lutra*
Blue Monkey	*Cercopithecus mitis**	Porcupine	*Hystrix africaeaustralis*
Burchell's Zebra	*Equus burchelli*	Red Forest Duiker	*Cephalophus natalensis**
Bushbuck	*Tragelaphus strepsiceros*	Reedbuck	*Redunca arundinium*
Bushpig	*Potamochoerus porcus*	Roan Antelope	*Hippotragus equinus*
Civet	*Civettictis civetta*	Rock Hare	*Pronolagus randensis*
Common Duiker	*Sylicapra grimmia*	Serval	*Felis serval*
Eland	*Taurotrogus oryx*	Spotted Hyaena	*Crocuta crocuta*
Genet	*Genetta spp*	Vervet Monkeys	*Cercophitecus natalensis*
Greater Kudu	*Tragelaphus strepsiceros*	Warthog	*Phacochitecus aethiopicus*
Hippopotamus	*Hippopotamus amphibious*	Yellow Baboon	*Papio cynocephalus*
Honey Badger	*Mellivora capensis*		
Impala	*Aepyceros melampus*	Small mammal recorded alongside:	
Side Striped Jackal	*Canus adustus*	Molerat	*Heterocephalus glabe*
Klipspringer	*Oreotragus oreotragus*		

Figure 3 Species with the highest activity scores overall

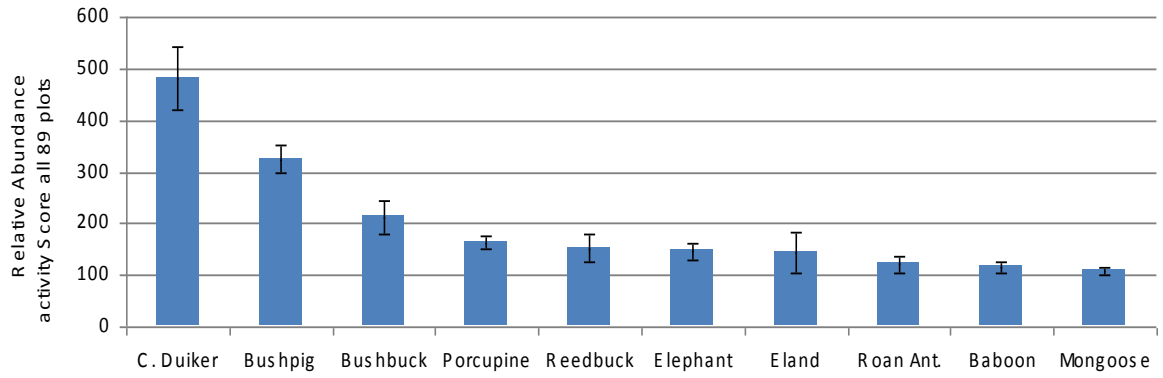
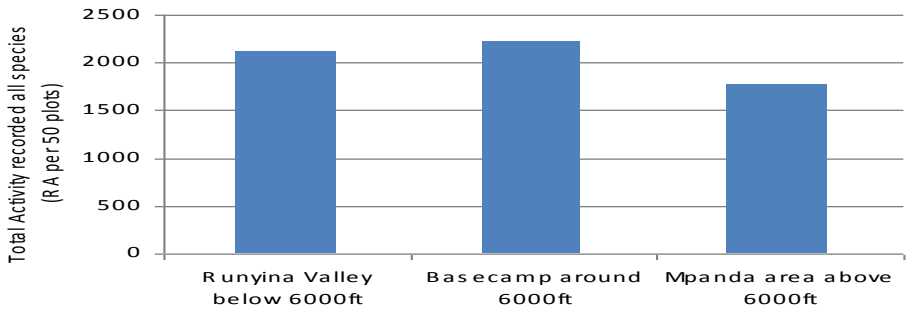


Figure 4 Total Activity recorded for all species over the three different areas surveyed.

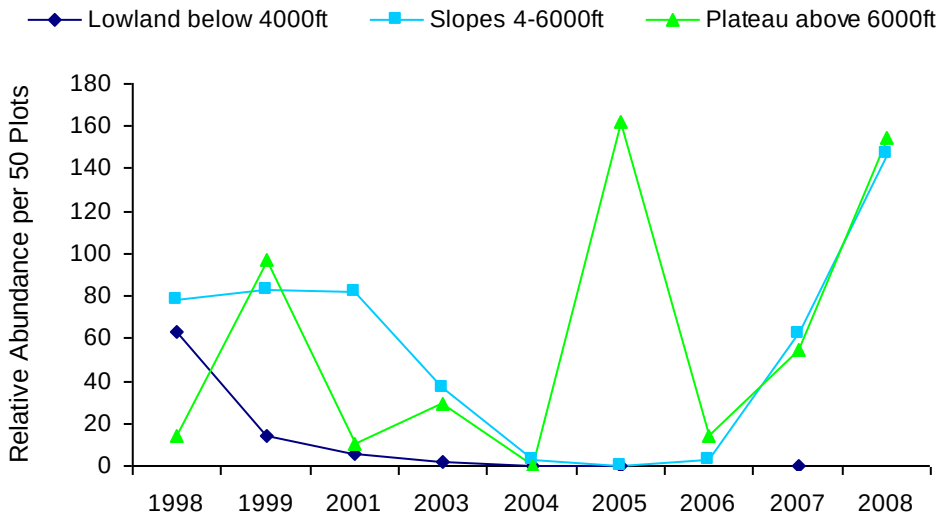


Recorded activity of species overall
Some animals are genuinely more common and others leave a lot of signs of activity where they occur. The Common Duiker produces copious piles of droppings and in damp areas extensive areas of Bushpig diggings are evident. Thus it is best to compare relative activity for each species in one area to another and in one year to another.

TRENDS IN INDIVIDUAL SPECIES
Data collected in the same season, July/August, 1998 to 2008 is included here. Results from three other expeditions are not included here as they took place in March/April (1997 and 2003) and in September 1999. There are no results for 2000 and 2002 as no Biosearch expeditions took place.

Elephant

Figure 5 Relative Abundance Activity of Elephants



In 2008, there was no significant difference in elephant activity between the three areas studied, which were all between 5650ft and 6450ft. There was no lowland studied in the Nyika this year. There were relatively few sightings considering their size and behaviour and the amount of activity evidenced. Evidence of activity was concentrated in some forest patches where the elephants presumably spent the most time, out of sight.

As Figure 5 shows, the Relative Abundance of elephants has increased since 2004. 2006 was exceptionally low, but this was when the expedition spent time on the high, cooler Juniper Forest area and the very steep slopes of the Wovwe Valley, both poorer habitats for elephants.

The total Relative Abundance has ranged from 194 per 50 plots in 1999, down to 3 per 50 plots in 2004. This year and last year's finding show an increase, with 157 and 155 being the abundance per 50 plots for the years 2007 and 2008. Indeed the activity level for elephant in 2008 has returned to the same level as it was in 2005. This year saw an increase in elephant activity on the plateau and on the slopes and also yielded a sighting of a lone bull on a transect close to the first base camp.

The results of 2008 suggest that the elephant population is stable but there are areas of uncertainty. The fact that all activity below the plateau seems to have disappeared could suggest several things. The population has increased on the plateau, suggesting that the elephants have migrated here from the lower slopes. The lack of elephants in the low woodlands could suggest that poaching has increased in the area, in contrast to hopes made last year (Overton 2007). They may have chosen to spend more time away from areas where

poachers are operating. Whilst in Vwaza, the expedition saw the greatest poacher activity in the more accessible lower altitudes around Lake Kazuni.

As one of Africa's Big Five and the poster "child of African Safari Tourism", the presence of elephants is highly important to Nyika and Malawi's developing tourism. Ansell describes the elephant as using all habitats, but only once recorded above 6000ft in the Nyika in 1954, a situation we have shown to have changed since 1999, especially in the last three years. (Ansell 1988) In 2004 Melissa de Kock, of the Peace Parks Foundation photographed from the air 32 elephants in one herd on the plateau. Nyika's landscape is much above 6000ft on the plateau and much of the lower areas are steep slopes, so the area is not typical elephant landscape. Elephants are known to pass through all kinds of habitats being able to travel great distances and feeding on all types of vegetation. Elephants move into forest but do poorly without access to grassland. (Apps 1996) If elephants need to avoid making themselves evident on open grassland, that will inhibit their feeding. It was noted that these elephants have fewer young than the elephants seen in the Vwaza Marsh Reserve.

The sighting of a lone bull on the first day of the expedition was interesting. Elephants have highly developed social structures and adolescent bulls, 10-12 years old, often leave or are driven from the groups by the matriarch. This lone elephant is likely to eat between 180kg and 270kg of biomass each day; a diet of mainly grass but can contain wild fruits, bark and roots (Walker 1996). An adult requires 150kg per day, of which only about 40% is assimilated, leaving the production of about 100kg per day, by a ten year old female. (This makes elephants a major recycler of biomass into detritus.)

Photo 6 Evidence of fruit in Elephant diet found in droppings *Philippa Stubbs*

Eland

Figure 6 Relative Abundance of Eland

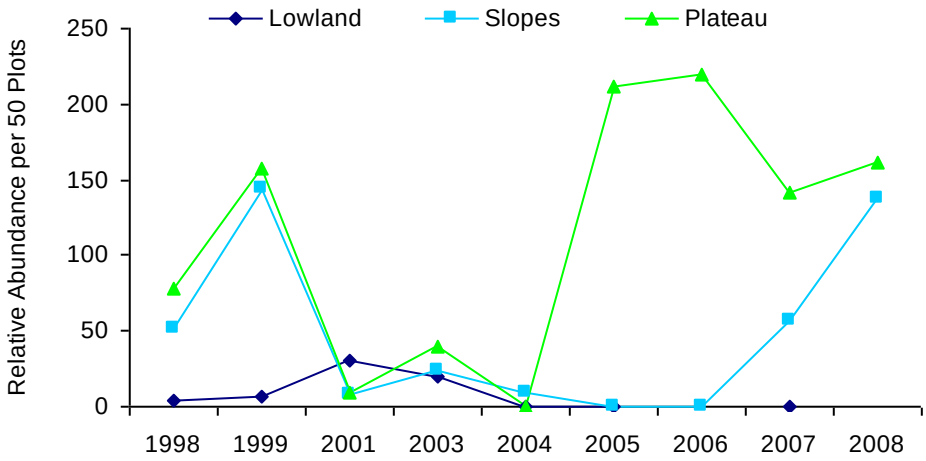
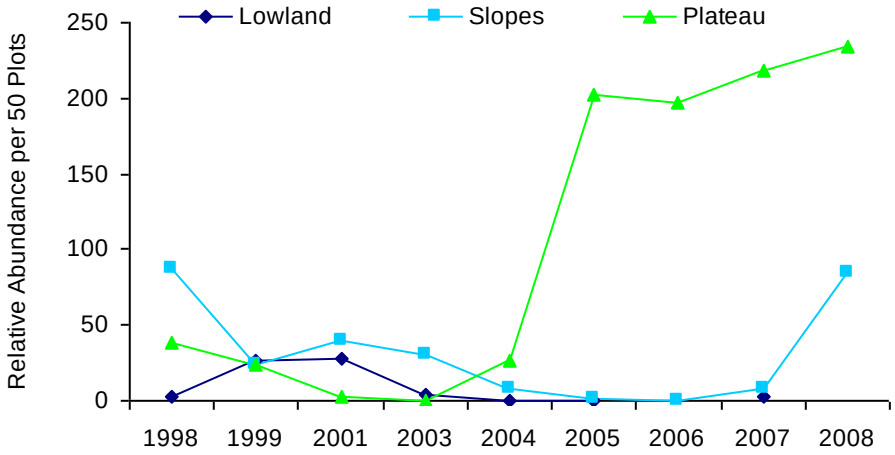


Figure 6 presents the trends that can be seen in the results of the presence of Eland from 1998 to 2008. The data shows an increase of Eland activity in both the plateau and more so on the slopes. The graph shows that the plateau population has picked up from where it dropped last year, increasing from 141 in 2007 to 161 in 2008, although it is still a long way from the Relative Abundance value of the plateau of 2006 where the value was 219. When combined with the data collected from slope plots this 2007 and 2008, the total Relative

Abundance for Eland has increased overall in the past 2 years. This is a marked improvement on the Relative Abundance value of 2004 of just 9. This increase suggests that the Eland population is prospering and a large amount of the habitat available to it. The sudden increase in 2005 may have been due to better protection against poaching and/or increased burning taking place on the plateau (Munthali and Banda, 1992). The burning would clear the ground of old plant communities, encouraging fresh young shoots. Eland are mainly browsers but will graze and enjoy young grass (Walker, 1996). However there was no evidence of Eland in the lowlands. The increase of activity on the slopes and plateau could be the result of the Eland's search for better feeding. There is also a possibility of the Eland migrating away from areas where poachers operate. A poacher's drying rack was discovered with the remains of an Eland on it, indicating that the species may be reduced by poachers, especially on the plateau where cover is scarce. Indeed, poachers do start illegal fires in order to tempt game out into the open with fresh grazing.

Roan Antelope

Figure 7 Relative Abundance of Roan Antelope



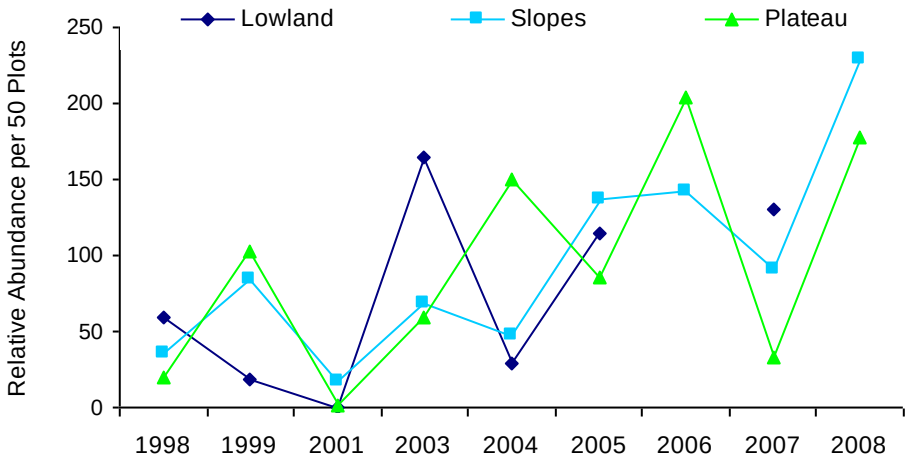
By comparing Figures 6 and 7, it could be stated that Eland and Roan share a number of characteristics which could influence their distribution throughout Nyika. From 2003, the two graphs are very similar. Roan Antelope Relative Abundance numbers follow a similar path, with their values for activity on the plateau suddenly increasing rapidly in 2005, from only 27 to 202 in the space of a year. Unlike the Eland population, the Roan Antelope Relative Abundance values have been steadily increasing, suffering only a small decline between 2005 and 2006. The Roan Antelopes' Relative Abundance values also mimic the trend of the Eland values. The difference seems to be that the sudden increase in value occurs a year behind that of the Eland. The Roan Antelope Relative Abundance values on the slopes remained low until this year, when there was an increase from 8 to 84.

This year, 2008, saw the highest collective Relative Abundance for Roan Antelope since the expedition started work in the area with a value of 318. Like Eland, there was no recorded trace of Roan Antelope in the lowlands. The increasing recorded activity indicates that the Roan Antelope population is increasing. Similar to Eland, the increased activity on the plateau and the slopes may be due to the Roan Antelope seeking out better grazing and better protection from poachers. There is also a possibility of the Eland migrating away from areas where poachers operate.

Photo 7 Droppings of Roan and Bushbuck with a scout boot. *Marianne Overton*

Bushbuck

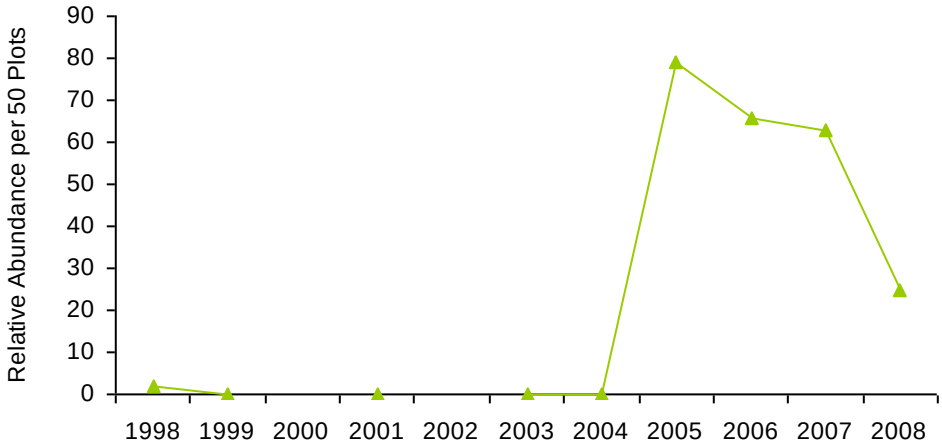
Figure 8 Relative Abundance of Bushbuck



As Figure 8 suggests, Bushbuck activity has increased overall, but hasn't been consistent over the years that Biosearch have been operating in the park. The Relative Abundance of Bushbuck has increased significantly in the slopes and on the plateau. The increase is rather rapid, the Relative Abundance on the plateau increasing 4 fold in only a year. This year sees a repeat of reference seen in 2005, the preferred habitat being that on the slopes. As these antelope are very timid they prefer cover, usually seeking cover in forest and dense bush. (Walker 1996) There is a pattern developing, as the graph indicates. On alternate years, the RA values for Bushbuck fall and rise, most noticeably on the plateau. This pattern could be put down to possible migration patterns around the park or maybe even patterns in the breeding seasons a generations change.

Zebra

Figure 9 Relative Abundance of Zebra on the plateau



The evidence of Zebra activity in Nykia was scarce but of great interest. Figure 9 shows the Relative Abundance of Zebra on the plateau. In all ten years, only two recordings were made on the slopes and lowland, not included in the graph here. The first significant appearance of Zebra in 2005 was recorded in Nyika may have been due to the increased burning taking place on the plateau (Munthali and Banda, 1992) and/or better anti-poaching control. Zebras

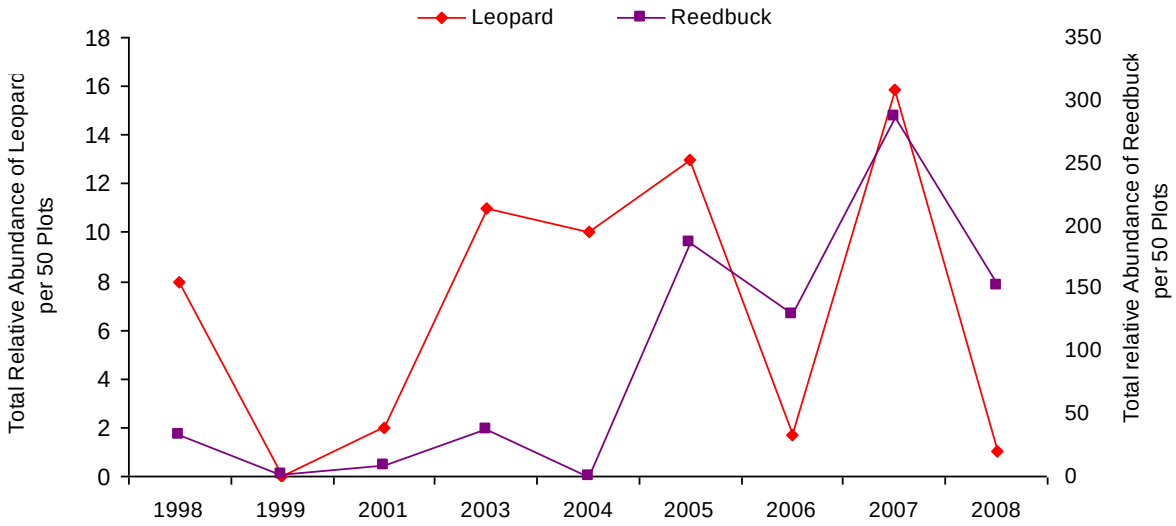
are specialised grazers and the clearing of plateau vegetation would encourage grasses to flourish in the first stages of succession. Relative Abundance of Zebra has dropped in recent years, halving in 2008 compared to 2007. This could be due to the plateau's vegetation passing through its seral stages as it recovers and reverts back to its original community. As the competition for water and nutrients develops, grasses would lose out to hardier, more specialised plants (Holden 2008). However, this is unlikely since the burning regime has not reduced during this time. The declining evident activity of Zebras may be due to the herds moving away to more specialised areas of grazing, perhaps close to Chilinda out of our study area. It might be possible that they were competing for the same type of grass with horses, (removed in 2008) but the same habitat in living memory did support very substantial herds of Zebra and Eland.

However, the fact that there is a population still present is encouraging. As they are highly social animals it is likely that the population is spread over the park in various herds and as they are highly dependent of water, it is unlikely that they would venture away from a constant source (Walker, 1996). The dams near Chilinda are probably a magnet to them.

Photo 8 Zebra print on burnt ground *Philippa Stubbs*

Reedbuck and Leopard

Figure 10 Relative Abundance of Reedbuck and Leopard



Leopard and Reedbuck show corresponding activity patterns typical of a predator-prey relationship. Like the closely related Bushbuck, Figure 10 shows that Reedbuck activity in Nyika has fluctuated. In a pattern similar to the Bushbuck, the abundance of the Reedbuck rises and falls dramatically on alternate years. The recorded activity levels of Bushbuck and Reedbuck have activity peaks and troughs in opposition, which could suggest that the two

species are in competition with each other. However, this is unlikely as they favour different habitats: Reedbuck favour the open grazing on the plateau, with little or no activity recorded on the lower slopes and lowlands and Bushbuck are found at all altitudes, but prefer dense bush. This year Reedbuck were found at both lower and plateau altitudes, probably because our study area below 6000ft was gently sloping away and not down an escarpment, as in previous years.

Previous Biosearch expeditions have found that the abundance is partly influenced by the amount of rainfall from past years. Reedbucks prefer areas of grassland and floodplains in particular, favouring reed beds as the need to be close to a constant water supply (Walker 1996). The regular fluctuations could suggest limitation of resource (grazing), but this is *not* evidenced as no over-grazing was seen.

Bushbuck and Reedbuck could be alternative prey animals for predators, such as Leopard and Lion; the predators moving up to feed on Reedbuck when Bushbuck become more scarce and back to Bushbuck when Reedbuck are scarce.

As Reedbuck is a major source of prey for Leopards in the area of Nyika, the abundance of Leopards is likely to be directly influenced by those of Reedbucks (Johnson, 1993). The trend can be seen in Figure 10; the abundance of Leopards closely follows that of its prey. Because there are fewer signs of Leopard, the percentage variations in activity are greater, from 13 to 2 to 16 in 2005, 2006 and 2007 respectively.

The changing Relative Abundance values of the predator could be explained by an aspect of Malthusian theory: As the population of Reedbuck rises, there is more prey for the Leopard, resulting in an increase of their population. This rise continues until the growth is curbed by the reduction of food resources, depleted due to over-predation. This leads to a fall in Leopard population because of starvation and migration away to areas with more food resources. The effect of Malthusian theory applied in nature, Darwin's idea of 'over reproduction', is evident in Figure 14. (Campbell et. al 2008)

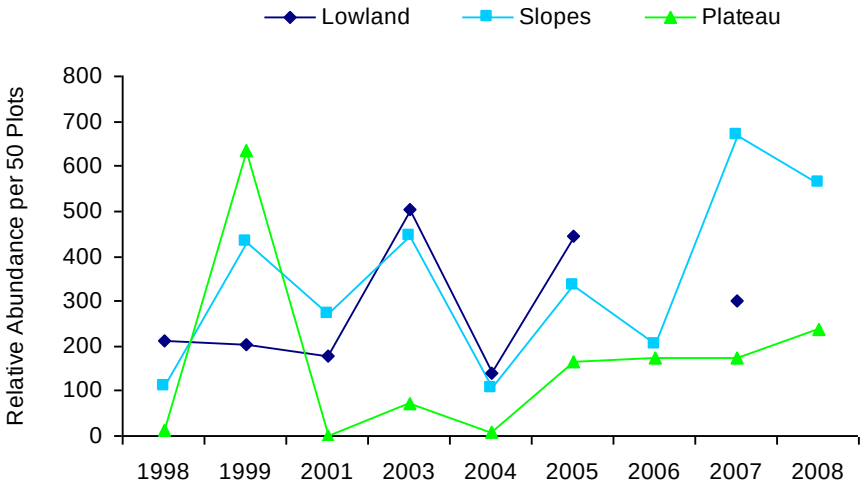
Leopards are hunted for their highly sought after pelts. Leopards have lower Relative Abundance scores as they leave fewer signs. They are rather solitary and prefer the height advantage of trees rather than open grassland, but droppings are placed prominently as territory markers. The fact that they are also less dependent on water reduces their need to venture onto the ground as they receive the majority of their moisture requirements from their prey (Walker 1996).

Photo 9 Kambuku can never go back to the wild after he was caught in a poacher's snare in Nyika National Park which shattered his patella, resulting in a permanent limp. He is now cared for at the Lilongwe Wildlife Centre in his own 2,500sq metre enclosure. *Philippa Stubbs*

Photo 10 Other predators, such as Jackal tend to feed on small mammals, as illustrated in this dissection of a Jackal pellet. *Marianne Overton*

Common Duiker

Figure 11 Relative Abundance of Common Duiker



Common Duiker has been the most abundantly recorded of the large mammals over the years of Biosearch work in the area. This year shows no exception. Their Relative Abundance total and value on the slopes has decreased since last year, which was almost an all-time high. (Last year saw the second highest Relative Abundance value for Common Duiker with a total of 1143 per 50 plots over the three different habitats.)

The Relative Abundance of Common Duiker on the plateau has increased by 65, which is a significant change considering that it has stayed at a near constant since 2005. Common Duiker decreased on the slopes by almost 100, but it is the habitat that shows the most evidence of Common Duiker. As they are mainly nocturnal, they tend to keep to thick cover during the day time (Walker, 1996). The abundance of Common Duiker is higher on the slopes of the valleys where there is more shelter, bushes and low trees. Despite being one of the smallest herbivores in Nyika, the population levels are very important to the rest of the ecology of the area, as they form a staple diet for the majority of carnivores.

Bushpig and Warthog

Figure 12 Relative Abundance of Bushpig

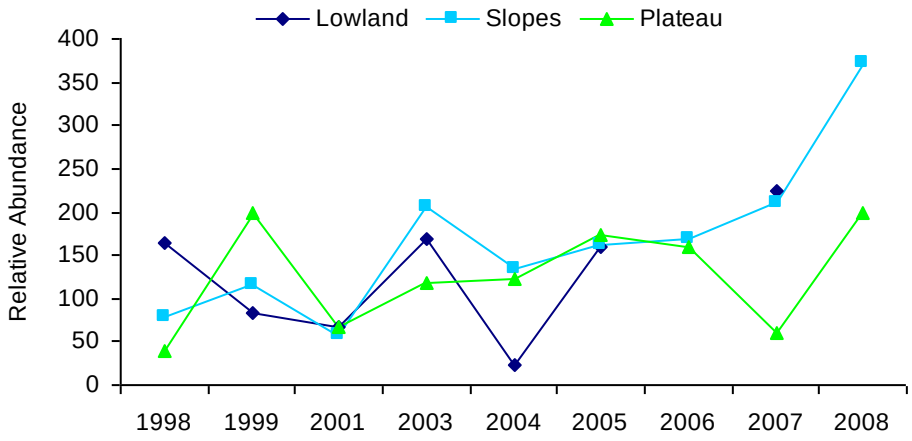
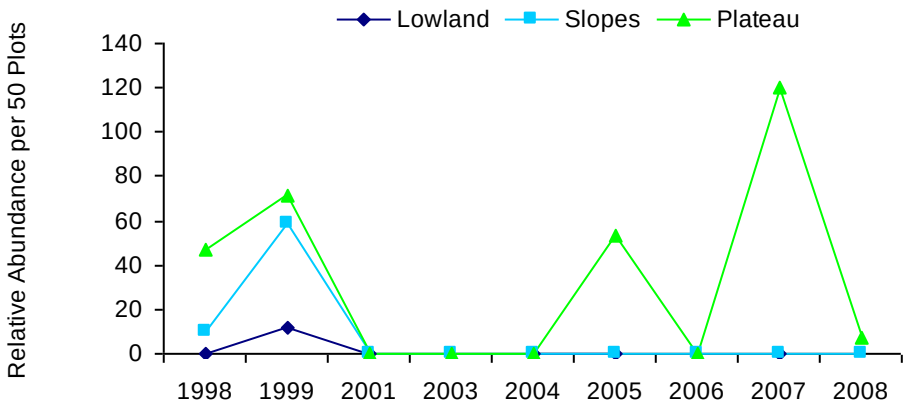


Figure 13 Graph showing Relative Abundance of Warthog



These two species, Bushpig and Warthog are clearly closely related, both being of the *Suidae* family. By comparing Figures 12 and 13, it can be seen that the two species nevertheless require very different environments, Warthog being more confined to the open plateau. Bushpig signs were easily the more abundant of the two species, with a total value of 570 per 50 plots this year. In 2008 the population has continued to increase, the Relative Abundance score rising by 143 per 50 plots. As their name suggests, Bushpigs favour the more settled slopes with thicker and taller vegetation. At between 65 and 75cm at the shoulder, they need relatively high cover to allow movement (Walker, 1996). Despite this, their activity on the plateau has increased significantly as well. This suggests that their numbers on the slopes have become too much and the population is dispersing to find fresh resources.

Figure 13 shows the Relative Abundance of Warthogs in comparison. From first glance, it can be agreed that Warthogs are significantly less abundant then Bushpigs, suggesting that Warthogs aren't as adept to coping in the environment Nyika has to offer. Their Relative Abundance does not seem to have a definable trend. Either the populations really do fluctuate greatly or they are dispersed very unevenly, making a lot of signs of activity in a few dispersed areas, so that they have been missed in some years. Figure 17 shows the plateau abundance values ranging from 0 all the way up to 120 per 50 plots in 2006 and 2007.

Baboon

Figure 14 Relative Abundance of Baboon

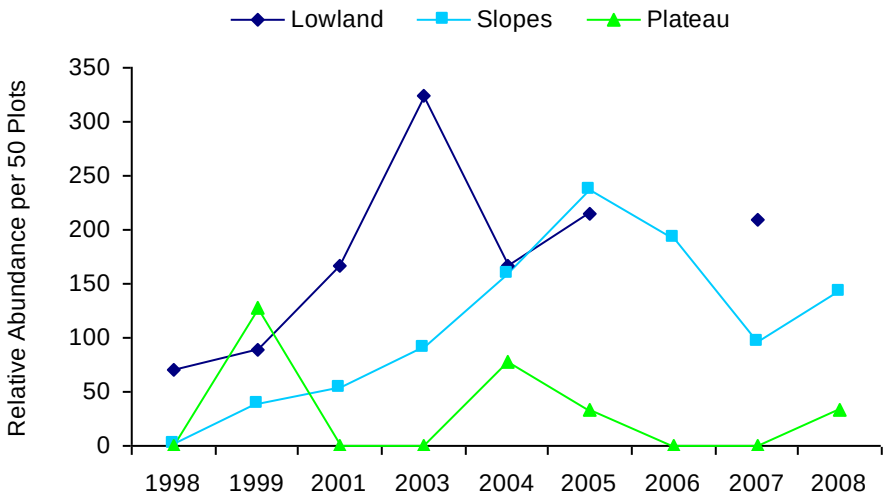
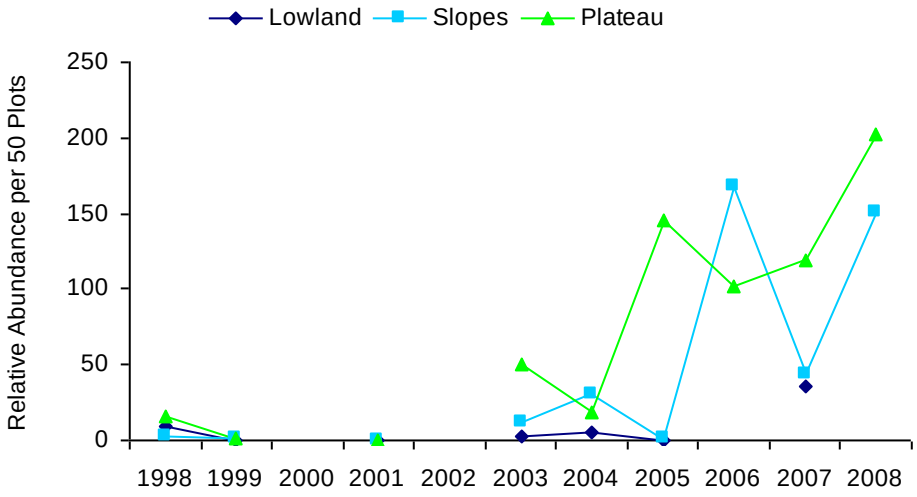


Photo 11 Baboon on Nyika
Baboons, although terrestrial primates, have habitat needs similar to those of the Bushpig. They also require the cover the habitat offers as well as being their food source. Their main diet is plants; fruits, bulbs, roots and such. They also prefer to 'roost', occupying tree branches rather that sleeping on the ground. (Walker, 1996). Plants with these features can be expected in the valley slopes where the variety of plants is greater compared to the grasses which dominate the plateau. The greatest abundance of activity in 1998 was indeed found on the slopes, as shown in Figure 18. Baboon activity was also recorded on the plateau for the first time since 2005.

Porcupine

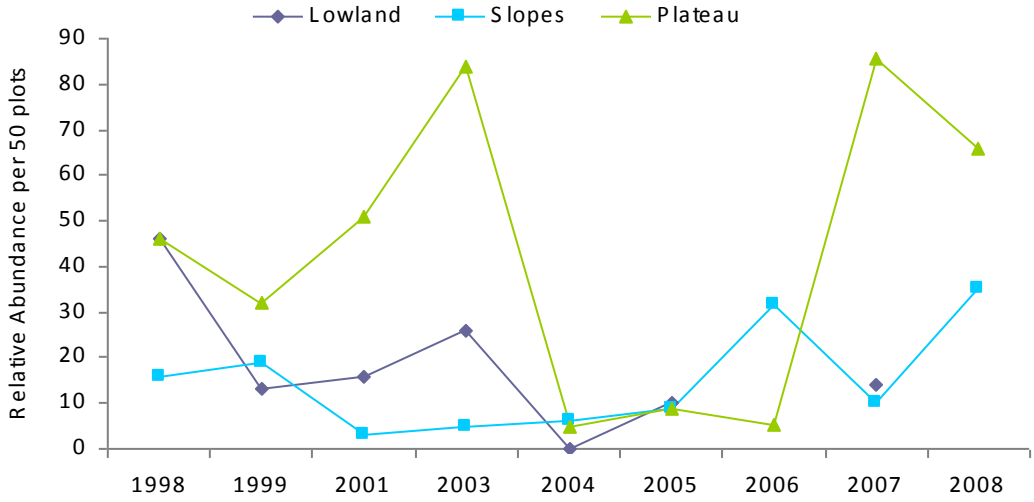
Following the trend of 2007, the most Porcupine activity was found on the plateau and had increased in abundance, nearly doubling from a Relative Abundance of 119 to 202 per 50 plots, surpassing any values recorded by Biosearch before. This suggests that the Porcupine is on the increase. Looking at the overall abundance of Porcupine there seems to have been a population explosion since last year, jumping from 72 to 163. This rise in population may tie in with the fall of the Leopard activity levels. Leopards are a Porcupine's main threat along with lions, hunted opportunistically. (Walker, 1993).

Figure 15 Graph showing Relative Abundance of Porcupine



Aardvark

Figure 16 Relative Abundance of Aardvark



For the Aardvark, the main influence on where these animals can live isn't so much the vegetation as it is with many of the large mammals, but the direct supply of ants and termites. So the soil make-up is more of an influence. Common locations are areas where ants and termites have the resources and space to build their colonies, such as open grass land or in sparse woodland. As Fig. 16 shows, the activity of the Aardvarks varies greatly, suggesting that Aardvark populations aren't evenly spread but rather gravitate towards food rich areas. A point brought up in last year's report was evidence contradicting Hough (1982). Hough stated that Aardvarks wouldn't be present above 6000ft. This year's survey, like each year since 1998, again saw evidence of Aardvark activity above 6000ft. This year saw a drop in total RA value, but only by a value of 9. Indeed, the population saw little total change, due to the decrease on the plateau and the increase on the slopes almost equalling each other. We also found Aardvark diggings at over 7500ft near Nganda in 2007

Kudu and Buffalo

As outlined in the past and highlighted in last year's report, (Overton, (ed), 2005, 2006, 2007) these two species are in serious danger in Nyika. This year saw no evidence of either within the Park. The abundance of Kudu on the plateau and slopes dropped to 0 in 2004 and haven't recovered since. The only movement seen was in the Sawi last year, and no further change has been seen this year. (Overton, (ed), 2007) Despite favouring well-bushed regions and in hills, no evidence of Kudu was found on the slopes this year, the environment which would seem to suit them best. This is rather concerning as one of the influencing factors, water supply, doesn't constrict the Kudu. The north region is one huge drainage basin, resulting in there being little standing water. The Kudu are fairly independent of water, meaning another variable is influencing the recorded activity levels. The lack of abundant water is a possible explanation for the lack of Buffalo however. Buffalo are heavily dependent on water, restricting their movement and limiting their distribution (Walker, 1996). Despite this, there was evidence of Buffalo presence in the Park up until 2004. Since then there has been no indication of a definite return to the Nyika. Whilst in Vwaza Marsh, however, Buffalo prints were found in the

Photo 12 Kudu were seen daily at Lake Kazuni. *Ian Pilcher*

lowland and a young pair of Kudu was sighted on a vehicle transect. Kudu was resident at Lake Kazuni, however.

Vervet Monkey

Another species missing from this year's records is the Vervet Monkey. As stated in last year's report, evidence of Vervet Monkey activity in the Park has only been recorded by Biosearch occasionally, and in those cases in lowland areas. Last year was the first significant recording of Vervet Monkey activity in the remote Nyika study areas. The sudden high level of activity in 2007 was from records above 6000ft, up towards the plateau, but still situated on the slopes (Overton, (ed), 2007). This year however, saw no evidence within our plots.

Activity of the less abundant species

Photo 13 Prints of African clawless otter at Nyika basecamp. *Marianne Overton*

A grand total of 30 large mammal species were identified in the various plots and transects between them. However, not all species activity levels were high or significant enough for statistical analysis. Some species low recorded are discussed above as they are considered 'key stone' species; either their presence is important to the stability of the local food webs, or their presence could greatly aid Malawi's newly forming Safari Tourism. Species of particular interest include Scrub Hare, Honey Badger, Hyaena, Otter and Civet.

Table 5 Activity of the less abundant species
* denotes species covered in individual species results and discussions.

Species	Total Relative Abundance per 50 plots
Aardvark*	41
Scrub Hare	14
Honey Badger	8
Zebra*	7
Hyaena	3
Jackal	3
Warthog*	2
Klipspringer	2
Genet	2
Leopard*	1
Serval	1
Civet	1
Otter	1

TRANSECTS

The method of using transect lines was reserved primarily for areas were the plots would be impractical. This method was used in Vwaza as it is the method used by Park scouts to monitor the populations of the various species. In Vwaza the transect lines were mapped out, whereas sightings in Nyika occurred during movements between camps and plot locations and the results seen in Kazuni were from making multiple circuits of the lake shore. Some species were seen in only one of the three locations, such as the Hippo. There is no evidence of Hippos outside of the Kazuni Lake area, not even in the marsh area in the north of the same reserve. This could be due to Kazuni providing a constant source of open water, as opposed to Vwaza's marshland, which is densely covered with reeds and subject to seasonal changes in levels. Hippo's were the most sighted large mammal and aren't as concerned by human approach as other species, especially when in the water. Figure 17 shows that habitat requirements also influence smaller mammals. There is no evidence of Tree Squirrel outside the wooded area of Vwaza.

Figure 17 The number of animals sighted during transect walks in three different areas.

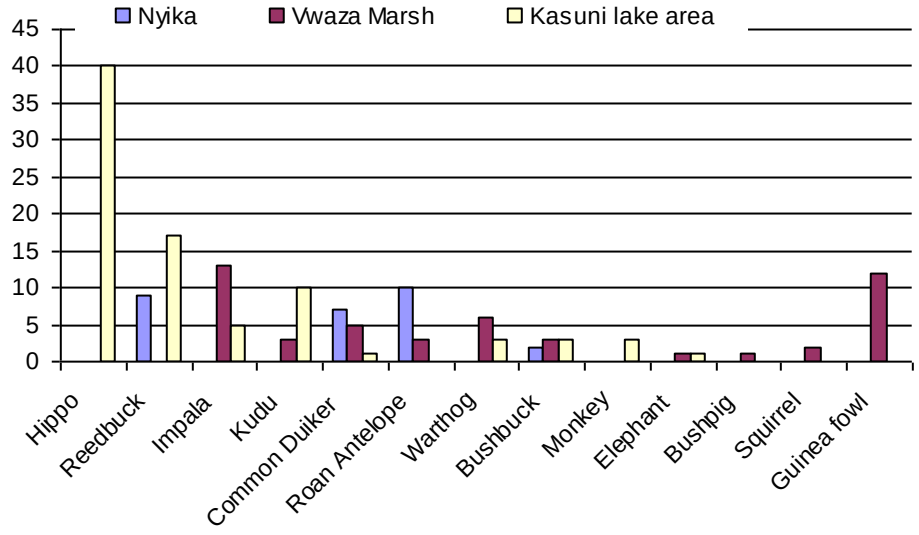


Photo 14 Presence of Sable was confirmed *Marianne Overton*

On the transect lines, we were also on the lookout for any traces of Sable, Lion or Buffalo, all of which had become rare in the area. Thankfully we found and recorded evidence of all three in Vwaza, as well as suspected Lion prints on a vehicle transect in Nyika returning from the Luselo River sub-camp to the Nyika basecamp.

Photo 15 Small Lion print in comparison to adult hand *Philippa Stubbs*

The two different Lion droppings found on transects in Vwaza are an indication of the state of the Lions' health and eating habits. The high water to solid content ratio of the sample in Photo 15 suggests that this Lion hadn't eaten recently. This in contrast, the dried sample of Photo 16 suggests that the animal has fed recently. The whitish colour suggests high calcium content, possibly due to the ingestion of bone. The lion smell was very distinctive.

Photo 16 Dried Lion droppings with Roan Antelope droppings *Philippa Stubbs*

Photo 17 Fresh Lion droppings *Philippa Stubbs*

Analysis of transect data

Transects were surveyed in all three areas; the Nyika National Park above 5500ft; the Vwaza Marsh area, around 4000ft and lower, working up to 20km from the Kawiya Scout Camp into the Park and one detailed transect at the Kazuni Lake area. Other transects were carried out at Kazuni, but unfortunately without recording distances. Only sightings were recorded to enable analysis into rough estimates of population in the areas studied. More data would be needed, but the results give an impression of the scale of the populations. We had some difficulty in estimating the distance of visibility and that is probably our greatest source of error. At Kazuni, we only did one transect around the Lake, which happened to miss the 90 elephants that came to drink later in the day! Transects need to be carried out in the evening to get the most consistent results for diurnal animals and at night for nocturnal animals. No night transects were carried out on this expedition.

Table 5 Transect sampling undertaken by the team

	Nyika	Vwaza Marsh Reserve	Lake Kazuni
No. of transects	11	13	1
Length of transect in km	51	73.1	3
Average width of visibility m	210	53.24	212.5
Area observed km²	18	3.89	0.64

Figure 18 Rough estimates of the populations seen per km² in all three areas studied.

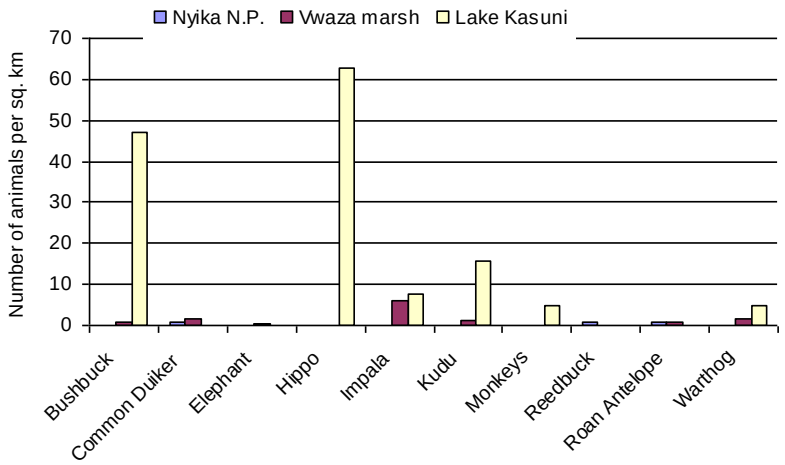
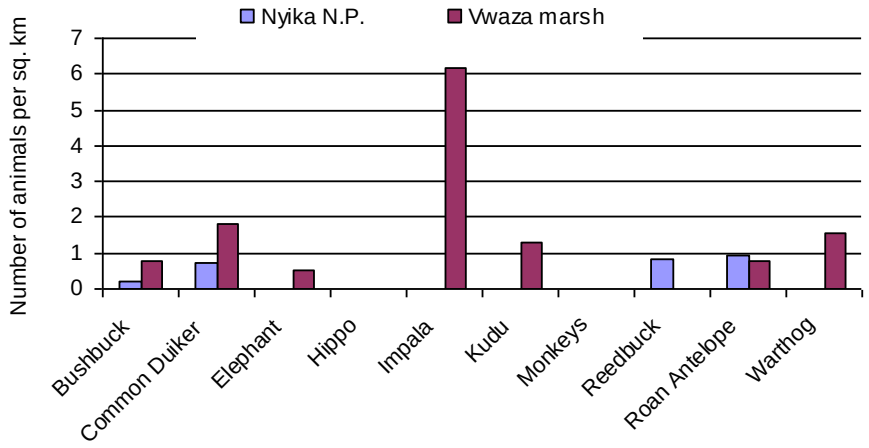


Figure 19 Rough estimates of the populations seen per km² in two areas; Nyika and Vwaza Marsh.



The population calculations were very high alongside the Lake shore in the morning and evening, which is reflected in the figure 18. This is only a snapshot at peak time for game and a fuller study would give a better overall picture. Figure 19 illustrates that the populations of Impala is particularly high in the flat lowland of the Vwaza Marsh area.

CONCLUSIONS

This expedition recorded an overall increase in signs of game animals. Almost all species showed an increase with the notable exceptions of the Warthog, Reedbuck and Zebra in the plateau area. All three of these species prefer open, recently burnt areas and it is possible this is simply a sign of uneven distribution, not overcome by enough widespread sampling this year. Kudu and Grysbok were also absent from the Nyika records this year, but the expedition did not go as low into the valleys where they have been most common in the past. Careful note is needed of these species in future to check this is not the start of an unfortunate trend.

Figures for Elephant, Eland, Roan and Bushbuck were substantially up this year. Porcupine also well recorded this year, including an afternoon sighting on the first day near base camp, the first ever daytime sighting for Biosearch. One team member was able to approach quite close! The presence of Elephants in Nyika seems essential for the Park to be considered a legitimate 'Safari Reserve' which could be beneficial to Malawi's economy. With more international income, there will be potentially more money to invest directly into the Park for its wildlife conservation. One of the country's best resources it has to offer on an international level is that of its wildlife and biodiversity. Elephants seem to represent African wildlife and are the image Malawi needs to encourage funding. This funding is desperately needed by the Park, its scouts and the local communities.

Photo 18 Pippa's Pumba!
Downwind of this Warthog we were able to get close whilst on an evening transect in the Vwaza Marsh area. *Pippa Stubbs*

In lowland Vwaza, the expedition saw examples of old cases of Elephant poaching. One team was confronted with a freshly abandoned drying rack with the barest remains of an Eland on the first day away from the main base camp on the Nyika. The full extent of evidence of poaching is covered in the poaching report in this edition. The scouts need as much support as possible so that they can do their jobs. In order to for the numbers of the large mammals to grow and stabilise, the area needs to be protected and laws involving it enforced. There is a growing threat of competition from outside the Park land, as domestic animals move further into the reserve to graze increasing competition on food resources. There is also the threat of carnivores being killed to protect livestock and the risk of cross-infection.

The fact that the total recorded activity of large mammals is increasing, does suggest that past efforts in the Park have started to pay off and that the ecosystem is finding a stable state without a devastating effect of poaching or other outside influence. The next aim of the research taking place in Nyika is to try and determine if the populations that are falling, such as Kudu, can be reversed. The fact that species such as Kudu, Warthogs and Zebra once had larger populations within the Park, suggests that it isn't the habitat which is limiting, but something else. However, the fact that some species have been able to come back from the edge, such as the Eland after a low in 2004, gives hope to the Park and the conservation community as a whole. The conservation efforts by the Parks Authority and Biosearch are very creditable and shown to be effective. However, they do need to be maintained.

Photo 19 Elephant wallow in the Runyina Valley. *Pippa Stubbs*

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Appendix 1 Large mammal field records (abundance scores per plot)

Square, Quality/Extreme Team	Plot	Grid Ref	Altitude ft	% Burnt	% Tree Canopy	% Grass cover	% Bush	% Marsh	% Bare earth	Elephant	Eland	Roan Antelope	Kudu	Reedbuck	Bushbuck	Common duiker	Warthog	Bushpig	Zebra	Leopard	Serval	Hyaena	Jackal	Civet	Baboon	Porcupine	Otter	Aardvark	Mongoose	Hare	Genet	Honey Badger	Vervet monkey	Klipspringer	No. of large mammal species
Quality Team on Runyina below 6000'																																			
9Qu	1	744111	5850	0	60		2		60	3	2			1	1	4		6							3	1			3						9
	2	746115	5750	0	60	80	20		20	4	1	4			1	5		6							3				4						8
	3	746113	5800	0	60	80	10		20	3		6		1	2	6		6		1					4	2			3						10
	4	748115	5750	0	90	15	0		85	3					4	4		8							4				4						6
	5	746114	5850	0	60	70	0		30	3					2	4		5							3	1			3						7
10Qu	1	730100	5950	0	40	100	10	10		6		2		10	12	2		4							3	4			3						9
	2	734101	5950	0	50	100	20			1					1	2		16							3	3			3						7
	3	735101	5950	0	50	100	20			3	7				3	16		7							3	4			3						8
	4	738103	5950	0	50	100	20			2				1		9		3							3	2			3						7
	5	738105	5900	0	50	100	20								2	2		15							8	3			3						6
11Qu	1	752100	5650	0	60	80	20		20	2						5		3							3	1			5						6
	2	752103	5650	0	60	80	20		20	3		1				12		3							3				3						6
	3	754104	5700	0	0	100	5		20	3		1		1		7		14							3				4						7
	4	757106	5650	0	80	60	10	5	5	1						2		3							3	3		3	3						7
12Qu	1	749098	5850	0	50	80	5			1	2	11				24		13							7	3		1	3						9
	2	747099	5900	0	40	90	5				1			2	3	49		26							3	3		3	3						9
	3	742099	5800	0	60	80	5	5			2					5		4							3	3		3	3						7
	4	743097	5750	0	60	80	5	5		1	1					6		11							4	1		1	3						8
	5	746093	5650	0	1	50	10	40		1	4	2		1	7	8		24							3	2			3						10
13Qu	1	747124	5950	0	10	60		40		3	1	1		10	24	25		3							2	3		1	3						11
	2	749128	5950	0	60	80	10		20	3					1	5		6							3	3			4						7
	3	749129	5950	0	60	80	10		20	3	6					6		15							3	3		2	3						8
	4	742122	5850	100	5	40	10	5		4		3		8	13	19		3							3	3		3	4						10
	5	741128	5950	100	5	40	10			3	1			6	4	40		2								2			3			1			9
14Qu	1	749131	5900	0	10	80	5	15		9	2	9		1	3	3		5								4									8
	2	748135	5900	0	40	80			20	7		4			1	2		4							3	4			2						8
	3	748138	5950	0	60	80	5	10		6	15	2		3	7	6		19							6	3			3			2			11
	4	746141	5900	100	0	30	5	20	70	9		4		7	6	24		3							6	3			3	2					10
	5	744145	5850	100	5	30	5	20	70	3		3		19	4	29		10								10		1	3	3					11
Basecamp area around 6000'																																			
1 Qu	1	730156	6050	0	60	100	10			3					5	5		9							1	2		3							7
	2	731156	6050	0	30	100				3		3			3	18		16							3	6			2						8
	3	736155	5950	0	30	100	5			3					1	10		17								3		3							6
	4	733151	6100	0	60	100	10			2		2			2	55		5							3	3									7
2 Qu	1	732179	6400	0	40	100	30									2		12			1				2	11			3		1	1		4	9
	2	738173	5950	50	0	100				5	3	1		12	4	5		8								6	1		3						10
	3	739170	5950	0	0	95	5							1	1	12		4				1				5		3	4	7					9
	4	731172	6000	0	0	99	2	1		1	3	2		10	5			2								2		1	3						9
	5	730174	6050	70	0	100	5	10			4	4		16	9	24		3				1				8		2	3		1				11
3 Qu	1	758152	6200	0	80	100	10			3				5		2		4							3	3			1						7
	2	756157	6200	0	80	90	10			7		2		2	1			7							3	2			2						8
	3	755157	6200	0	80	90	10			4	1					3		3							5	5									6
	4	753157	6200	0	80	90	2			4				7		2		4							3	5			3						7
	5	751157	6200	25	60	5			70	5	1	3		2		1		3							3	4		2	3						10
4 Qu	1	747162	6000	70	30	80	30	10			35	3		6	13	53		4								3		1	4						10
	2	747167	6050	15	70	80	2		20	3	4	3			4	2		5							1	5			3						9
	3	744168	5900	0	80	70	2		30	3	2			1				4							3	2			3						7
	4	743164	5900	80	0	80	10			3	24	4		3	4	19		7								4		3	3						10
	5	742164	5900	80	5	20	20		80	18	55	17		23	36	13		20							1	5		2	3						11
5 Ex	1	723137	6250	0	5	90	35			3	3	1		27	30	29		4				1			3	10			1						11
	2	728136	6250	100	70	95			5					3	14	30		3							2	6				1					7
	3	725134	6250	100	2	100	2				1	1		3	9	16		5							3	2			1	4					10
	4	726134	6300	100	2	100	2				1	3		9	14	7		5							3	3		2	3	6					11
6 Ex	1	751138	6100	0	45	100	10		5						5	8		11							3										4
	2	757138	6200	0	60	90			20			5			3	6		10							4	1				1					7
	3	759134	6100	0	30	90	40		5	3	1			1				10	1						7	1		1				1			9
	4	757132	6150	0	20	90	5		10	5		2			6	8		9							6	5									7
	5	754131	6000	0	40	90		5	10	4				10	6	15		7							4			2							7
7 Ex	1	734121	6050	0	70	40	20		10	5						5		6							3	3			3						6
	2	730124	6200	0	70	100	5		18	3					1	3		4							4	3				1					7
	3	730127	6350	0	80	95	5		8	1					1	4		9							4	1			1						7
	4	734129	6100	0	70	70	30	2	5	4					4	2		5				2							3						6
	5	737128	6050	100	60	100	30			3	1				5	4		3							3	3									7
8 Ex	1	773100	6100	0	80	100	5		2			2			6	13		5						1	3	2			3						8
	2	779103	5950	0	80	100	5		2			2			3	15		4							4	3			2						7
	3	779105	6050	0	80	100	5		2						2	13		3							3	1									5
	4	777108	5900	0	70	100	5			5					3	10		5							3			3							6
	5	778109	5850	0	55	90	2	3	7	4				1	6	12		7							3	1		1	1						9

Appendix 2 Large Mammal field records from above 6000ft (abundance scores per plot)

Square, Quality/Extreme Team	Plot	Grid Ref	Altitude ft	% Burnt	% Tree Canopy	% Grass cover	% Bush	% Marsh	% Bare earth	Elephant	Eland	Roan Antelope	Kudu	Reedbuck	Bushbuck	Common duiker	Warthog	Bushpig	Zebra	Leopard	Serval	Hyaena	Jackal	Civet	Baboon	Porcupine	Otter	Aardvark	Mongoose	Hare	Genet	Honey Badger	Vervet monkey	Klipspringer	No. of large mammal species
Extreme Team near border and above 6000'																																		
15E	1	762196	6050	50	2	70			30	4	2	4		3	2	3	3	5								8		3	3			2			12
	2	766197	6100	80		70	3	5	2	6	5	5		2	1	4		10	3			1				5		3	3						12
16E	1	741202	6350	0		95	5			3	3	3		2	4	4		4					1			9		1	3						11
	2	741206	6400	50	5	70	3	12	15	7	4	3		3	4	3		3								7		3	3						10
	3	746209	6450	0		70	5		25	2	3	3			4	3		5								5			2			1			9
	4	746208	6400	0		50	10		40	2	4	3						4								7		1				1			8
	5	745207	6400	0		90			10	3	6	3			5	3		4								3		2	2						9
17E	1	662195	6150	0		100				7	4	11		1	5	7		3											2		1				9
	2	661197	6200	0		98	2			5	4	8		1	3	2		4								3									8
	3	669197	6300	0		95			5	9	3	10				2		5							3	3		3	3						9
	4	666193	6250	0	70	70	25		5	14	2	3			3	6		6							5	2									8
	5	665191	6250	80		50	20		30	3	4	5		4	18	23		3							5	3		2	3			1			12
18E	1	699186	6250	100	2	40		10	50		1	3		4	7	6		4	1							5			3						9
	2	693186	6250	50		50		15	35		1	4		4		4		5		1			1			4		2							9
	3	692181	6350	100		50	5		50	2	6	4		4	4	6			2							1			2						9
	4	693181	6350	100		70			30		3	4		3	4	5			2				4		2	3			1						10
	5	694181	6350	100		70			30		5			3	3	4		4	1							5		1	2						9
19E	1	684198	6200	40		80			20		3	9		11	4	6		3	2							4		3	4			3			11
	2	685199	6200	0		100					1	3		1		3		3								3		1							7
	3	685195	6200	0		80		20			3	3		3	3	3		3								3									7
	4	687196	6200	100		70			30	1	4	7		6	4	5		5								3		1	3						10
	5	689197	6200	100		40			60			5		3		3		4								3		3	3			1			8

Relative abundance scores per 50 plots	Elep	Elan	Roa	Kud	Ree	Bus	Com	Wa	Bus	Zeb	Leo	Ser	Hya	Jac	Civ	Bab	Porc	Otte	Aard	Mon	Sci	Ge	Ho	Ver	Klip	No.
Below 6000ft Runyina Valley (n=29)	155	78	91	0	122	174	571	0	426	0	2	0	0	0	0	164	128	0	31	155	9	0	5	0	0	
Basecamp area c.6000ft (n=38)	141	183	79	0	187	271	561	0	332	1	0	1	7	0	1	126	170	1	38	80	26	3	3	0	5	
Plateau above 6000ft (n=22)	155	161	234	0	132	177	239	7	198	25	2	0	2	14	0	34	202	0	66	95	0	2	20	0	0	
6000ft and below combined Runyina and basecam	147	137	84	0	159	229	565	0	372	1	1	1	4	0	1	143	151	1	35	113	19	1	4	0	3	
All results combined (n=89)	149	143	121	0	152	216	484	2	329	7	1	1	3	3	1	116	164	1	43	108	14	2	8	0	2	

KEY

Square = Random kilometer square, Plot = 100m x 100m

Vegetation is recorded in % cover, in 25% intervals (eg 100 indicates 76-100% cover)

Appendix 3 Summary of July/August large mammal data 1998-2008
(Relative Abundance scores per 50 plots)

Lowland below 4000ft	Elephant	Eland	Roan	Kudu	Reedbuck	Bushbuck	Common Duiker	Grysbok	Red Forest Duiker	Buffalo	Warthog	Bushpig	Zebra	Leopard	Serval	Hyaena	Jackal	Civet	Baboon	Porcupine	Otter	Aardvaark	Mongoose	Hare	Genet	Honey Badger	Vervet Monkey	Klipspringer	No.species
1998 Sawi (40 plots)	63	4	3	66	0	59	210	23	0	39	0	164	0	0	14	25	20	23	71	9	0	46	88	0	0	0	0	0	17
1999 Sawi (50 plots)	14	7	26	5	0	18	204	0	0	3	12	84	0	0	0	2	12	2	88	0	0	13	105	4	0	0	0	0	15
2001 Sawi (25 plots) 4-4,500ft	6	30	28	0	0	0	176	0	0	0	0	68	0	0	0	0	0	10	166	0	0	16	46	0	0	0	0	0	9
2003 Sawi (25 plots)	2	20	4	46	6	164	504	22	0	20		168	2	2	6	2	0	0	324	2	6	26	176	38	0	10	0	0	21
2004 Mpanda (10.5plots) 3-4,000ft	0	0	0	0	0	29	138	10	0	0	0	24	0	10	0	5	0	0	167	5	0	0	38	33	0	0	0	0	10
2005 Chisanga (10 plots) 4-5,000ft	0	0	0	0	0	114	445	0	0	0	0	160	0	0	0	0	0	10	215	0	0	10	175	0	25	0	5	0	8
2007 Sawi (12 plots)	0	0	0	25	0	92	342	138	0	0	0	288	0	0	0	13	0	0	200	63	4	21	0	0	0	0	0	0	10

Slopes 4-6,000ft	Elephant	Eland	Roan	Kudu	Reedbuck	Bushbuck	Common Duiker	Grysbok	Red Forest Duiker	Buffalo	Warthog	Bushpig	Zebra	Leopard	Serval	Hyaena	Jackal	Civet	Baboon	Porcupine	Otter	Aardvaark	Mongoose	Hare	Genet	Honey Badger	Vervet Monkey	Klipspringer	No.species
1998 Chipome (50 plots)	78	51	87	17	0	36	108	3	0	43	10	79	0	6	16	8	24	8	2	3	11	16	38	32	7	0	0	0	22
1999 Chipome (25 plots)	83	144	24	70	1	84	430	0	2	72	59	115	0	0	1	20	32	3	39	1	4	19	95	49	1	0	0	0	22
2001 Chipome (30 plots)	82	8	40	13	0	17	270	20	0	23	0	57	2	0	0	10	0	2	53	0	0	3	20	67	0	0	0	0	16
2003 Chipome (50 plots)	37	24	30	52	6	68	446	81	0	25	0	206	0	2	2	2	0	13	90	12	3	5	107	82	4	0	0	0	22
2004 Mpanda (43.5plots)	3	9	8	24	0	47	106	2	0	5	0	134	0	0	0	2	5	7	159	30	0	6	40	5	0	0	0	0	17
2005 Chisanga (34 plots)	0	0	1	0	4	137	332	0	0	0	0	163	0	1	0	0	0	24	237	1	0	9	107	29	1	10	1	4	16
2006 4 sites (14 plots)	4	0	0	0	0	161	154	0	14	0	0	179	0	0	0	0	4	0	214	189	0	18	89	0	0	25	0	11	12
2006 4 sites (19 plots)	3	0	0	0	0	142	203	0	11	0	0	168	0	0	0	0	3		192	168	0	32	87	0	0	26	11	8	13
2007 Chipome (38 plots)	62	57	8	45	0	91	511	57	3	1	0	211	0	3	3	8	3	0	180	28	1	16	1	7	1	0	0	0	21
2008 Runyina Valley (67 plots)	147	137	84	0	159	229	565	0	0	0	0	372	1	1	1	4	0	1	143	151	1	35	113	18.7	1	4	0	3	21

Plateau 6-7,500ft	Elephant	Eland	Roan	Kudu	Reedbuck	Bushbuck	Common Duiker	Grysbok	Red Forest Duiker	Buffalo	Warthog	Bushpig	Zebra	Leopard	Serval	Hyaena	Jackal	Civet	Baboon	Porcupine	Otter	Aardvaark	Mongoose	Hare	Genet	Honey Badger	Vervet Monkey	Klipspringer	No.species
1998 Chipome	14	78	38	0	33	20	12	0	3	0	47	39	2	2	2	14	9	2	0	16	6	46	14	15	1	0	0	0	21
1999 Chipome	97	158	24	75	1	102	634	0	2	75	71	199	0	0	1	22	44	5	127	1	4	32	200	53	1	0	0	0	22
2001 Chipome (25 plots)	10	9	2	0	9	1	2	1	1	0	0	67	0	2	0	1	0	0	0	0	0	51	4	1	0	0	0	0	14
2003 Chipome (50plots)	29	40	0	0	26	59	73	10	0	0	0	118	0	7	0	0	5	4	0	50	1	84	27	30	0	0	0	0	15
2004 Mpanda (17plots)	0	0	27	14	0	150	9	0	0	0	0	123	0	0	0	0	0	0	77	18	0	5	27	0	0	5	0	0	10
2005 Chisanga (29 plots)	162	212	202	0	183	86	164	0	0	0	53	174	79	12	2	7	0	2	33	145	0	9	117	52	7	9	5	55	22
2006 4 sites (34 plots)	12	187	168	0	110	187	199	0	0	0	0	157	56	1	3	4	6	1	19	103	0	15	63	64.7	6	19	6	49	22
2006 4 sites (29 plots)	14	219	197	0	129	203	174	0	0	0	0	160	66	2	3	5	7	2	0	102	0	5	60	75.9	7	17	0	57	20
2007 Plateau (35 plots)	54	141	219	0	284	33	174	0	0	0	120	60	63	13	1	16	10	1	0	119	0	86	29	21.4	1	11	0	0	20
2008 Plateau (22 plots)	155	161	234	0	132	177	239	0	0	0	7	198	25	2	0	2	14	0	34	202	0	66	95	0	2	20	0	0	18

Appendix 4 GPS references for large mammals outside plots, all locations.

Date	Droppings	Latitude	Longitude	Altitude ft	Map ref	
31-Jul	Leopard	10º 41.54'S	33º 40.29'E	6073	739133	Nyika
31-Jul	Leopard	10º 42.22'S	33º 39.93'E	6130	728173	
02-Aug	Leopard	10º 42.48'S	33º 40.51'E	5950	740255	
02-Aug	Leopard	10º 43.05'S	33º 40.83'E	5890	743157	Lake subcan
04-Aug	Leopard	10º 40.84'S	33º 40.92'E	6250	747194	
04-Aug	Civet	10º 40.63'S	33º 42.0'E	6100	766197	
04-Aug	Civet	10º 40.57'S	33º 41.76'E	6050	near 762196	
05-Aug	Hyaena	10º 40.14'S	33º 40.02'E	6430	730213	
05-Aug	Jackal	10º 40.14'S	33º 40.02'E	6430	730213	
14-Aug	Sable	10º 55.38'S	33º 29.89E	3991	544926	Vwaza
14-Aug	Sable	10º 53.69'S	33º 26.69'E	3773	487957	
14-Aug	Sable	10º 56.84'S	33º 29.72'E	3929	533899	
14-Aug	Lion on Kudu	10º 55.00S	33º 25.30'E	3750	460933	
15-Aug	Lion print	10º 54.77'S	33º 25.69'E	3715	468935	
15-Aug	Lion (very fresh)	10º 55.02'S	33º 25.43'E	3724	454927	

Appendix 5 2008 Transect records of large mammal sightings only

		Length of Transect km	No. of individual animals seen	Distance from transect line in m	Distance visible from transect line (m)	O/S Map ref
Runyina Area of the Nyika National Park						
Transect 1	30-Jul	6	Basecamp 723 150 SE t			
Reed Buck f			1	400	800	731 135
Bush Buck f			1	400	800	731 135
Transect 2	31-Jul	4	Basecamp NE towards V			
Roan Antelope			1	150	300	746 173
Common Duiker			1	150	300	728 173
Common Duiker			1	0	30	730 174
Transect 3	01-Aug	8.5	Vehicle SE from baseca			
Roan Antelope			9	100	100	745 142
Transect 4	01-Aug	3	Lake subcamp 743 157			
Common Duiker			1	100	100	744 158
Reedbuck Family			3	100	100	744 158
Transect 5	02-Aug	3	Lake subcamp to 7416 r			
Reedbuck f			1	100	200	741 158
Common Duiker			1	100	200	
Reedbuck			2	50	100	745 167
Common Duiker			1	10	50	745 167
Transect 6	04-Aug	3	Basecamp to upper Run			
No sightings					50	
Transect 7	05-Aug	6	Upper Runyina subcamp			
Common Duiker			1	0	100	744 122
Bushbuck			1	0	50	745 124
Transect 8	06-Aug	6	Runyina upper to lower s			
No sightings					30	
Transect 9	07-Aug	5	Runyina lower subcamp			
No sightings					30	
Transect 10	08-Aug	3	Runyina lower subcamp			
Reedbuck			1		50	757 143
Transect 11	09-Aug	3.5	Upper Runyina subcamp			
Reedbuck			1	300	500	745 127
Common Duiker			1	200	300	
Total		51km				
Transfer to Kasuni						
Transect 25	18-Aug	3	Eve walk along Kasuni L			
Hippo			40	400	1000	
Kudu			4	200	400	
Impala			5	0	50	
Monkeys			3	10	50	
Kudu			6	0	50	
Warthog			3	0	50	
Bushbuck f			1	0	50	
Bushbuck m			1	30	50	
Extreme team Sightings					Transect 29	06-Aug
Transect 26	30-Jul				No sightings	
Reedbuck			11		Transect 30	07-Aug
Elephant			1		Reedbuck	5
Transect 27	31-Jul				Transect 31	08-Aug
Common Duiker					No sightings	
Transect 28	05-Aug				Transect 32	09-Aug
Reedbuck			2		Baboon calls	?
Bushbuck			1		Bushpig	1
					Common Duiker	1

		Length of Transect km	No. of individual animals seen	Distance from transect line in m	Distance visible from transect line (m)	
Transfer to Vwaza						
Transect 12	11-Aug	1.5				
No sightings					10	
Transect 13	12-Aug	6	Chirania Borehole to Kawuwu Pool 539 900 return			
Warthogs			2	80	200	
Bushbuck			1	40	40	
Kudu			1	40	40	
Transect 14	12-Aug	3	Chirania Borehole to Kawewa Camp and return next day			
No sightings					10	
Transect 15	14-Aug	7	E from Chriania borehole to River Dera Camp 497 955			
Common Duiker			1	10	30	
Common Duiker			1	10	30	
Warthog			1	5	10	
Transect 16	14-Aug	7	River Dera Camp to Chamatete Pool 479 927return			
No sightings					20	?
Transect 17	15-Aug	16	River Dera Camp to Chondoka Pool 433 928 and return			
Squirrel			1	10	30	
Roan			3	250	250	
Warthog			1	5	100	
Common Duiker			1	10	50	
Bushbuck			1	10	20	
Common Duiker			1	10	20	
Transect 18	15-Aug	7	Chirania Borehole to River Dera (Peter and Bridgett)			
Warthogs			2	5	30	
Common Duiker			1	0	30	
Transect 19	16-Aug	3	River Dera to Marsh 460 960			
No sightings					30	
Transect 20	16-Aug	5	Eve walk from River Dera camp return 3.30-5.30pm			
Guinea Fowl			12	30	100	
Bushbuck f			1	30	100	
Impala f			1	100	100	
Impala			11	150	100	
Transect 21	17-Aug	7.25	River Dera back to Chirania Borehole Group 1			
Common Duiker			1	10	10	
Elephant			1	50	70	
Transect 22	17-Aug	7.25	River Dera back to Chirania Borehole Group 2			
No sightings					30	
Transect 23	17-Aug	1.5	Chirania Borehole to Kawewa Camp			
No sightings					10	
Transect 24	18-Aug	1.5	Chirania Borehole to Kawewa Camp by vehicle			
Kudu			2	0	10	
Total		73.1km				

Appendix 6 Analysis of large mammal sightings from the transects

Species	Length of Transect (km)	Number of individual animals seen	Distance from transect line in m	Distance visible from transect line	Total number of animals	Average No of animals seen per km²
Bushbuck female	6	1	400	800		
Bushbuck	6	1	0	50	2	0.19
Common Duiker	4	2	150	300		
Common Duiker	4	1	0	30		
Common Duiker	3	1	100	100		
Common Duiker	3	1	100	200		
Common Duiker	3	1	10	50		
Common Duiker	6	1	0	100		
Common Duiker	3.5	1	200	300	8	0.75
Reed Buck f	6	1	400	800		
Reedbuck	3	1		50		
Reedbuck	3.5	1	300	500		
Reedbuck	3	2	50	100		
Reedbuck f	3	1	100	200		
Reedbuck family	3	3	100	100	9	0.84
Roan Antelope	4	1	150	300		
Roan Antelope	8.5	9	100	100	10	0.94
No sightings	3	0		50		
No sightings	6	0		30		
No sightings	5	0		30		
Total distance	51					
Average transect width				210		
Therefore Total area covered is 18km²						
Vwaza Marsh Area						
Bushbuck	6	1	40	40		
Bushbuck	16	1	10	20		
Bushbuck f	5	1	30	100	3	0.77
Common Duiker	7	1	10	30		
Common Duiker	7	1	10	30		
Common Duiker	16	1	10	50		
Common Duiker	16	1	10	20		
Common Duiker	7	1	0	30		
Common Duiker	7.25	1	10	10		
Common Duiker	7.25	1	10	10	7	1.80
Elephant	7.25	1	50	70		
Elephant	7.25	1	50	70	2	0.51
Guinea Fowl	5	12	30	100	12	3.08
Impala	5	11	150	100		
Impala	1.5	11	150	100		
Impala f	5	1	100	100		
Impala f	1.5	1	100	100	24	6.17
Kudu	6	1	40	40		
Kudu	1.5	2	0	10		
Kudu	1.5	2	0	10	5	1.28
Roan	16	3	250	250	3	0.77
Squirrel	16	1	10	30	1	0.26
Warthog	7	1	5	10		
Warthog	16	1	5	100		
Warthogs	6	2	80	200		
Warthogs	7	2	5	30	6	1.54
No sightings	1.5	0		10		
No sightings	3	0		10		
No sightings	7	0		20		
No sightings	3	0		30		
No sightings	7.25	0		30		
No sightings	1.5	0		10		
No sightings	7.25	0		30		
No sightings	1.5	0		10		
Total transect length	73.1					
Average transect width				53.24		
Area observed in km²	3.89					

Species	Length of Transect (km)	Number of individual animals seen	Distance from transect line in m	Distance visible from transect line	Total number of animals	Average No of animals seen per km²
Lake Kasuni area in Vwaza Marsh Reserve						
Bushbuck f		1	0	50		
Bushbuck m		1	30	50	30	47.06
Hippo		40	400	1000	40	62.75
Impala		5	0	50	5	7.84
Kudu		4	200	400		
Kudu		6	0	50	10	15.69
Monkeys		3	10	50	3	4.71
Warthog		3	0	50	3	4.71
Total trans	3					
Average transect width				212.5		
Area obse	0.64					

Game Population estimates			
	Nyika N.P.	Vwaza ma	Lake Kasuni
Bushbuck	0.19	0.77	47
Common D	0.75	1.8	
Elephant		0.51	
Hippo			62.75
Impala		6.17	7.84
Kudu		1.28	15.69
Monkeys			4.71
Reedbuck	0.84		
Roan Ante	0.94	0.77	
Warthog		1.54	4.71
Guinea Fowl		0.96	
Squirrel		0.08	

MEDICINES FROM PLANTS

Imran Khan

INTRODUCTION

Plants have provided helpful remedies for illnesses and many types of medicines purchased from pharmacists are derived from plants. There are possibly many more medicines that can be obtained from plants, that we do not, as yet, know about. This emphasises the importance of conservation of our plant life and its diversity. This project is largely anecdotal but the knowledge of plants by both scouts and our botanist has enabled a listing of some of the ways in which different species are being used by local people as herbal remedies for common ailments.

Medicinal plants have been used as remedies for a diverse range of health related problems. These include the ability to cure coughs and fever; stomach ache and abdominal pain, pneumonia, sexual diseases, headache and general pain. They are believed to be helpful in providing aid for pregnancy and helping people who have been bewitched. They are also used for good luck.

The effect of the medicines obtained from the plant could be tested by the pharmacist isolating and analysing the active ingredients for use in medicines. Undoubtedly local herbal medicine plays a big part in the communities.

METHOD

Lewis Mtumbuka and other scouts pointed out a number of traditionally known medicinal plants during the fieldwork in the Vwaza Marsh Game Reserve. These were formally identified by botanist, Steven Mphanda. In the information gathered below, an asterisk marks where photographs are included below the text. Further desk study has found a number of research papers that help substantiate the information.

Evidence gathered

Coughs

Plants used for curing coughs include Muwawani, *Cassia abbreviata**, *Azanza garckeana, and Fagara chalybea.* Muwawani, and *Cassia abbreviata* is used by putting the bark of the tree into water and drinking it. Azanza garckeana and *Fagara chalybea* are also both used for curing cough by digging up the roots and boiling in water to drink.

Fever

This process with *Fagara chalybea, Turrea nilotica* and *Diplorhynchus candylocarpon** is also used to cure fever. The roots of both *T. nilotica* and *D. candylocarpon* are ground and mixed together, sometimes with roots from other trees, boiled in water, then drunk.

Stomach ache

Leaves of *Zobara* are used for treating people with stomach ache. The roots are also used for treating STD. The roots are pounded with seaweed to form flour. The flour can be used by adding it to porridge or putting it into a small mug with water and drinking it.

Abdominal pain

This can be treated using the bark of *Ozoroa reticulata* and the roots of *Maranthes floribunda*. The bark of *O. reticulata* is removed, soaked in water and drunk. The roots of *M. floribunda* are boiled in water and drunk.

Blood Loss

Someone who has been losing blood can be treated using *Terminalia sericea or Ximenia caffra**. The leaves of these plants are ground down in a mortar, put in water and soaked, then drunk.

Back pain
Perecopsis angolensis is used to treat people with back-bone pains. The roots of the tree are used and mixed with those of other tree species.

Pneumonia
This can be treated with *Flaucourtia indica* and *Dichrostachys cinerea*, using the roots which are ground, boiled and drunk.

Sexually transmitted diseases
The roots of *Terminalia stenostachya** and bark of *Cassia abbreviate* are used to treat sexually transmitted diseases except HIV. The roots of *T. stenostachya* are boiled in water and drunk, and tea made from the bark of *C. stenostachya* as described previously.

Pain
Zanha africana is used to treat people with headache and general pain. To treat someone who has a headache the bark of the tree is taken, dried and ground down. The skin at the side of the patients head is cut with a razor where the medicine is rubbed in. When there is general pain in the body, however, it is the roots of the tree that are used by boiling in water and drunk.

Bewitching
People who have been bewitched can be treated using the roots of the trees, *Ziziphus abyssinica* and *Dalbergia melanoxylon*,* with *Pseudolachnostylis maprouneifolia*.* They are boiled and drunk in water.

Poisoning
If someone has been poisoned, *Maprounea africana* is used. This poisonous plant is neutralised by boiling the roots and drinking the infusion.

Pregnancy
This is assisted by the use of *Rhus quartiniana* by a root infusion. *Lannea schimperi.* is formed into a loop for pregnant women to wear as a belt.

Good luck and good manners
Crossopteryx febrifuga, however, is used for good luck on a journey and for while they are away. It helps people to be polite and is used at a farewell beer party.

CONCLUSION AND THANKS

This project was conducted with the support of Steven Mphamba of the Forestry Research Institute of Malawi (FRIM) and Lewis Mtumbuka, Senior Scout, who has spent many years in the area and is familiar with current uses of medicinal plants. There is no doubt that many of these species must have real value in aiding and comforting those who have illness or are going through painful experiences.

It is likely that there could be many more medicines of beneficial use that can be obtained from the plants in Malawi that might not have been discovered yet. These could be discovered at a later date in the future by carrying out further observations, experiments and investigations. Plants are source of the vast majority of modern medicines and have considerable commercial significance.

There has been much research into medicinal plants and one of our Malawian supporters in earlier years, Hassam Patel has co-authored a book on this subject.

The photos on the following page illustrate some of the medicinal trees and shrubs found.

REFERENCES

Morris, Chewa Medical Botany (The Herbalist Tradition - Medicinal Plants of Malawi , Part 1&2) (Paperback).

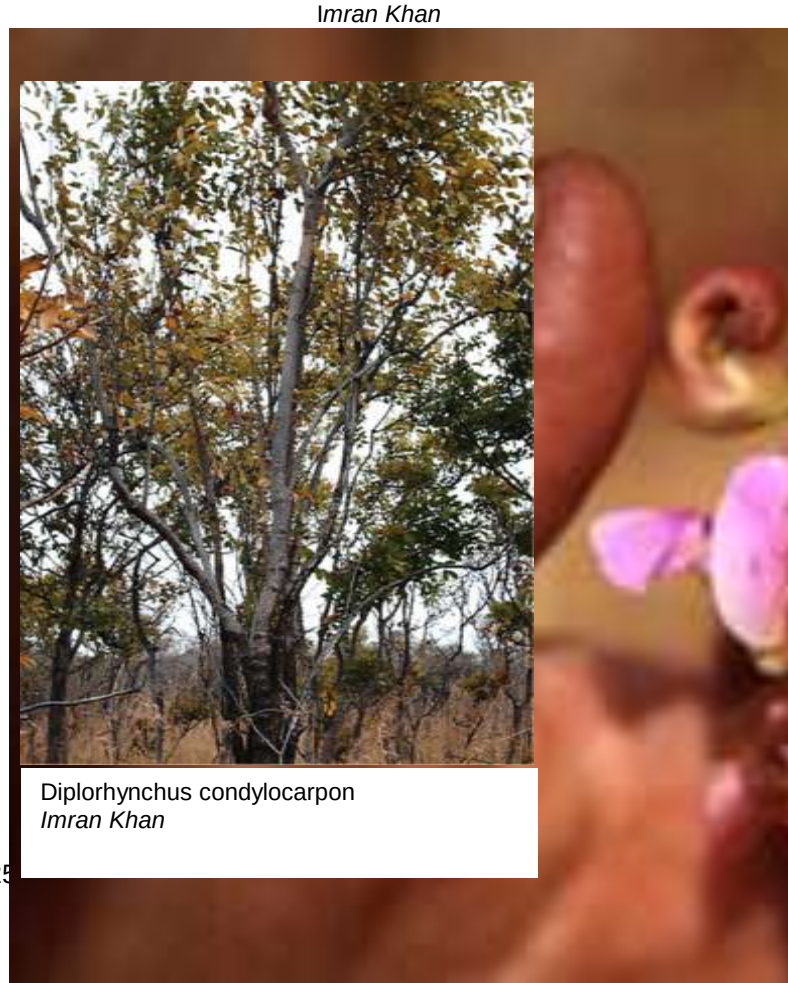
Cassia abbreviata Family Caesalpiniaceae
Imran Khan

Ximenia caffra Sour plum Family Olacaceae
Imran Khan

Terminalia stenostachya Family Connaraceae
Imran Khan

Dalbergia melanoxylon Family Fabaceae
Imran Khan

Pseudolachnostylis maproneifolia
Family Euphorbiaceae *Imran Khan*



Diplorhynchus condylocarpon
Imran Khan

POST SCRIPT: SOME FURTHER DESK STUDY

Marianne Overton

Other plants were also pointed out by Lewis Mtumbuka and photographed. Some further work has uncovered some really interesting scientific research that backs up the traditional knowledge that Lewis displayed. These are mainly simple extracts, referenced.

Olinia rochetiana

These plants are traditionally used in the form of topical applications for the treatment of various skin disorders in Ethiopia. In view of their traditional uses and proven antimicrobial activities, the effectiveness of *O. rochetiana* and *Lippia oedensis* have been scientifically assessed and compared with other medicines on the market. *O. rochetiana* was found to be "far better than any of the topical antifungal agents tested. The traditional claims attributed to these herbal drugs by the local people for the treatment of topical skin disorders is partly justified by the different degrees of antimicrobial activities exhibited by topical formulations of these botanicals against the selected strains of bacteria and fungi which are known to be common causative agents for different types of skin infections."

Olinia rochetiana Family Olineaceae
Imran Khan

Reference: Ethiopian Pharmaceutical Journal, vol. 22 (2004): 15-26

***Sterculia africana* (Bastard Baobab) (Mulele)**

"Grows up to 15m high. Leaves turn gold at end of rains and are shed in May-June. Flowers a green/yellow with red honey-guide lines, on bare tree. Very attractive to bees.

Timber is soft but can be used for furniture. Trees yield a gum. Bark is used to make rope for house construction and mats. Was earlier used to make gun powder for muzzle-loading guns."

The effectiveness of S. Africana as an anti-fungal is well known. Treatment against HIV has also been scientifically investigated:

Sterculia africana Family Sterculiaceae
Imran Khan

"HIV-infected patients in sub-Saharan countries highly depend on traditional medicines for the treatment of opportunistic oral infections as candidiasis. Previous investigations on antifungal activity of medicinal plant extracts utilized by traditional healers in Tanzania have revealed 12 extracts with potent antifungal activity. Although the plants may be good candidates for new treatment opportunities, they can be toxic or genotoxic and could cause pharmacokinetic interactions when used concomitantly with antiretroviral agents. Genotoxicity was found for *Sterculia africana* Only Agaura salicifolia, Turraea holstii and S. africana significantly induced levels of CYP3A4 mRNA. These results indicate the possibility of potential medicinal plant-antiretroviral interactions."
Reference: Basic & clinical pharmacology & toxicology **ISSN** 1742-7835 2008, vol.102, no. 6, pp. 515-526 [12 page(s) (article)] (36 ref.)

Lannea schimperi
This is mentioned in the medicinal uses of plants in Central Africa was catalogued by Bearts and Lehmann. However, Lannea discolor, which we found and photographed here, was tested and found not to have the same powers against Salmonella. However, for L. schimperi;
For diarrhoea, dysentery, cholera: barks stem, branch, trunk, juice, apply as an enema
Prolapse of uterus,leaves of Lannea schimperi, to pound and apply
Anaemia, stimulant, kwasiokor Anti-emetic, nausea drink leaves of boiled in water
Reference: Baerts, M. & J. Lehmann, Guérisseurs et plantes médicinales de la région des crêtes Zaïre-Nil au Burundi.Musée royal de l'Afrique centrale, Tervuren, Belgique.Ann. Sc. Eco., Vol. 18, 214 p (1989)

Lannea discolor Family Anacardiaceae *Imran Khan*

***Kigelia africana* (Sausage Tree)**
Uses and cultural aspects
"In Malawi, roasted fruits are used to flavour beer and aid fermentation. The tough wood is used for shelving and fruit boxes, and dugout canoes are made from the tree in Botswana and Zimbabwe. Roots are said to yield a bright yellow dye.

Traditional remedies prepared from crushed, dried or fresh fruits are used to deal with ulcers, sores and syphilis - the fruit has antibacterial activity. Today, beauty products and skin ointments are prepared from fruit extracts.
Fresh fruit cannot be eaten - it is said to be a strong purgative, and causes blisters in the mouth and on the skin. Green fruits are said to be poisonous. In time of scarcity, seeds are roasted and eaten."

Kiggelia Africana Family Flacourtiaceae *Imran Khan*

Reference: Van Wyk, B-E., Van Oudtshoorn, B. & Gericke, N. 1997. *Medicinal plants of South Africa.* Briza Publications, Pretoria.

Psorospermum febrifugum

Used in the Cameroons to treat epilepsy. This was tested and found to be an effective anti-convulsant in mice. It also protected them from convulsions initiated by poisons.
Reference International Journal of Pharmacology 1 (2): 118-1221, 2005 ISSN 1811-17775

The following is from the ALUKA site about Africa; www,aluka.org.uk
Bark Medicines: antidotes (venomous stings, bites, etc.); diarrhoea, dysentery; paralysis, epilepsy, convulsions, spasm; skin, mucosae; venereal diseases
Flower-stalk: generally healing, Fruit Food: general, Root-bark Phytochemistry: falvones; tannins, astringents; Stem-bark, root, root-bark;cutaneous, subcutaneous parasitic infection

Psorospermum febrifugum Rhodesian Holly
Family Combretaceae *Imran Khan*

Zanthoxylum chalybeum

Viruses
The effectiveness against viruses was tested and found to be effective against measles. “Seed extracts of *Z.chalybeum* therefore probably cure measles due to the antiviral effect of skimmianine.”
Reference: D Olila,[a] Olwa-Odyek,[b] and J Opuda-Asibo[c] Screening of extracts of Zanthoxylum chalybeum and Warburgia ugandensis for activity against measles virus (Swartz and Edmonston strains) *in vitro* Afr Health Sci. 2002 April; 2(1): 2–10

Asthma, respiratory diseases Use a decoction of crushed roots and leaves in water. Also aphrodisiac, impotence using a decoction of crushed roots
Reference: Hedberg I., O. Hedberg, P.J. Madati, K.E. Mshigeni, E.N. Mshiu & G. Samuelsson Inventory of plants used in traditional medicine in Tanzania. III. Plants of the families Papilionaceae - Vitaceae.Journal of Ethnopharmacology, Volume 9, pp. 237 - 260 (1983)

Zanthoxylum chalybeum
Family Rutaceae *Imran Khan*

Combretum adenogonium

Snake bite and sting by venomous animals Leaves and roots
Reference: Adjanohoun, E., V. Adjakidje, M.R.A. Ahyi, L. Ake Assi, A. Akoegninou, J. d'Almeida, F. Apovo, K. Boukef, M. Chadare, G. Gusset, K. Dramane, J. Eyme, J. - N. Gassita, N. Gbaguidi, E. Goudote, S. Guinko, P. Houngnon, Issa Lo, A. Keita, H. V. Kiniffo, D.

K Contribution aux études ethnobotaniques et floristiques en République populaire du Bénin. Agence de coopération culturelle et technique, (ACCT.), Paris, 895 p., (1989)

Injury and wounds
Maregesi, S. M., O.D. Ngassapa, L. Pieters, A.J. Vlietinck Ethnopharmacological suvey of the Bunda district, Tanzania: Plants used to treat infectious diseases. Journal of Ethnopharmacology, Vol. 113, pp. 457 - 470 (2007)

Malaria Boil leaves to drink and steam bath
Reference: Asase, A., A.A. Oteng-Yeboah, G.T. Odamtten & M.S.J. Simmonds Ethnobotanical study of some Ghanaian anti-malarial plants. Journal of Ethnopharmacology, Volume 99, pp. 273 - 279 (2005)

Combretum adenogonium
Family Combretaceae *Imran Khan*

Combretum zeyheri Family Combretaceae
Imran Khan

Combretum zeheri
The leaves are used to prepare an infusion against coughs. They are cooked in water and drunk three times per day. The roots provide a remedy for stomach pain. About half-a-finger thick up to arm thick roots are dug out and the brown skin of the roots is scraped away. The cleaned roots are then put into a pot with water. The water is only slightly heated by putting the pot next to the fire and a cup of the liquid is drunk three times per day until the patient feels better.
Reference: Sigrid Leger 2000-2003 The hidden gifts of nature

***Dicrostachys cinerea* Chinese lantern tree**
Rheumatism, urinary calculi and renal troubles (root); applied to the eyes in cases of ophthalmia (shoot); for snake-bites and scorpion stings (plant). to treat dysentery, toothache, elephantiasis, vermifuge, snake-bite, leprosy, syphilis and gonorrhoea (bark).
Reference: Sharma PV. Classical Uses of Medicinal Plants.

Dichrostachys cinerea
Family Mimosaceae *Imran Khan*

PLANT COMMUNITIES

Martin Preston and Steven Mphamba

INTRODUCTION

There is a high biodiversity of plant species in the Nyika National Park. This is due to the great variance in the biotic and abiotic conditions in the park. In addition to this there are anthropogenic influences, principally burning, which greatly affect the community structure, prevalence and species diversity.

The plant communities and therefore animals habitats are greatly effected by the abiotic conditions, which can vary greatly over a year and can be crucial in the distribution of plant communities and there structure. The most important abiotic features in an environment such as the Nyika national park will be:

- Altitude
- Temperature
- Water availability
- Soil pH
- Nutrient availability

Biotic factors such as presence, absence and abundance of grazing and browsing species may have an effect on the vegetation that is found in the area, but is unlikely to have a major negative effect, as the numbers of such species is well within what the environment can cope with due to pressures such as poaching, on the mammals in the park.

The survey on the flora of the area consisted of basic species recognition and recording, alongside working out the ground cover for each of the mammal survey plots. The project included this. However, Steven Mphamba also collected seeds for the Millennium Seed Bank project, as well as specimens of plants for identification.

METHOD

The main work done was assessing the ground cover of each plot conducted; this was done by assessing what percentage of the $100m^2$ plot was covered by trees, grass, marsh, bush/shrubs, and bare ground. All plots were selected randomly, as was the map grid square which contained them, the overall area of some 100 km^2 being selected in advance for logistical reasons.

DISCUSSION

Due to the time of year that the expedition was conducted it was much more difficult to assess the vegetation present due to it being very dry with few of the plants in flower making difficult to identify them. Steven Mphamba did find species to take samples of and did collect a large number of seeds for the millennium seed bank project.

The results show that there are differences between the habitats and therefore the plant communities found at different altitudes. The largest differences were in the amount of burnt ground that is present tin the higher altitudes and there being a lot more tree cover further down the mountain. As the altitude is increased the amount of bare earth also increases, while the amount of both marsh and bush decrease and there is no significant change to the amount of grassland present.

As expected the amount of tree cover, marsh and bush decreased with an increase in altitude. This would be expected due to the large change in water availability as altitude increases. The marsh will decrease as there is less slow moving water higher up due to the ground tends to get much steeper as you travel up the sides of a river valley and as you travel along a river towards its source. This means that the main areas in which the marsh habitats and plants are located are on the banks of rivers, lakes and ponds.

The amount of tree cover most likely decreased because of water becomes less available in the higher areas and they are much more likely to be expose to high winds and lower temperatures which may stop large numbers of certain tree and plant species from growing in the higher areas. The amount of bush was probably less affected due to having lower water requirements.

The plots show that there was little difference in the amount of grassland that was present in the higher and lower plots, but as no species identification occurred, the grasslands present may have had very different compositions

The burnt land is a combination of natural fire, and fires set by poachers. These areas if recently burned show little diversity, but natural fire can be very important in keeping an areas biodiversity as it clears some of the larger species, and can let more light through to the ground allowing less shade tolerant species to develop increasing the general biodiversity. Unfortunately fires set by poachers can devastate areas in which fire isn't wanted and destroy areas which contain rare species such as orchids.

No particular work was conducted in north Vwaza or a Kazuni. The overall vegetation in theses areas was much different to that found in the Nyika. In north Vwaza tall grasses dominated much of the landscape, but there were some areas of quite substantial woodland, which had a greater variety of trees present than the wooded areas of Nyika studied. Around Lake Kazuni there were much large areas of dry woodland. There were also large specimens of species such as *Acacia* and *Euphorbia cyparissioides,* which are both adapted for xerophytic, dry, conditions, showing that even though there is a lake, there is not much rainfall, nor large amounts of ground water.

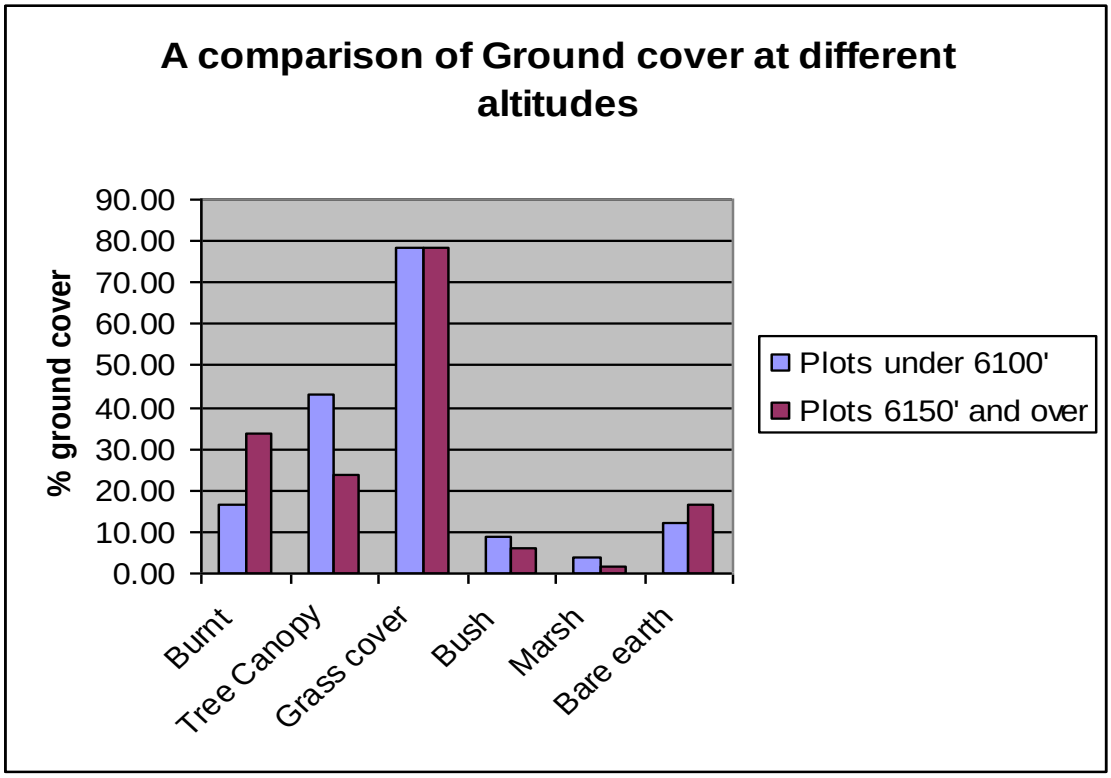
RESULTS

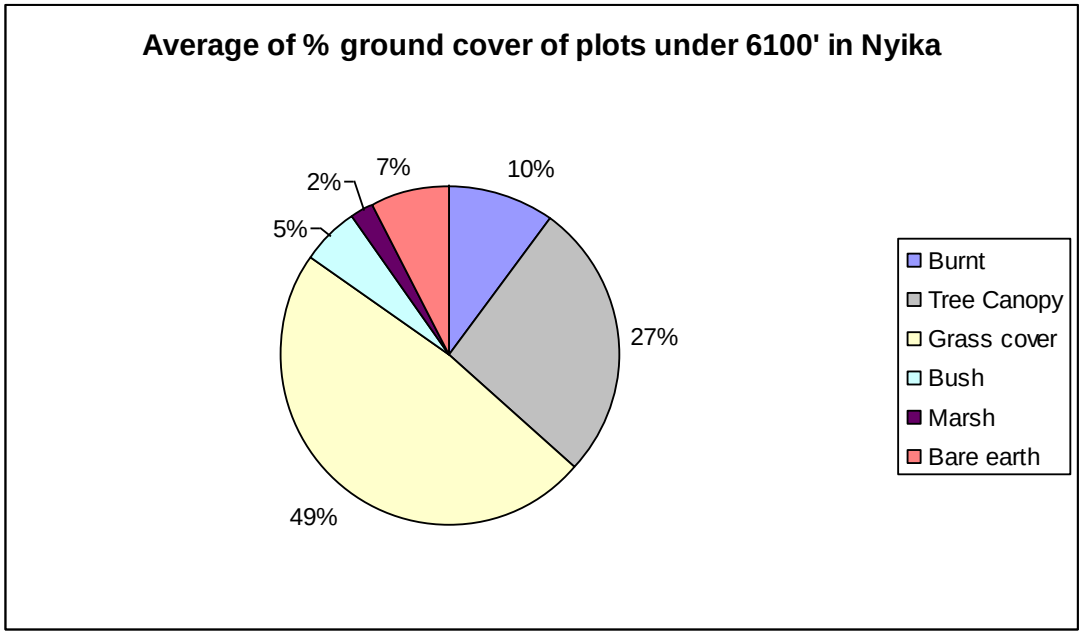
Please note that the ground cover results have been replicated in the Large Mammal Report and presented in a different graphical format, since they clearly have relevance to that project too.

Table 1 Average, max and minimum percentage ground cover and altitude

	Altitude ft	Burnt	Tree Canopy	Grass cover	Bush	Marsh	Bare earth
Plots 6100' and under							
average	5922	17	43	78	9	4	12
max	6100	100	90	100	30	40	85
min	5650	0	0	0	0	0	0
Plots 6150' and over							
average	6266	34	24	79	6	2	17
max	6450	100	80	100	35	20	70
min	6150	0	0	5	0	0	0

The largest variation in height is in the 6100' and under category. The table also highlights the differences in the amount of particular ground covers at site over 6100' and those under 6100'.





CONCLUSION

Although not a great deal of time was spent on studying the vegetation and plant communities, the results do indicate substantial differences in vegetation at different altitudes. While no specialist work was done in Vwaza and Kazuni it was shown that there are great differences in plant communities, in all three areas. This variation leads to a large variety of habitats, with varying food sources being created allowing for the development of a large and diverse animal population. The photos that follow illustrate some of the species identified in 2008.

Justicia linearispica Family Acanthaceae *Pippa Stubbs*

Aloe mzimbana in tree Family Asphodelaceae *Bridget Starling*

Vernonia melleri Family Asteraceae *Bridget starling*

Cineraria grandiflora now *C. deltoidea* Family Asteraceae *Marianne Overton*

Brachystegia spiciformis Family Caesalpiniaceae *Marianne Overton*

Brachystegia boehmii Family Caesalpiniaceae *Marianne Overton*

Cryptosepalum maraviense Family Caesalpiniaceae *Marianne Overton*

Vernonia chloropappa Family Asteraceae *Marianne Overton*

Euphorbia sp. Family Euphorbia
Marianne Overton

Uapaca robynsii suffering elephant damage
Family Euphorbiaceae *Marianne Overton*

Unknown species *?* Family Euphorbia
Marianne Overton

Drocera madagascariensis Family Droceraceae
Marianne Overton

Vignum pygmeae Family Fabaceae
Peter Overton

Dolichus kilimandscharicus Family Fabaceae *Imran Khan*

Crotalaria goetzii Family Fabaceae *Marianne Overton*

Rhynchosia insignis Family Fabaceae *Pippa Stubbs*

Geranium sp. Family Geraniaceae *Bridget Starling*

Scilla rigidifolia now *S. nervosa* Family Hyacinthaceae *Pippa Stubbs*

Scilla rigidifolia Family Hyacinthaceae *Bridget Starling*

Geranium sp. Family Geraniaceae *Bridget Starling*

Satureja biflora Family Laminaceae *Pippa Stubbs*

Geniosporum paludosum Family Laminaceae *Marianne Overton*

Leonotis leonurus
Family Laminaceae

Lobelia stricklandii
Family Lobeliaceae
Marianne Overton

Lobelia stricklandi Family
Lobeliaceae *Marianne Overton*

Hibiscus debeerstii Family
Melastomataceae *Marianne Overton*

Hibiscus rhodanthus Family Melastomataceae
Marianne Overton

Trichilia volkensii now
Lepidotrichilia volkensii Family
Melicaceae *Marianne Overton*

Uapaca by Sophie Martin

Disssotis princeps Family Meliaceae *Marianne Overton*

Osmunda regalis Family Osmundaceae *Marianne Overton*

Thelypteris dentata Family Thelypteridaceae *Marianne Overton*

Biophytum nyikense Family Oxalidaceae *Marianne Overton*

Gnidia buchananii Family Thymelacaceae *Marianne Overton*

Prunus africana Family Rosaceae *Marianne Overton*

Craterispermum schweinfurthii = Multidentia crassa? Family Rubiaceae *Marianne Overton*

Triumfetta welwitschii
Family Ulmaceae *Pippa Stubbs*

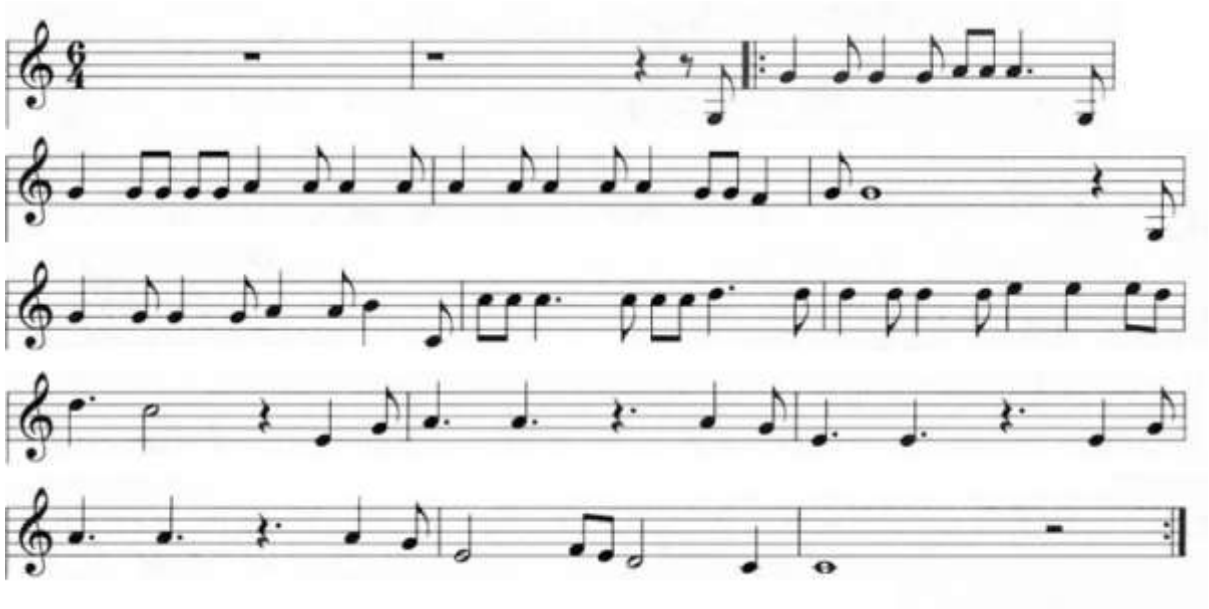
Unidentified *?*Family Lamiaceae
Marianne Overton

Unidentified *Marianne Overton*

Usnea sp. possibly *.abyssinica* Lichens
Marianne Overton

THE CAMP SONG FOR 2008

Set to the tune of 'Hallelujah', Rufus Wainwright



MUSIC
We always heard the same three chords,
When Michael played and it pleased us all
Till *By the way* was all that he could play.
It goes like this; *Jolene, Mad World,*
The Scientist, My Brown Eyed Girl,
Ilkly Moore, The ChuChu and Baby *Got Back.*
Baby Got Back, Baby Got Back, Baby Got Back, Baby Got Back.

QUALITY TEAM
Marie and Peter wanted proof,
The Black Crake, so rare, aloof,
But sore Kaele was not so pleased to stray.
Martin a constant shade of wine,
The retreat of Bambo's waistline
Imran's equation stood at T+30.
T+30, T+30, T+30, T+30.

EXTREME TEAM
Pip soon learnt to watch the ground,
Katie and Laura, less grunge, more browned,
With bikinis on, sunbathing half the day.
Sophie at work with her artist's eye,
Shawn and Mike, in swamps, knee high,
And Bridget broke out the *Mars* atop of Mwanda.
Atop of Mwanda, Atop of Mwanda, Atop of Mwanda, Atop of Mwanda.

ANIMALS

Our I.D. skills all needed work,
An elephant/leopard sent XT berserk,
But a bushpig was what made us run away.
The pacaderms sometimes we'd meet,
Puffadder and Cat-eyeds around our feet.
But we were most cautious of those ant diggings.
Those ant diggings, those ant diggings, those ant diggings, those ant diggings.

POACHERS

We abandoned the job and took to stalk,
The spot made clear by falcon and hawk,
Where poachers had dried out their Eland prey.
We left them notes, tore up their nets,
Cut down the beehives, recorded the sets,
All this and yet they'd still hunt with no clothes on!
With no clothes on! With no clothes on! With no clothes on! With no clothes on!

COOKING

The rations often needed thought,
As tins and dried stuff could only be brought,
Lunch was hardly an all you can eat buffet.
Pizza and flatjacks were made in from scratch,
The 'egg' remarks saved half a batch,
We couldn't leave camp 'till we'd had our nsima.
Our nsima, our nsima, our nsima, our nsima.

Biosearch 2008: The campfire singers

MEMORIES OF AFRICA

I really enjoyed this year's Biosearch expedition. Working alongside a team of skilled people was an honour and a pleasure.

Shaun Allingham

I grew up on tales of empire (mainly from my grandfather who was a merchant seaman from the 1920s to the late 1940s), Cecil Rhodes and Dr David Livingstone. I read Treasure Island, Swiss Family Robinson and later, books by Wilbur Smith. I had boyhood dreams of following in the footsteps of my heroes.

The Biosearch expedition allowed me to fulfil those dreams, to enjoy the great outdoors, to experience a different people and culture, work with wildlife and make new friends.

Leaving the materialistic world behind and living in the bush you learn the true meaning of happiness: tired from a day's walking, sitting by a fire with a full stomach, talking and laughing with friends, and the prospect of a warm sleeping bag not far away. You can keep your mobile phones, TVs and rat-race. Malawi, I will be back.

Ian Pilcher

I found this expedition to be very enjoyable and beneficial. It managed to improve my organisation and confidence in working with people and meeting new people, seeing the culture in Africa. On the whole I have found being part of this team on the expedition a great pleasure.

Imran Khan

Joining this year's Biosearch expedition fulfilled an ambition I've had for many years to join the team and contribute to the wonderful work they were doing in Malawi. It has been a great pleasure to work with so many skilful people and share with them the remarkable experience of living and working in and for a beautiful natural environment. It was tremendously rewarding to see the realisation of so much hard work on all our parts to the beneficial results we achieved.

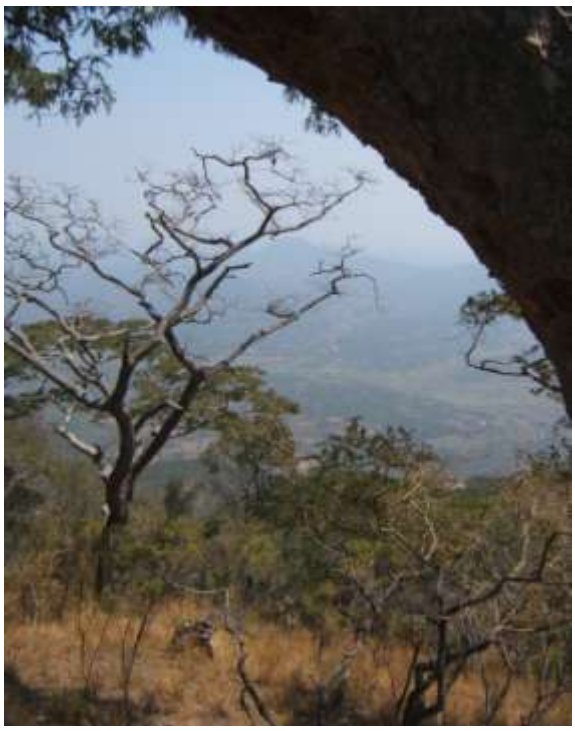
Sophie Martin

It was a last minute decision to join the Biosearch 2008 expedition and one I'll never forget! Four weeks of camping; swapping the noise pollution of mobile phones and traffic for the sounds of baboons fighting, crickets and the lack of electric light for the grateful glow of fire. The thing that amazed me the most was how civilised the lack of civilisation really is - and how much I'll always miss Richard!

Laura Humphries

I loved being in a truly wild place, where nature governs and we are guests, privileged to be truly part of that world. We learned how to live safely and sustainably, comfortably and without damage to our environment. We spent our days walking in the field, every day a new discovery, with good food, good company and at night, a well-earned sleep. I rejoiced in the camaraderie of an excellent bunch of people; with all our human foibles and diverse characters. We faced adversity, had enormous fun and worked together to achieve something incredible. We will always share a special bond with those who have been there.

Marianne Overton



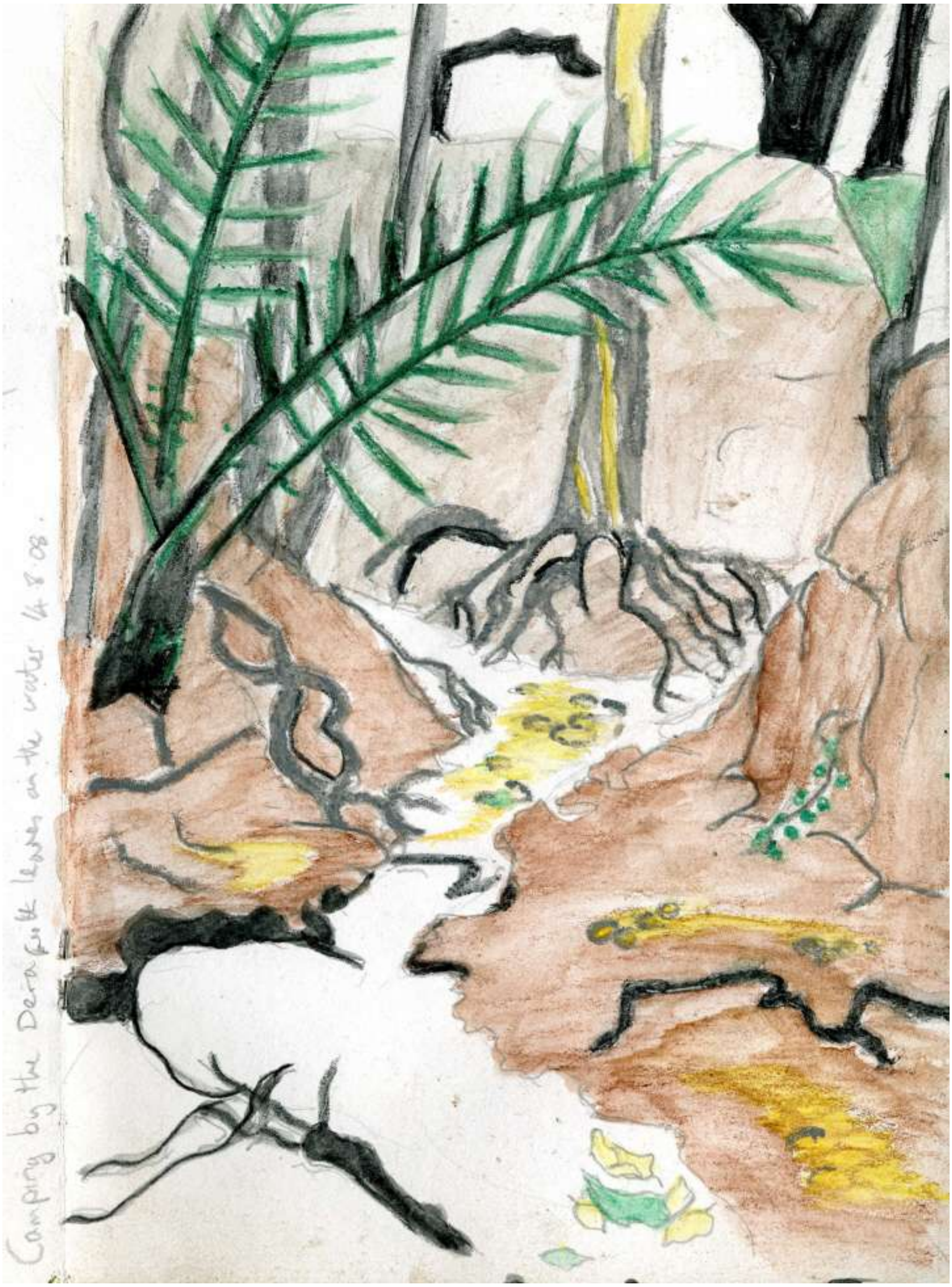
Into the Great Rift Valley *Pippa Stubbs*

THE BIOSEARCH TEAM
on the Nyika at the beginning…

…and later at Vwaza

ARTWORK

Sophie Martin

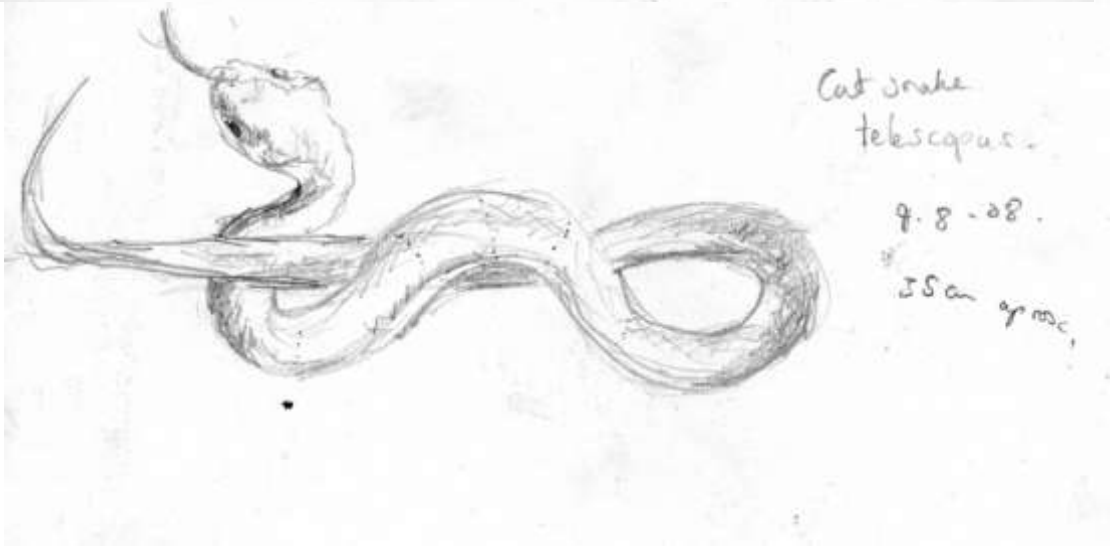

Camping by the Dera
leaves on the water 14.8.08


Mascarene grassland frog
ptychadena
mascarensis

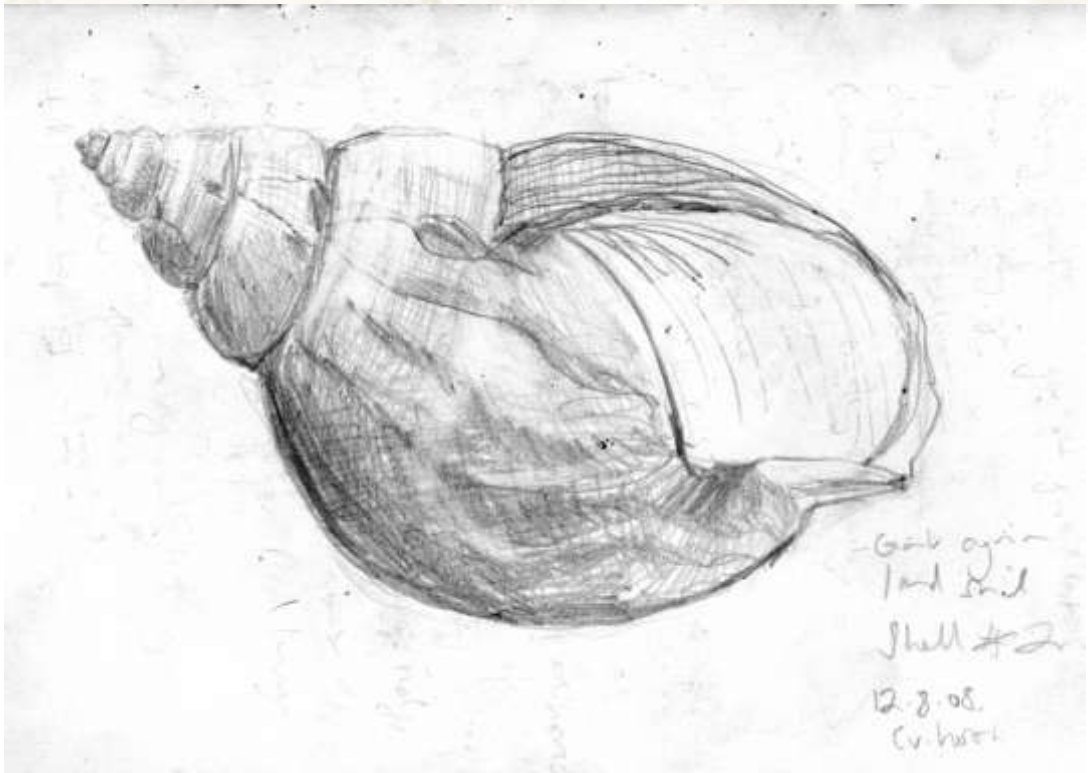

Grey Tree frog
Chiromantis xerampelina

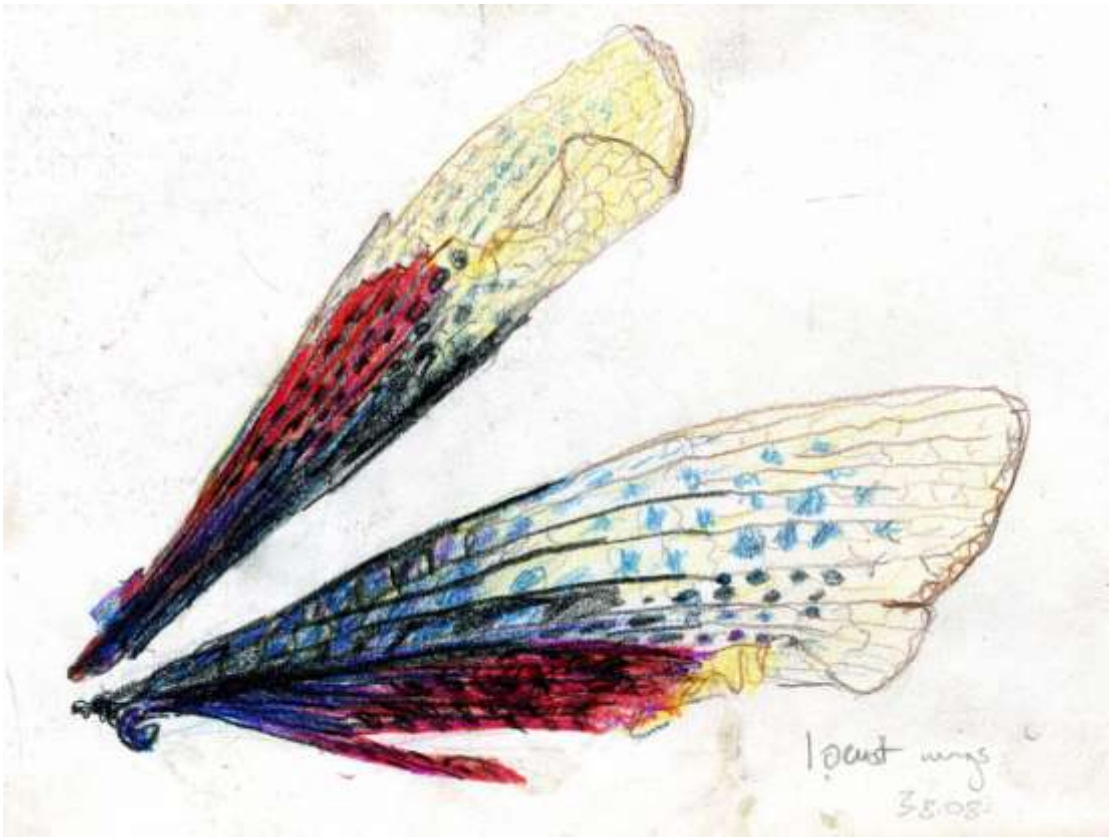

Little free Tail Bat. mrius
20.8.08


Dead — bat found in office
20.8.08
Sundevalls leaf nose bat


Cat snake
tetescapus.
9.8.08.
15cm approx.


agama.
1931 mtr. alt
8-8. 08.


Shell #2
12.8.08.


locust wings
35.08


1.8.08
12 cm long
Rungwe Puddle frog
Phrynobatrachus
rungwensis