The Lone Wolf Project Final Report 2006

An expedition to the Simien Mountains, Ethiopia

29th June – 12th September 2005

www.lonewolfproject.org.uk

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Citation: **Busby, G.B.J., Busby, J.S.E., Grant, J., Hoolahan, R.A. and Marsden, C.D.** 2006. *The Lone Wolf Project Final Report: An expedition to the Simien Mountains, 29th June to 12th September 2005.* Unpublished expedition report, vi + 127 pages

Key words: *Canis simiensis*, Ethiopia, Simien Mountains, habitat assessment, rodents, large mammal surveys

Front Cover: A "Lone Wolf" sits on the crest of a hill, near the village of Adilemlem in the Simien Mountains, Northern Ethiopia – taken by Richard Hoolahan

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Acknowledgements

In every expedition there are always so many people to thank besides the expedition members. However, firstly I would like to thank the whole Lone Wolf Project Expedition team, for involving themselves in what was a truly amazing experience for so many from Ethiopia and from the UK.

Expeditions are never possible without the kind and generous funding and belief of sponsors. I would therefore like to thank The University of Edinburgh, who through the Davis and Weir Funds, the Barnson and James Rennie Bequests, the Carnegie Fund and the British Association Travel Fund were benignant in their support. A huge thank you to the Gumby Foundation, through the Royal Geographical Society, the British Ecological Society, the Thriplow Charitable Trust and the Gordon Foundation for their financial aid.

During the initial planning stages Shane and Nigel Winser at the RGS were inspiring with their confidence and help. Dr Claudio Sillero, the doyen of Ethiopian Wolf knowledge, who wrote the foreword to this report, and all at the Ethiopian Wolf Conservation Programme were especially helpful: Dr Zelealem Tefera was the lynchpin that held the early thoughts together and allowed the expedition to get off the ground through his in-country support; thanks to Lucy Tallents for her support in Addis before the expedition and for the loan of rodent traps; others at the EWCP who helped include Dr Jorgelina Marino, Dr Stuart Williams, Dr James Malcolm and Dr Dan Haydon particularly with his help to get the expedition leader to the symposium and comments on the report draft. Thanks too to Dr Derek Yalden who, after the expedition, helped with rodent identification from the many photographs taken while we were in the field.

Further selfless help was given before the expedition from Dr John Deag in the planning of the ecological fieldwork and from Professor Andrew Read and Dr Pat Preston at the University of Edinburgh. Chris Grant at Gondarlink gave invaluable information about the Gondar region as did Professor Robin Dubar from the University of Liverpool. Thanks also to ‘It’s Great Outdoors’ in Hawick for their generous discounts on equipment. A huge thanks too to Mary Busby for proof-reading the report.

Without the tireless efforts of Anagaw Atickem, we would not have benefited from the help and experience of our four Ethiopian students. I cannot thank him enough for all that he did to ensure that they could take time to be with us. We all benefited from the exchange. I wish him every luck for the future.

Thanks too in Ethiopia to Fanuel Kebede and Tadesse Hailu of the Wildlife and Conservation Department and Mulugeta Woubshet of the Amhara Region Parks office, who enabled our permissions to get through speedily and completely. Further thanks also to Mulugeta for his conversations about the Simien and Ethiopia and for his phone calls to Debark, and also to all at the Simien Mountains National Park head office in Debark. During the expeditionary phase we were indebted to the help of many Ethiopians, from taxi-drivers to mule men to the villagers that allowed us into their homes and gave insight into their lives.

Foreword

The Ethiopian wolf is a natural icon of the Ethiopian highlands and particularly of the Simien Mountains from where the species was first described by German naturalist and explorer Eduard Rüppell in 1835, and from where *Canis simensis* takes its scientific name.

Of the 36 wild canid species the Ethiopian wolf is the rarest, with less than 500 adults surviving in a few highland tracts in Ethiopia, and is one of the most endangered carnivores in the world. Although Ethiopian wolves were probably never very common, relentless human pressure for high altitude farming and grazing keeps pushing the last remaining wolves ever higher up the mountains. The Simien Mountains sum up the wolves' predicament more vividly than any other mountain range in Ethiopia, and it is therefore a timely challenge to try to do more to ensure the conservation of this awesome landscape and its endemic flora and fauna epitomised by the *Ky Kebero*.

What can be done to save these strikingly handsome creatures? The *Ethiopian Wolf Conservation Programme* has been working with the Ethiopian authorities for nearly two decades to increase awareness for the plight of this species and its Afroalpine enclaves. Good conservation practices must be built on sound scientific foundations and one of our priorities remains to monitor all remaining Ethiopian wolf populations including Simien. It is therefore rewarding to see young people taking the initiative to organize and undertake an expedition to these magnificent mountains, allowing them to gain field experience but at the same time making a worthwhile contribution. In collaboration with their Ethiopian counterparts a team of dedicated students from Edinburgh University spend 7 weeks working on the grassy meadows of Simien, surveying wolves and their rodent prey. This report presents the results of their endeavours, and makes a contribution to our knowledge of the Afroalpine ecology. I wish the authors a bright professional future and hope they cherish the experience gained in their Simien adventure.

Claudio Sillero

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Abstract

The Lone Wolf Project was a 2005 expedition that investigated the status of the Ethiopian wolf, *Canis simiensis*, both inside and outside of the Simien Mountains National Park, in the Simien Mountains of Northern Ethiopia. Previous research on this endangered species has largely been conducted in the main wolf population in the Bale Mountains of Southern Ethiopia and the results subsequently extrapolated to the rest of the country. The unique Simien Mountain Range contains one of the largest populations of wolves outside of the Bale Mountains and is less well studied. For effective conservation of this population, it is vital that the specific characteristics of this population are studied, that is, the habitat, prey availability and threats to this area.

We performed habitat quality assessments, small mammal trapping investigations, large mammal transects and separate wolf monitoring in order to collect data on the wolf in this otherwise under-studied area. We also collected sociological data in the form of interviews and informal meetings with local people in order to better understand their needs and their opinions about the Ethiopian wolf and other endangered endemic Ethiopian mammals. Without the involvement of the people whose lives are intimately entwined with that of the wildlife of the Simien, there can be little chance of constructively helping conservation in Ethiopia. This extra element to the expedition had the potential to give really useful answers to how wildlife and conservation scientists are perceived by locals.

We found that the grazing pressure was high in all areas of the mountains, irrespective of whether the study site was within the national park. The density of live rodents and rodent signs was considerably lower than previously recorded in the Bale Mountains, a hotspot of wolf abundance. The habitat quality surveys and large mammal transects showed that the number and densities of livestock, mainly sheep and goats, was great and could potentially affect the number of wolves that can survive in this ecosystem. We saw roughly 30 different wolves in the areas of study and estimate there to be 80 wolves in total in the Simien. Our questionnaires showed that the conservation policies of the SMNP have both positive and negative effects on the people of the Simien. The questionnaires provided a useful voice for the local people and highlight their needs in the years to come. We have also produced a brief ethnography of the Simien Highlanders.

We recommend that in order to effectively conserve the wolf, and its associated habitat in the Simien Mountains, an intergrated research programme which addresses the conservation of the wolf and afroalpine habitat as well as the needs of the people of the Simien, some of whom are particularly poor, will be necessary.

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1. Overview

George Busby

Welcome to the Lone Wolf Project. This report aims to highlight the major results of the expedition as well as touch on some of the issues that came up during the two months that the expedition was in the Simien. The project was principly involved with compiling data relevant to the Ethiopian wolf, *Canis simiensis*, in the Simien Mountains, in order to better assess its conservation needs.

The Ethiopian Wolf is the most endangered canid in the world[1]. The most recent estimates of the extant global population stand at less than 500 individuals (Marino, 2003), although this is based largely on extrapolation of estimates made only from detailed study of the Bale Mountains population in southern Ethiopia. The Ethiopian Wolf Conservation Programme (EWCP) in association with the IUCN Canid Specialist Group has been conducting extensive research on this population (Bale Mountains) to create the IUCN Conservation Action Plan for this species (Sillero-Zubiri and Macdonald 1997).

The Simien Mountains (Figure 1.1) in Northern Ethiopia contain the third largest population of Ethiopian wolves, estimated by Marino (2003) to comprise between 40 and 54 wolves. Presently, however, their effective conservation is hindered by a lack of baseline knowledge, most importantly concerning the distribution and abundance of these wolves and their rodent prey. Dr Zelealem Tefera, the 2005 interim coordinator of the EWCP, directed our proposed research towards the most appropriate and important area requiring study and throughout the planning we continued to liaise with him and his successor Dr James Malcolm.

Ethiopian wolves first suffered extensive decline as a result of the loss and fragmentation of its habitat through agriculture and overgrazing (Sillero-Zubiri et al. 1994; Sillero-Zubiri and Macdonald 1997). More recently hybridisation with domestic dogs and several rabies epidemics (see Gottelli et al 1994) have further threatened this species' genetic integrity and fitness. Without a highly effective conservation management programme, the EWCP and the IUCN Canid Specialist Group have predicted this species will become extinct[1] (Sillero-Zubiri and Macdonald 1997). The wolf will be lost first from areas with smaller populations such as the Simien. Through collaboration with the EWCP this expedition aimed to contribute data on the status of the wolf in the Simien. This will provide information that can be used to determine conservation management options for the wolf.

Studies have shown that in order to maintain the present level of genetic variability in the Ethiopian wolf, northern populations must be conserved, (Gottelli et al., 1994; 2004). Furthermore, preventing extinction will allow the wolf to remain as Ethiopia's top predator. Loss of the main rodent predator could have disastrous consequences for the ecology of the area. Stable populations of Ethiopian wolves may also help to support tourism in the area, promoting the economy of the area and country. The expedition provides data that can be

[1] www.iucnredlist.org

used as an incentive for future projects wishing to undetake long-term, intensive study. Although the aim of the expedition was to generate baseline data, it also provides impetus and direction for future study.

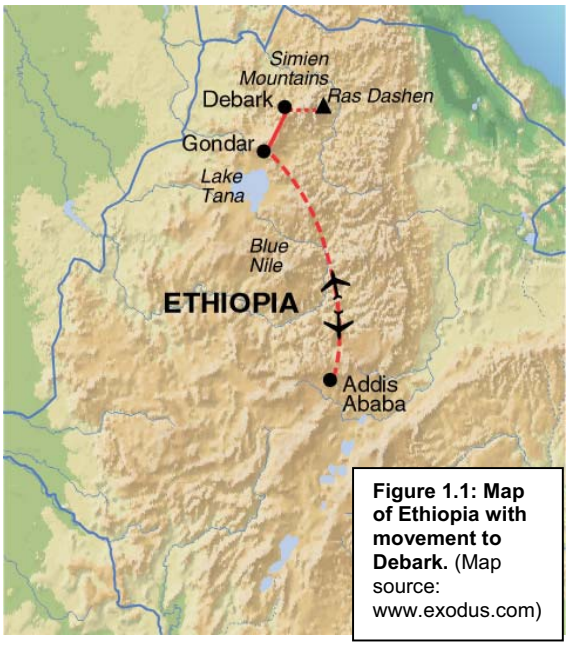


Figure 1.1: Map of Ethiopia with movement to Debark. (Map source: www.exodus.com)

From an early stage our planning was directed towards a large, three-pronged, multi-disciplinary expedition in which information from different sources could be collected to produce robust conclusions. The idea that people of different backgrounds could join the expedition in order to add new dimensions to the results was certainly attractive, and in this respect the expedition succeeded in covering a broad range of the available sources of information. For example, two anthropologists were enrolled with a brief to investigate the human aspect of conservation in the Simien. How did people feel about the wolf? Did they understand that wildlife in the Simien is unique and in need of conservation? Was the wolf in fact a pest to the villagers' livestock? Did they care? Questions like these and others were used to try to raise awareness of wildlife conservation in this environment. Indeed, the very fact that the expedition moved around the remote mountains, using local mules and visiting small villages raised awareness in itself. People were always very interested in what could possibly be so important as to attract all these people from so far away. One of the anthropological studies concentrated almost purely on the lifestyle of people in the Simien, and this proved very intriguing and insightful as to how best to address the human aspect of conservation in the Simien.

So, together with the largely ecological field surveys which looked on the one hand at the distribution of Ethiopian wolves and other large mammals and on the other at the density of rodents in different habitats, the interviews added the extra depth needed to make broad, intelligible conclusions.

This report is split into chapters concerning the two major research themes, scientific and anthropological, as well as separate chapters on more general expeditionary subjects, such as the study sites and camp life, expedition logistics, and health and safety.

2. Study Sites

George Busby

2.1. Background

The Ethiopian Highlands represent the northern end of the Great East-African Rift Valley, formed through intense tectonic activity over the last 200 million years. Over the past 25 million years, several phases of uplift of igneous laval deposits led to brittle basaltic domes of crust that bulged upwards, the largest of which (approximately 400 km wide) resulted in what we know today as the Ethiopian Highlands. The expedition took place in the Simien Mountains of Northern Ethiopia (38^{o} 04' E, 13^{o} 11' N). Subsequent erosion has resulted in the dramatic landscape that today forms the Simien Mountains; highland plateaus split by deep valleys and gorges; steep escarpments; jagged mountain peaks and sharp precipices[1] (Kingdon, 1997; Drake, no year). The Simien is one of the highest mountain ranges in all of Africa, containing the fourth highest mountain in Africa, Ras Dejen, which is 4550 masl (metres above sea level). Indeed 80% of all land in Africa above 3000 masl occurs in Ethiopia (Newey and Sillero-Zubiri, 2002), so it is not surprising that Ethiopia is sometimes described as the 'Roof of Africa'.

We decided to choose our exact study sites following exploration of the area on arrival. This proved wise, in as much as we were in a better position to look at habitats and talk to local guides about the feasibility of different proposed areas. Figure 2.1. shows the Simien Mountains with the Simien Mountains National Park (SMNP) demarcated in red. Straight away it is possible to see that the SMNP does not in any way cover all of the mountain range. It in fact covers a mere 27km^2 of the range. This however has now changed. Upon arrival in the SMNP the expedition leader was told that during June 2003 the park was officially expanded and, although no official map of the new boundary is available, the park is now substantially bigger. The yellow line in Figure 2.1. shows an approximation of the new boundary.

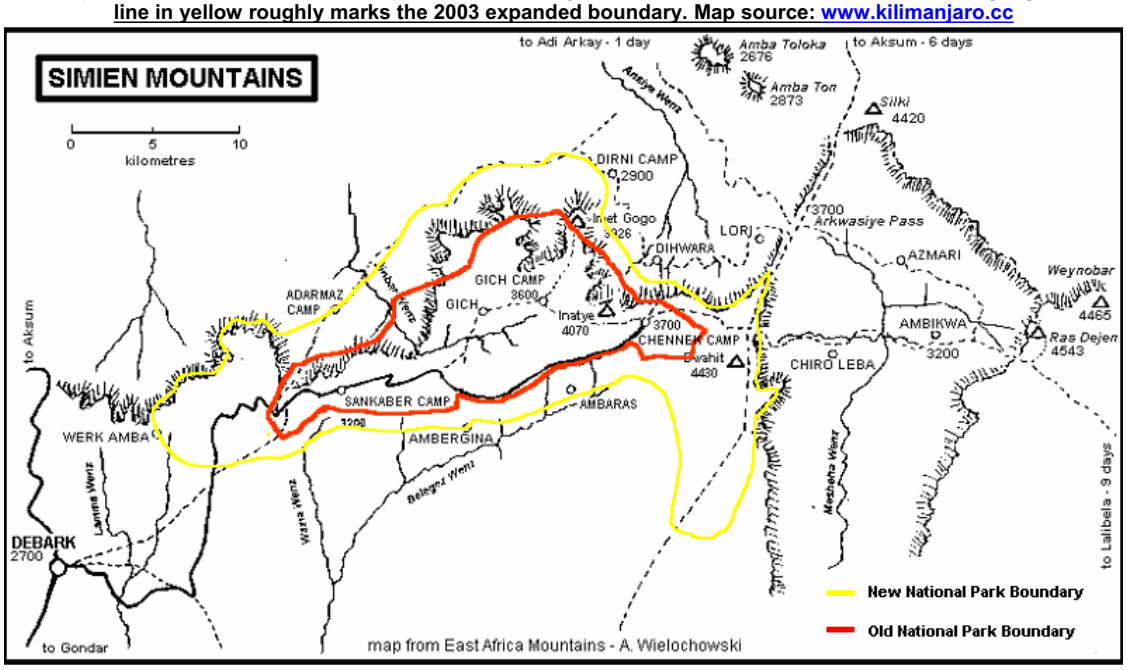
2.2. Survey Sites

During our stay in Gondar, the expedition leader met with Anagaw Atickem Mesheshe, a local scientist, and Getachew Abera, a field assistant for the EWCP and SMNP guide, in order to discuss possible base camp sites. The time we were to spend at each camp had to be in multiples of 7 days if we were to maximise the efficiency of the time spent at each camp. Each rodent trapping period took 5 days, so a 7 day window would give us a day before to carry and set the traps up, as well as a day at the end to collect traps and enter data into the computer. We decided to head all the way through the park to Chennek Camp. This is one of four main camps in the park where scouts are continually located and represented the eastern edge of the SMNP. The other three permanent camps at Geech, Sankabar and Dirni were not considered as base camps as the former two were well within the park boundary and therefore represented areas that had already been researched, as well as being areas where scouts and guides regularly visit with tourists and thus the situation of the wolves was

[1] http://whc.unesco.org/en/list/9

relatively well known. We also planned to have our last camp on the southern limit of the park so that we could enjoy the park and conduct some sampling comparisons within the park.

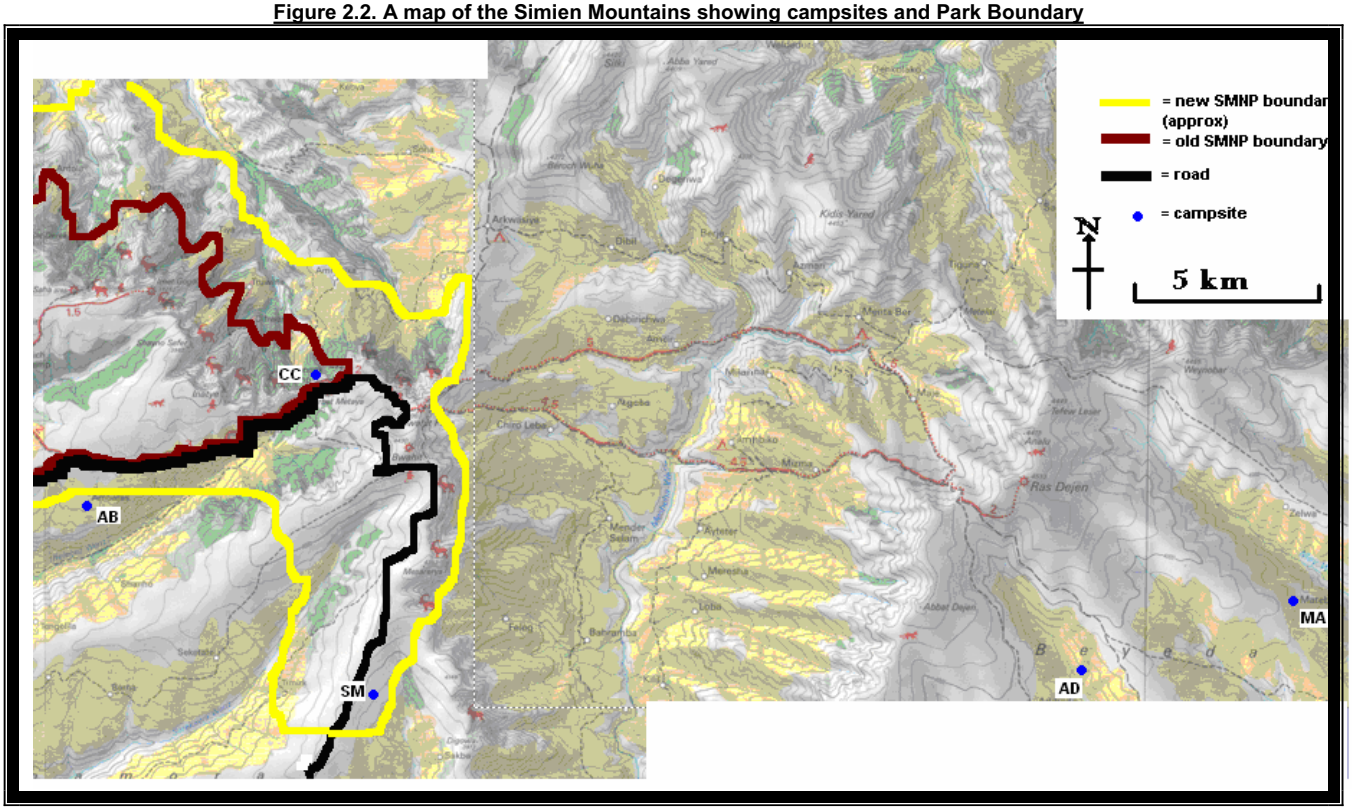
Figure 2.1. Map of Simien Mountains with the previous boundary of the Simien Mountains National Park highlighted in red. The line in yellow roughly marks the 2003 expanded boundary. Map source: www.kilimanjaro.cc



Campsite	Altitude	Coordinates	Benefits
Chennek Camp – CC	3621m	N 13 15.735 E 38 11.534	Scout camp on edge of park
Sebat Minch – SM	4010m	N 13 10.397 E 38 12.075	Near road
Adilemlem – AD	3818m	N 13 10 139 E 38 22 139	Area far out of park – little/no previous data
Matba – MA	3842m	N 13 13.748 E 33 24.959	Area far out of park – little/no previous data
Ambaras – AB	3703m	N 13 14.134' E 38 08.134'	On edge of park allowing investigation inside park

Table 2.1. Campsites in the Simien

Figure 2.2. A map of the Simien Mountains showing campsites and Park Boundary



Chennek Camp (CC) – Wednesday 13th to Friday 22nd July

We spent 9 days in Chennek, the first two spent acclimatising to the altitude at 3621m, a large rise from the 2200m we had been used to in Gondar. We spent a week familiarising ourselves with the rodent surveying methodology as well as becoming proficient in large mammal and habitat assessment techniques. The weather was generally appalling in Chennek. Only on three occasions did the mist rise enough for us to see further than approximately 20 metres, which was frustrating when trying to get bearings in a new environment. It also rained on most days. Fortunately we were able to borrow a spare hut which is not used by the scouts and could dry off there. Ethiopian custom also requires that you should drink *buna*, or coffee, when asked. This ceremony can happen as many as five times a day and was a warm and very welcome refreshment after a day in the rain.

There was known to be at least one pack of around 6 wolves around the slopes of Bwahit. This made it an excellent area to start in because it was quite likely that we would see some wolves. Bwahit is a mountain that has traditionally marked the boundary between the accessible western area of the mountain range and the more inaccessible east. A road, which has only been graded in the last 10 years now stretches along the southern border of the park up to Bwahit and then heads south, past Sebat Minch, and on to Jannamora. Therefore positioning ourselves in this area would let us explore the wildlife and people of an area of the country which is connected, albeit tenuously, to towns outside the park such as Debark. This was an important consideration

when trying to plan our route around the park because we wanted to try to speak to as many different people from as many different lifestyles as possible.

Sebat Minch Camp (SM) – Friday 22nd July to Sunday 7th August

Next we moved on to Sebat Minch Camp, the last outpost of the newly expanded park. Sebat Minch means Seven Springs, which refers to the springs which are found up and down the sides of this spur of land. At 4010m, this was our highest campsite during the expedition, and was exposed on a small, windy plateau.

We had decided to spend two weeks at this campsite so that we could run two rodent trapping sessions. There was also a large area to be surveyed, which potentially encompassed three different packs of wolves. It had also been decided that the anthropology interview team would benefit greatly if they could spend some time in a village, living with the local people, as this would greatly enhance their abilities to obtain reliable data. As this would require time, a suitable village had to be selected in which they could spend time and introductions had to be made, this fitted in perfectly with the plans to carry out two rodent trapping sessions and also with the large mammal surveys and wolf monitoring.

The weather in Sebat Minch was much more agreeable than in Chennek. It seldom rained and because of the altitude and wind we experienced sunny, blustery days, occasionally with rain in the late afternoon. The nights were cold and again we had managed to borrow a hut in which to eat, cook and talk at night. The students from Gondar also joined the expedition at this campsite, so we were able to get good fieldwork done, now that the team was up to full strength. Sebat Minch could be split into three areas, Kechamo Bwahit, to the north of the campsite, covering the southern slopes of Bwahit to the environs of Sebat Minch, the second area. Thirdly there was the area known as Zana, following the road to the south as far as Sakba to the south-east and the plateau of Janamora to the west.

Adilemlem Camp (AD) – Monday 8th to Monday 15th August

This camp was further east into the mountains, well outside the park. Being eight kilometres south-east of Ras Dejen, Adilemlem was far from the usual tourist route and represented an area in which wolves were known to exist, unprotected by park legislation. It was at an altitude of 3818 m.

Adilemlem could only be reached by two days walking with mules from Sebat Minch, over Bwahit and then down into the valleys beyond before reaching the plateau of Beyeda and then up onto the afroalpine plains beyond. We reached the village of Adilemlem late in the day and camped out in a walled garden. The area around Adilemlem can broadly be split into three areas: Atterie, Arbarugrug (literally ‘Forty Swamps’) and Mirdirdar (‘Earth’). Atterie and Adilemlem were of interest because they contained areas where the long guassa grass had been protected from grazing in order to be used as thatch for houses. Therefore these were areas where we could investigate what the Simien might be like without the pressure of people and their agriculture. The area was also far from the main road and there was less interaction between local villages and the outside world.

The village of Adilemlem was approximately three hours walk from the town of Dilibza. The weekly market occurs here every Saturday. We sent four expedition members to Dilibza to talk to people. This was a real mountain town market where people from local villages all around come to barter and trade their home grown produce. This was a fantastic opportunity for us to explore an 'untouched' area of the Simien and was a great glimpse into the life of the average Simien villager. In order to get the best sampling out of our time behind Ras Dejen we thought it best to stay for one week in each of two separate sites. We therefore moved on to another area behind Ras Dejen, Matba.

Matba Camp (MA) – Monday 15th to Monday 22nd August

Matba was the second village that we explored 'behind' Ras Dejen. As mentioned above we also stayed here for a week only. The area was characterised by a long valley that rose steadily to a height of 3842m. The sides of the valley were mostly inhabited by villagers and their fields of barley, *tef* and sorghum. Even as high as we were, above the tree line, and with poor, infertile soil on steep slopes there was still a surprising amount of agriculture. This really highlighted the growing population problem in the Simien Mountains.

We were aware of two packs of wolves that we might encounter in the surrounding area. The packs are named after the area where they are normally seen, namely Gaudymada and Gaganbahar. This area proved difficult to traverse and was the most heterogeneous in terms of landscape.

The weather had now picked up from that which we experienced earlier in the expedition. It tended only to rain for a few hours in the afternoon, and there were even patches of a few days where it did not rain at all. However when the rain did come after these sunny intervals it was hard and long. The camp was therefore often waterlogged which proved slightly frustrating for the members of the expedition who did not have the best tents.

Generally this camp site was well positioned though, and it is from this base that the team tackled Ras Dejen. It was also the furthest from help, should anything have gone wrong and so it was necessary for everyone to be extra vigilant while they were working. There were several villages around with people who were happy to take part in interviews and the fact that we conducted research so far from the road, and outside influences, proved valuable to the results.

Ambaras Camp (AB) – Tuesday 23rd to Monday 29th August

Ambaras was our final camp in the Simien and was situated just south of the SMNP's southern boundary at an altitude of 3703m. This was a perfect place to investigate the status of the wolf population in the park. It again took two days walking from Matba across Bwahit and past our first camp at Chennek to reach. Indeed had we been able to do it in less time then we would have chosen one of the scout camps in the park, but it was felt that

the positioning of Ambaras near to the road would help speed up our arrival as well as our departure from the park.

Ambaras had a newly built medical centre which consisted of a concrete outbuilding with three rooms. At first we were given permission to use this facility for cooking, however permission for cooking was later withdrawn but we were still able to use the rooms for meetings. Everyday we would walk up and into the park to research the areas within the SMNP around Imet Gogo and Inatye, where wolves were known to exist but where limited livestock grazing also occurs. It was also our seventh and last week in the field and so we felt it necessary to spend some of the time visiting the 'picture card' scenes of the Simien. The landscape was generally easy to cover and magnificent to work in. Most of the area was plateau which ended abruptly at the northern edge of the park in dramatically steep cliffs, often over 1000 metres drop straight down.

There were also always people around to talk to, but our interviewers spent a lot of their time consolidating their interview data as well as talking to the Ethiopian members of the team.

3. Scientific Investigations

Clare Marsden and George Busby

3.1. Introduction

The highlands of Ethiopia are characterised by an extreme and unique climate which gives rise to the largest area of Afroalpine habitat in Africa (Marino, 2003). There are often strong drying winds and intense radiation during the day, regular frosts during the nights, and sometimes even snow settles on the tallest mountainous peaks[1] (Marino, 2003). The combination of this unique environment, extreme climate and isolation gives rise to a setting conducive to adaptation, extreme specialisation and speciation (Sillero-Zubiri and Macdonald, 1997; Marino, 2003).

The Afroalpine ecosystem in Ethiopia is dominated by Afroalpine grasslands and ericaceous heathlands. These largely consist of tree heather, *Erica arborea*, smaller plants, herbs, grasses and the unusual giant Lobelia, *Lobelia rhynchopetalum*, which at heights of up to 10 metres is a dominant feature in this largely treeless landscape. Afroalpine plant species have evolved a number of adaptations to the Afroalpine climate such as dessication resistance, temperature insulation and gigantism e.g. the Giant Lobelia (Figure 3.1.)[2] (Hedberg, 1970). They also have evolved a number of adaptations to the specific herbivores of this ecosystem.

Figure 3.1. Giant Lobelia can grow 10 metres tall.

With the ability to avoid temperature fluctuations by retreating to their burrows, rodents unlike larger mammals are particularly well suited to the Afroalpine environment and are the dominant herbivores in this ecosystem (Marino 2003). Although some large herbivores such as the Walia ibex (*Capra walie*) and mountain nyala (*Tragelaphus buxtoni*) are present, they are rare and occur at low densities. By contrast rodents can reach biomass densities of up to 26 kg/ha which is considered by some to be comparable to the biomass density of medium and large mammals in the African grasslands (Marino, 2003). Rodent abundance has been shown to be strongly linked to vegetation type (Marino, 2003). For example in the Bale Mountains, the highest densities of rodents are found in *Alchemilla* meadows and rocky grasslands, whereas the lowest were found in *Helichrysum*

[1] http://whc.unesco.org/en/list/9
[2] www.ethiopianwolf.org; www.worldwildlife.org

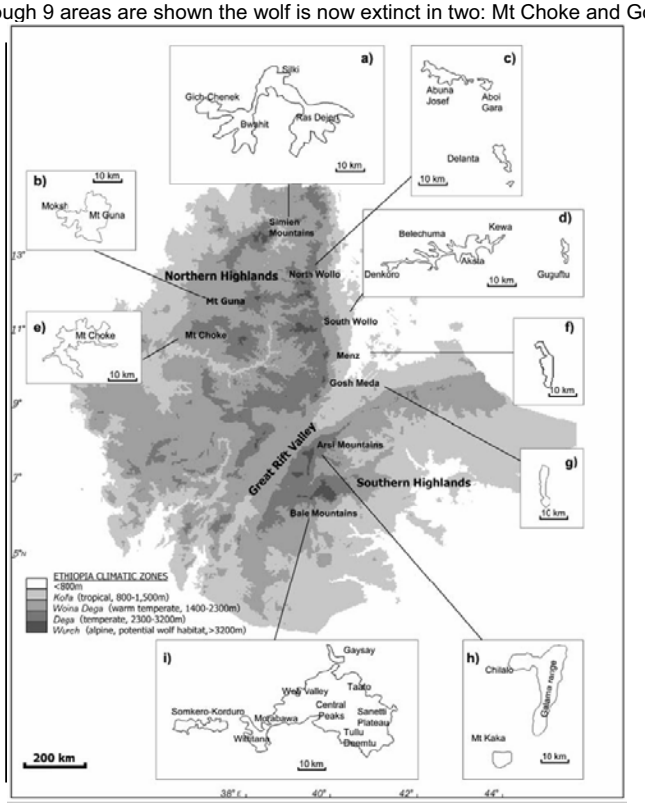
heaths and *Artemisia* grasslands (Sillero-Zubiri, 1995; Marino, 2003). Twenty six rodent species are found in the Afroalpine habitats of Ethiopia, including 10 endemic species. The Afroalpine rodents have a number of adaptations to the extreme conditions – many reduce heat loss through diurnal behaviour and a large body size, others have evolved more unique specialisations; the eyes of the giant mole rat have moved to the top of its head so it can scan for predators whilst the majority of its body still within the burrow (EWCP; Marino, 2003).

The Ethiopian wolf is a medium sized canid endemic to Ethiopia (Sillero-Zubiri and Gottelli, 1994). Figure 3.2. shows the distribution of the wolves over the whole of Ethiopia. They have been described as surviving in *"small habitat islands within a sea of barly fields and settlements"* (Marino, 2003, p3). Like other canids, the Ethiopian wolf lives in social packs (2-13, mean 6, adults with dependent young) that communally defend a territory (Gottelli and Sillero-Zubiri, 1994; Sillero-Zubiri and Macdonald, 1997). Atypically for canids, the Ethiopian wolf is a specialist feeder with a narrow ecological distribution, being restricted to afroalpine highlands, where it feeds almost exclusively on rodents. Diverging from the grey wolf, *Canis lupus*, during the Pleistocene (Gottelli et al, 1994), the Ethiopian wolf has evolved a number of unique morphological adaptations for example its long legs and muzzle, and behavioural habits, such as solitary foraging (Marino, 2003). These adaptations have evolved in relation to their extreme dietary specialisation to rodent prey, which constitute more than 90% of their diet (Sillero-Zubiri and Gottelli, 1995a).

Unfortunately, however, this specialisation, that at one time enabled the Ethiopian wolf to be highly successful, now puts it at great risk (Marino, 2003). Over the past 10,000 years the area of afroalpine habitat has dramatically declined in response to changes in climate (Gottelli and Sillero-Zubiri, 1992). More recently, habitat contractions have occurred as a result of human population growth and habitat degradation, a consequence of the Afro-alpine ecosystem supporting one of the densest rural populations in the world. Estimates of the current global Ethiopian wolf population currently stand at a total of fewer than 500 individuals, distributed between the 7 remaining small isolated afroalpine remnant fragments. These small populations are at risk from both environmental and demographic stochasticity, in addition to the continuing threats of hybridisation, habitat loss, persecution and disease. Consequently, the Ethiopian wolf, is currently the world's most endangered canid (Marino, 2003; Ashenafi et al, 2005), surviving in one of the world's most threatened ecosystems.

In summary, the combination of both a unique environment and isolated ecosystem of the Ethiopian highlands has resulted in a divergent, highly adapted and specialised community of unique and intricately linked species.

Figure 3.2. Map to show the distribution of Wolves in Ethiopia (Marino, 2003)
Note that although 9 areas are shown the wolf is now extinct in two: Mt Choke and Gosh Meda



3.1.1. The Simien Mountains

The Simien Mountains contain the largest area of Ethiopian wolf habitat in the Northern highlands, the third largest overall (Marino, 2003), and therefore it represents an extremely important population in terms of global population sustainability. It is thought to contain an estimated population of around 50 wolves (Sillero-Zubiri and Macdonald, 1997; Marino, 2003) but due to limited funding, this area has received little research effort (Sillero-Zubiri and Macdonald, 1997). Consequently the effective conservation of this population of wolves is being hindered by a lack of baseline knowledge.

The Simien Mountains follow a wet dry season cycle, despite being classed as having a temperate climate. Approximately 75% of precipitation falls between June and September as predominantly hail, rain and mist resulting in a mean annual rainfall of 1550mm[1] (Sillero-Zuberi et al, 1995; Hunter, unpubl). Temperatures are relatively consistent throughout the year, however there are large diurnal fluctuations ranging from a minimum of -2.4-4°C at night to a maximum of 11-18°C during the day[2] (Hunter, unpubl).

The Afroalpine vegetation of the Simien Mountains consists of grass/herb communities with scattered patches of giant heather, *Erica arborea*, and Giant St Johns Wort, *Hyperiucm revolutum*, with shrub forests at lower

[1] http://whc.unesco.org/en/list/9
[2] www.worldwildlifefund.org

altitudes (3,000 m asl ~ 3,800 m asl). Above the treeline, the vegetation is replaced by short and long grass steppe communities dotted with the strange and characteristic Giant Lobelias dominating (Hunter, unpubl). The grasses, known collectively as *Guassa*, provide many uses for the local people, from rope to thatch. At the very highest altitudes scree and rubble intersperse the sparse herb vegetation.

The large mammal fauna of the Simien Mountains include the Walia ibex, *Capra ibex walie*, (endemic to the Simien Mountains), and the Gelada monkey, *Theropethicus gelada* in addition to the Ethiopian wolf (endemic to Ethiopia).

With one of the densest rural populations in Africa, the natural habitat in the Simien Mountains is under increasing pressure (Gottelli and Sillero-Zubiri, 1992). The majority of habitat below the tree line (<3800 m asl) has been converted to agriculture (the altitudinal limit for barely and *tef* cultivation being i.e. 3,700 – 3,900 m asl). Above these heights livestock grazing is widespread. Consequently Ethiopian wolves are now restricted to the increasingly overgrazed and disrupted Afroalpine habitat above 3,700 m asl (Marino, 2003; Hunter, unpubl).

3.1.2. The Simien Mountains National Park

As of 1969, a small section, 27km^2, of the Simien Mountains has been designated the Simien Mountains National Park (SMNP). In 1978 a larger area of 169km^2 in the Mountains was designated a World Heritage Site by UNESCO. These designations were designed to afford protection to the unique flora and fauna. Within the park it is forbidden to kill, harm or disturb any part of the natural flora and fauna, and domestic dogs that venture outside the villages risk being shot by patrolling park scouts. Grazing is allowed in a few concessionary areas within the park, and only at certain times of the year. However, until 2003, only 27 km^2 of the potential 273 km^2 of Ethiopian wolf habitat occurred within the SMNP. Furthermore, despite these protections, degradation of the Afroalpine habitat has continued. Consequently, in 1996, the SMNP was listed a World Heritage Site in danger (UNESCO website).

On arrival in the SMNP, the expedition was told that since 2003 the park has been extended to surround the whole of the main Simien plateau and southward past Sebat Minch. Although no detailed map was available to the team, an attempt to construct the new boundary can be seen in Figure 2.1. Now larger, the park will include more of the potential wolf habitat, but it is difficult to quantify this without the true map of the new boundary.

3.1.3. Study sites

Research was conducted in five study areas within the Simien Mountains (detailed in chapter 3), all of which were classified as afroalpine habitat and found above 3,500 m asl. The 5 sites were:

1. Chennek
2. Sebat Minch
3. Adilemlem
4. Matba
5. Ambaras

However, due to time and energy constraints, the survey effort was lower in Ambaras, and rodent and habitat surveys were not completed in this area. Table 3.1. below shows the numbers of surveys performed in each of the study sites.

CAMP	Altitude (m asl)	Habitat Assessment	Rodent surveys	Large mammal	Total
Chennek	3529 – 4248	10 (136)	2	6	**18**
Sebat Minch	3628 – 4215	11 (136)	6	10	**27**
Adilemlem	3797 – 4207	9 (117)	3	4	**16**
Matba	3740 - 4286	7 (77)	3	2	**12**
Ambaras	3703 – 3924	0	0	2	**2**
Total	3529 - 4286	37 (466)	14	24	**75**

Table 3.1. A summary of the surveys conducted in each of the study sites.

3.2. Scientific Aim

The scientific section of this report aims to investigate the status of the Ethiopian wolf in the largely unstudied Simien Mountains of Northern Ethiopia. Research in the Bale Mountains of Southern Ethiopia, where the largest population of Ethiopian wolves are found, shows strong correlations between vegetation type, rodent biomass and wolf abundance. Consequently, the Lone Wolf Project took a three tier approach with its research into the status of the wolf in the Simien Mountains. We investigated the status of the Ethiopian wolf, its prey and its habitat.

3.2.1. Justification of Aim

Habitat survey

Landscapes are inherently heterogeneous, consisting of a matrix of habitat patches which vary in habitat type and quality. This heterogeneity is not only caused by abiotic factors such as soil type but also by human factors such as grazing. As a result of niche requirements, this heterogeneity has implications for individual species, who view these patterns as ‘good’, ‘marginal’ or ‘poor’ patches. Thus the distributions of species reflect the patterns at the habitat scale (Marino, 2003).

Habitat type has been shown to be a major factor influencing rodent distribution and abundance and therefore surveys of the afroalpine habitat in the Simien Mountains were fundamental to an assessment of the status of the Ethiopian Wolf in this population. The habitat surveys were conducted with two primary objectives in mind.

1. To describe the habitat quality of each of the study areas and the Simien Mountains in general.

2. To use these data to investigate the influence of habitat on the rodent community.

Small mammal survey

With rodent species constituting the majority of the Ethiopian wolf's diet (>90%) and consequently being the primary factor influencing the distribution and abundance of wolves, researchers have highlighted the importance of a complete understanding of rodent distribution, abundance and biomass within Ethiopian wolf populations for the planning of their future conservation (Sillero-Zubiri and Macdonald, 1997). (Sillero-Zubiri et al*,* 1995; Sillero-Zubiri and Gottelli, 1995a,b; Sillero-Zubiri and Macdonald, 1997).

The vast majority of studies of afroalpine rodent populations in Ethiopia have been conducted in the Bale Mountains where strong correlations between habitat type, rodent biomass and wolf abundance were found. These findings have subsequently been extrapolated for other Ethiopian wolf populations. It is not known, however, if these findings are similar in other wolf populations, specifically the afroalpine habitats in Northern Ethiopia, which are known to differ ecologically (Burnand, 1998). For example, in the Bale Mountains, the giant molerat (*Tachyorctes macrocephalus*) is the wolf's primary prey item because this species is significantly larger (~930g) than all other available rodent species (50g-140g) (Sillero-Zubiri and Gottelli, 1995a,b; Ashenafi et al 2005). However this species is absent in the Simien.

The objective of this study was to investigate the species composition and abundance of rodents in the unique afroalpine habitats of the Simien Mountains.

Large mammal survey

Large mammals, such as the Ethiopian wolf, are generally at the top end of complex trophic webs. As such, they are usually the first to suffer when habitat begins to degrade. The main aim of the large mammal transects was to obtain an understanding of the species composition and densities in the Simien. Aside from these uses, transects allowed us to cover ground quickly and effectively to search out the wolves of the Simien. A broader understanding of the numbers and densities of large mammals in the Simien will allow inferences about the state of the ecosystem to be made. These surveys were conducted to provide estimates of the actual large mammal and livestock numbers, and to enable approximations of the grazing pressure, in each of the areas of study. The aim was then to use the data in conjunction with the habitat assessments in order to better understand the resource pressures on the wolf.

3.3. Lone Wolf Project Surveys

3.3.1. Habitat Quality Assessments

Methods

Habitat Assessments

We conducted habitat assessments in four of the study areas, Chennek, Sebat Minch, Adilemlem and Matba with the standard methodology utilised by the EWCP and Marino (2003). In each area we walked line-transects of 2.0 – 4.6 km in length on a set bearing. Every 200m a quadrat (point sample) of 5m radius was drawn and data on landscape type, ground cover, vegetation characteristics and rodent, livestock and wildlife signs were recorded (Marino, 2003).

Landscape was assessed through measurements of altitude, terrain form and slope. Ground cover was assessed as the percentage of soil, vegetation and rock cover within the quadrat according to Braun-Blanquet scale; 1 = <5 %, 2 = 5-25 %, 3 = 25-50 %, 4 = 50-75 %, 5 = 75-100%. Vegetation type and structure was assessed by measurements at three levels; <5cm: ground level, 5-30 cm: herbaceous level and >30 cm: shrub level. At each level the species present were recorded to the lowest taxonomic resolution possible. In addition, the height of shrub level was also noted as absent, 0.3 – 1 m, 1- 2 m, >2 m. The overall habitat type for the area immediately surrounding the quadrat was classified based on a list of habitat types devised by the EWCP. Rodent signs, i.e. murine rodent holes (hereafter referred to as rat), and common molerat holes (hereafter referred to as molerat), were counted in each quadrat and classified as either old or new. Livestock and wildlife droppings were counted and identified in each for each quadrat. Ethiopian wolf digouts were also recorded (Marino 2003).

These transects resulted in a systematic sampling regime for each of the study sites. By conducting multiple transects, the habitat of a complete study area was assessed.

To investigate the importance of habitat type and habitat quality on the rodent community, data for all study sites were pooled, and relationships between the different variables investigated.

Rodent hole transects

An additional methodology was used to investigate any differences in rodent abundance arising from grazing pressure within study areas. The total number of rodent holes in a 0.4 ha quadrat was counted every 200m along a 2 km transect. This larger quadrat size was chosen to allow for the very patchy distribution of rodent holes noted during field observations. Due to time restrictions, this methodology could only be conducted in two of the study areas: Sebat Minch and Adilemlem.

Results

Habitat status

Landscape characteristics

The study areas had landscapes typical of the Simien Mountains (Table 3.2.), that is, highland plateaus split by deep valleys. Such topography is in contrast to the Bale Mountains, which are characterised by extensive plateaus. Sebat Minch had the gentlest slopes of all the study sites, whereas Chennek which is positioned near the steep Northern escarpments had the steepest.

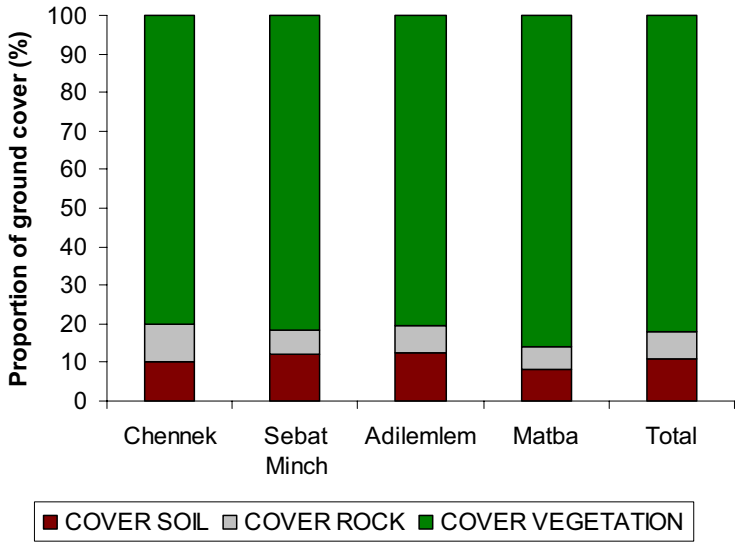
Table 3.2. Terrain and slope characteristics for the four study sites.

	Chennek	Sebat Minch	Adilemlem	Matba
Terrain				
Plateau	23%	24%	36%	27%
Slope	69%	73%	63%	66%
Crag	4%	1%	0%	0%
Swamp	4%	3%	4%	7%
Slope				
Flat	2%	1%	8%	0%
Gentle	15%	40%	27%	27%
Moderate	63%	48%	44%	48%
Steep	20%	10%	22%	25%

Ground cover

Vegetation was the dominant ground cover across study areas (≥80%) (Figure 3.3.). Sebat Minch and Adilemlem had slightly higher soil cover than both Chennek and Matba. Soil exposure frequently results from grazing related erosion and therefore these data could indicate a slightly higher grazing pressure in Sebat Minch and Adilemlem.

Figure 3.3. Proportion of ground cover in each of the study sites



Herbaceous cover

Herbaceous cover was notably lower in Sebat Minch and Adilemlem, than Chennek, which had the highest mean herbaceous cover/quadrat, and Matba (Figure 3.4.). These data provide further evidence indicative of high grazing pressure in Sebat Minch and Adilemlem. It was common to find <5% herbaceous level in all study areas which suggests grazing is widespread across the Simien.

Shrub cover

Shrub level vegetation is vulnerable to grazing because it is has both slow growth and slow regeneration. Similar to the Herbaceous cover findings, Sebat Minch had the lowest shrub cover of any site (Figure 3.5.), with shrubs present in just 33% of quadrats, indicating a high grazing pressure. However, it is concerning to note that in Chennek, Adilemlem and Matba, the proportion of shrubs in the 0.3 – 1 m category was always less than that in the 1 – 2 m or ≥2 m categories. This could indicate a lack of regeneration due to grazing of the vulnerable small shrub height classes. Of the four shrub species recorded, Erica, giant Lobelia, Red hot poker (*Knipholia foliosa*) and Helichrysum, giant Lobelia was the most common (~ 70%). This slow growing species is unlikely to regenerate under intensive grazing pressure (Burnard, 1998).

Habitat type

The habitats of the study areas were classified into seven types. Chennek had the widest diversity of habitat types, whereas Matba had the lowest (Figure 3.7.) although some of the lower diversity in Matba may be explained by the lower sampling effort in this study site. Habitats of all study sites were dominated by Guassa-Lobelia habitat (Figure 3.6.). The presence of Lobelia is strongly effected by grazing. Giant Lobelia are semelparous, flowering only once after approximately 20 years of growth, before dying. Low intensity grazing generates soil patches which are needed for Lobelia seed germination, promoting the formation of Lobelia stands (Figure 3.6.). However, grazing and hoof damage caused during intensive grazing kills Lobelia plants and results in a steady decline and eventual loss of Lobelia (Figure 3.6.) (Burnard, 1998). Lobelia stand habitat was found at moderate abundance in Adilemlem and low abundance in Sebat Minch, but was absent in other areas. Sebat Minch had a much higher abundance of Guassa grassland habitat (18%) than the other study sites (≥7%). These data would indicate high grazing pressure in Sebat Minch and a moderate grazing pressure in Adilemlem It is also important to note that Erica moorland and Erica Guassa Lobelia habitat were only found in study sites within or at the edge of the National park, i.e. Sebat Minch and Chennek.

Figure 3.4. Proportion of quadrats with different herbaceous level coverage (%) in each study site.

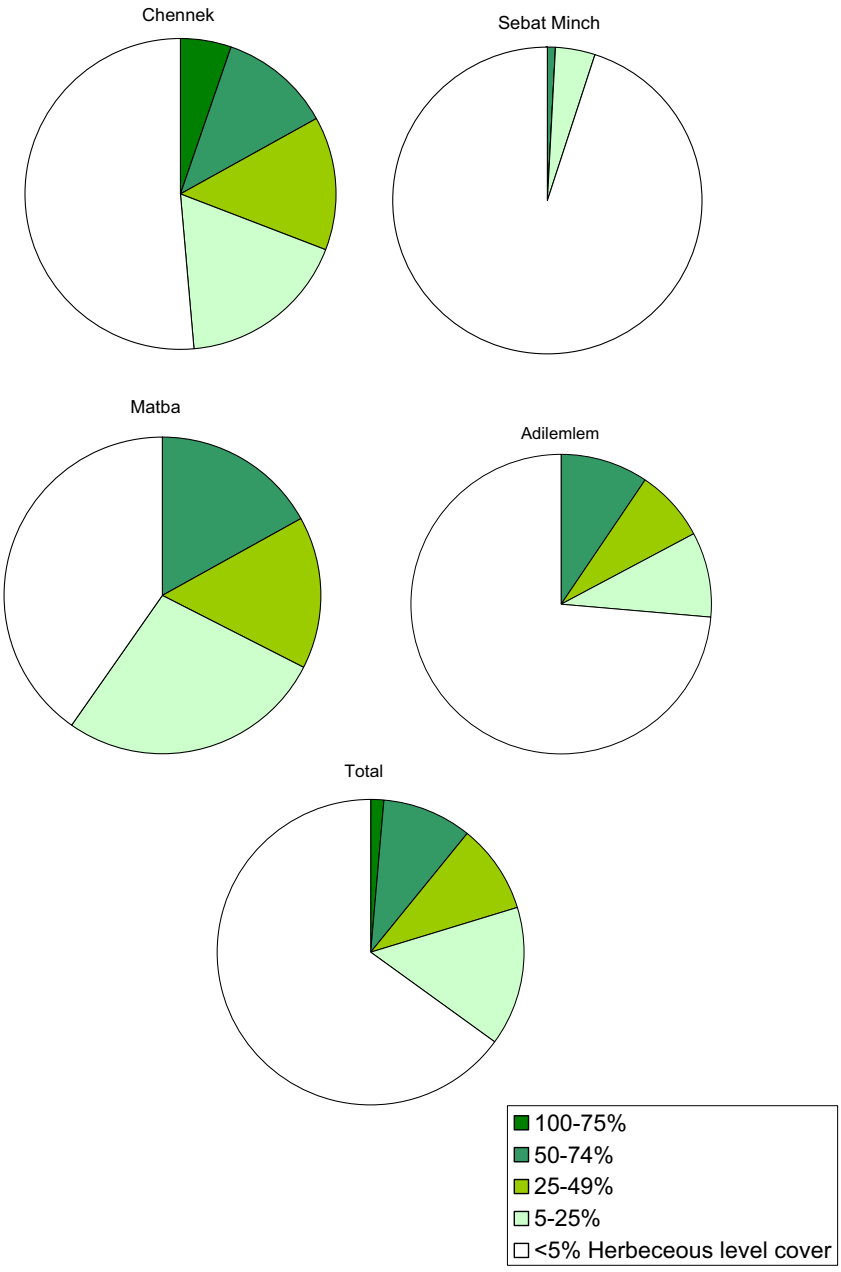


Figure 3.5. Proportion of quadrats with shrubs in different height categories for each study site

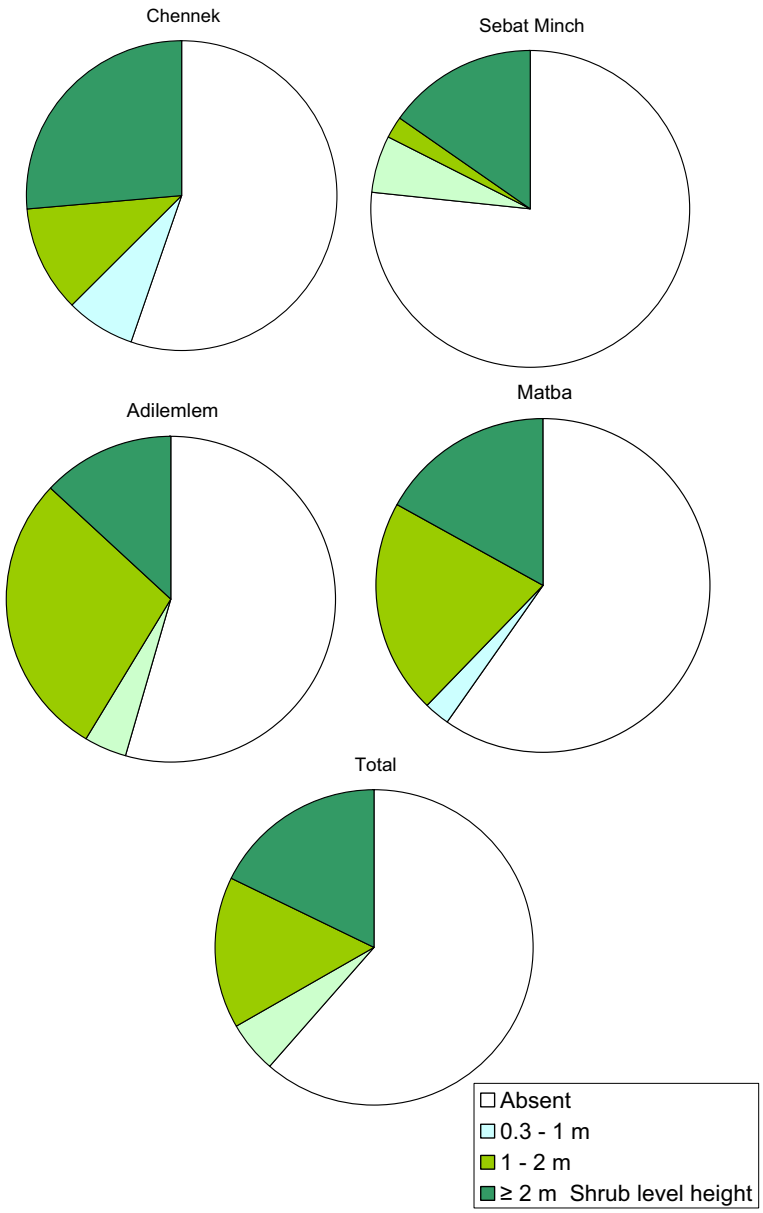
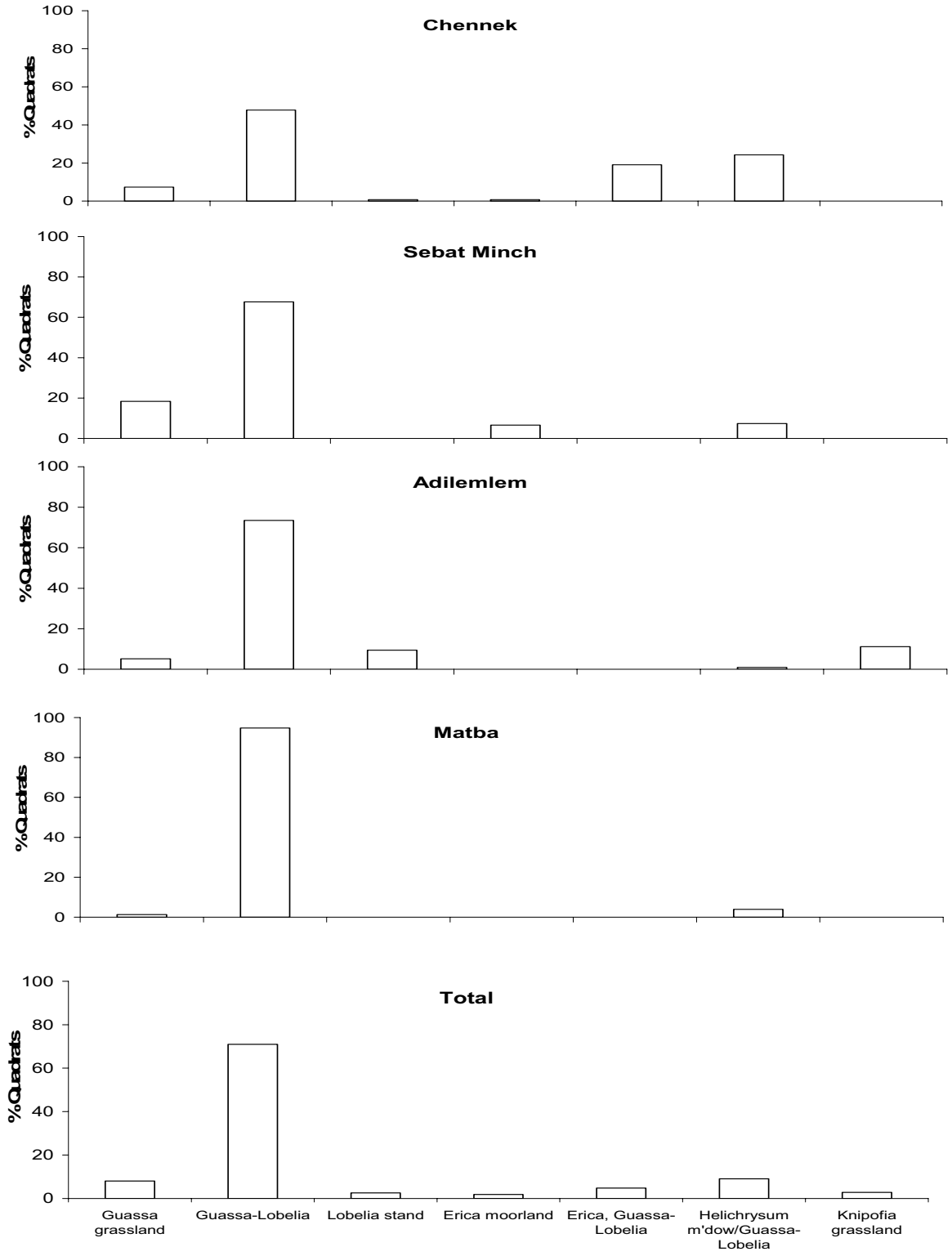


Figure 3.6. From top: photographs of Guassa-Lobelia, Lobelia stand and Guassa habitat. Location of sites were across a grazing gradient from within a protected area where grazing intensity is very low (Guassa-Lobelia habitat), just outside of the protected area where grazing intensity is low – medium (Lobelia stand) and far outside the protected area where grazing intensity is high. (Photographs - Marsden)

Figure 3.7. Habitat types of study areas, as percentage of quadrats recording each habitat type.



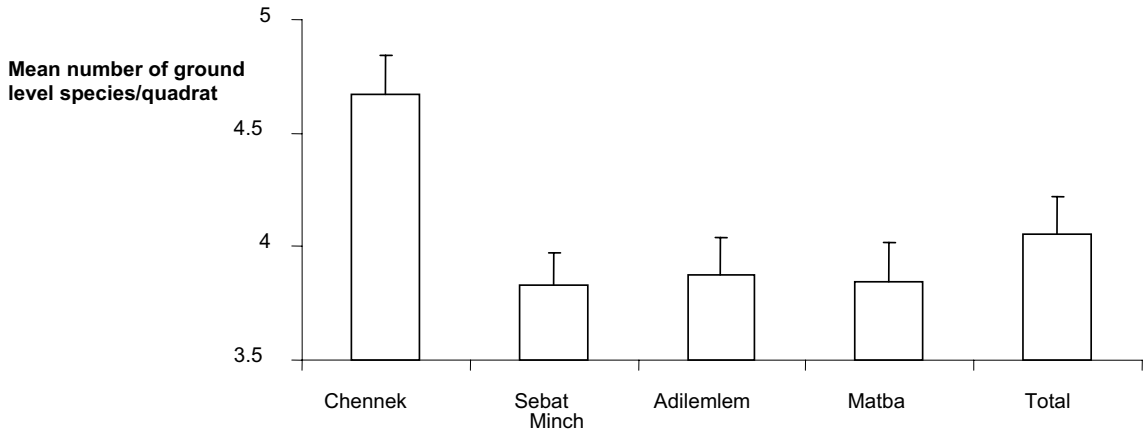
Erica arborea

As one of just a few woody species found in the Simien, *Erica arborea,* is utilised for fuel and building. The utility of this species, combined with the slow regeneration and growth rate, means that Erica is at conservation risk and has been made a protected species. Erica plants were found at ground, herbaceous, shrub and habitat level in Chennek and Sebat Minch however they were absent from Adilemlem and Matba with the exception of one herbaceous level specimen. It is possible that this is attributable to the higher elevation of Adilemlem and Matba because this species is restricted by altitude with the upper limit being the tree line at 3,700 m asl - 3,900 m asl (Hunter unpubl). However in this study, Erica shrub was noted at altitudes of up to 3,900 m asl, and herbaceous/ground level specimens were frequently recorded above 4,000 m asl, indicating that altitude is unlikely to be the cause of absence of Erica in Adilemlem and Matba. Although *Erica* is officially protected, Nievergelt (1998) reported an accelerated decline in this species in the Simien Mountains and our expedition found evidence of cutting of Erica shrubs, in addition to illegal use of Erica in building materials (at Sebat Minch). Consequently, it is possible that the lack of Erica shrubs in Adilemlem and Matba is the result of human related deforestation. The restriction of Erica to the National Park suggests that the Park affords increased protection because these areas are more frequently visited by the authorities.

Number of species

Chennek recorded the highest diversity of vegetative species of any study area (27). However, total diversity measures across study areas are vulnerable to the influence of sampling effort. The mean number of species per quadrat provides a less bias comparative metric (Figure 3.8.). Chennek had significantly higher numbers of species per quadrat across ground, herbaceous and shrub levels, than any other site (One Way ANOVA, Tukey's pairwise comparisons between Chennek and: Sebat Minch $p < 0.001$, Adilemlem $p < 0.01$, Matba $p < 0.001$). The number of species per quadrat at the other sites was not significantly different (data not shown). At low levels, grazing is likely to increase vegetation diversity because it prevents any species from becoming dominant. However, at higher levels, it results in the loss of species. The higher diversity of vegetative species in Chennek is indicative of lower grazing pressure comparative to the other study areas.

Figure 3.8. Shows the mean number of ground level species per quadrat



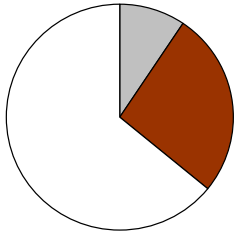
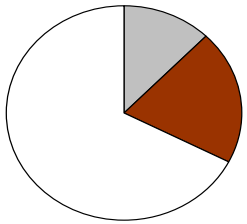
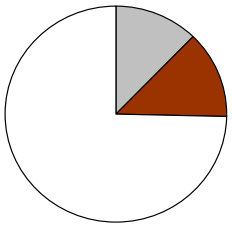
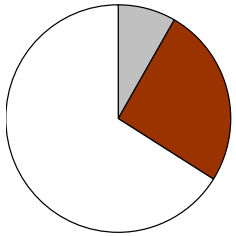
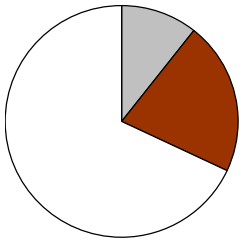
Large Mammal signs

Evidence of livestock droppings were extremely high, that is above 98%, in all four study areas (Table 3.3.). Across the study areas sheep/goat were the most common type of droppings recorded (64-75%), followed by cattle (13-26%) and then donkeys/mules (8-12%). This matches the comparative densities of different livestock types estimated from the large mammal surveys (section 3.3.3.). Interestingly, in the Bale Mountains, cattle were more common than sheep or goats. This difference may be related to cultural or financial factors or it could be attributable to sheep/goats requiring less care and being more suitable to the more mountainous terrain of the Simien Mountains. A particular caveat to this fact is that during the expedition, a cow fell off a steep cliff and died in Matba. Livestock species are known to differ in their grazing patterns. For example, cattle are known to have a large trampling effect, whereas sheep graze plants to shorter lengths. Consequently, these differences may have important implications for the extent of impact caused by grazing in the Simien Mountains.

Droppings of three wildlife large mammal species were found; the Walia ibex (*Capra ibex walie*), the common jackal (*Canis aureus*) and the Gelada (*Theropithecus gelada*) (Table 3.3.). Walia ibex and Gelada signs were much more common in Chennek than any other site (Table 3.3.). This is likely to be the result of the suitability of the steeper terrain and specific habitat of Chennek to these species, and its relative proximity to the park.

Signs of the Ethiopian wolf, either droppings or dig-gouts, were found infrequently across all study areas (Table 3.3.).

Table 3.3. Large mammal signs found during habitat assessments surveys at each of the study areas.

		Chennek	Sebat Minch	Adilemlem	Matba	Total
Livestock droppings						
Presence (% quadrats)		98.5	99.3	98.3	100.0	99.0
Average no/quadrat (sem)		13.6 (0.703)	11.6 (0.447)	17.1 (0.923)	14.5 (0.816)	14.0 (0.373)
Proportion of livestock droppings attributable to						
Wildlife signs*						
WI	Presence (% quadrats)	12.5	2.2	-	-	3.4
GB		15.4	3.7	-	-	4.8
CJ		-	-	0.8	-	0.2
Ethiopian wolf signs (droppings+digouts)						
Presence(% quadrats)		1.5	1.5	2.6		1.3

*WI = Walia ibex, GB = Gelada baboon, CJ = common jackal

Rodent signs

Signs of both rats and molerats (CMR) were found in all study areas, with the exception of Matba where only rats were found (Table 3.4.). Molerats were comparatively rare, being present in far fewer quadrats than rats across all study areas. Chennek, Adilemlem and Sebat Minch had broadly similar abundances of rodent signs. Signs were present in 40-50% of quadrats and the average abundance of holes/quadrat being 0.53 – 0.58. By contrast, in Matba, only a small percentage (6.5%) of quadrats had any rodent signs, and the average abundance of holes/quadrat was just 0.04. Overall, these abundances are considerably lower than results for the Bale Mountains, where a mean of between 3 - 22 rat holes and 0 - 11 molerat holes/quadrat are found depending on vegetation class. The Bale Mountains is reported to naturally have a particularly rodent rich habitat unrivalled by other Afro-alpine areas (Marino 2003), therefore a lower abundance of holes/quadrat was expected. However, the scale of difference is surprising, and indicates that the rodent populations in the Simien Mountains are considerably lower than the Bale Mountains.

Table 3.4. Rodent sign results from habitat quality assessment transects of the four study areas. R-N = new rat holes, R-O = old rat holes, CMR = Common Molerat holes, T = total. tn = number of transects conducted; qn = total number of quadrats conducted across all transects.

		Chennek (tn = 10; qn = 136)	**Sebat Minch (tn = 11; qn = 136)**	**Adilemlem (tn = 9, qn = 117)**	**Matba (tn = 7, qn = 77)**
	Altitude (m asl)	3,529 – 4,248	3,628 – 4,215	3,797 – 4,207	3,740 - 4286
Presence (% quadrats)	R – N	27.94	30.88	32.48	2.60
	R – O	35.29	24.26	21.37	3.90
	CMR	6.62	7.35	14.53	-
	T	**50**	**41.91**	**44.44**	**6.50**
Abundance, av.holes/quadrat (sem)	R – N	0.77 (0.14)	1.02 (0.18)	0.89 (0.15)	0.04 (0.03)
	R – O	0.69 (0.10)	0.43 (0.08)	0.47 (0.09)	0.08 (0.05)
	CMR	0.12 (0.12)	0.25 (0.12)	0.38 (0.11)	-
	T	**0.53 (0.06)**	**0.56 (0.08)**	**0.58 (0.07)**	**0.04 (0.02)**

The influence of habitat type and quality on rodent communities

As the primary prey species of the Ethiopian wolf, future conservation planning requires knowledge of the factors influencing rodent distribution and abundance. To investigate the relationship between grazing pressure and herbaceous level cover, the average number of livestock droppings were calculated for quadrats in each herbaceous level cover category using pooled data for all study sites (Figure 3.10.). As expected, this showed that quadrats with higher amounts of herbaceous level cover (i.e. 100-75%, 74-50%, 49-25%) had fewer livestock droppings. A less clear relationship was evident with the average number of rodent signs plotted in the same way (Figure 3.11.). With the exception of the 100-75% category, there was a general trend of decreasing rodent signs with decreasing herbaceous level cover. However the 100 - 75% herbaceous level cover has the lowest number of signs of any herbaceous level.

Figure 3.10. Number of livestock droppings/quadrat in differing levels of herbaceous level cover, using pooled data from all study sites. (Error bars ± 1 standard error of mean)

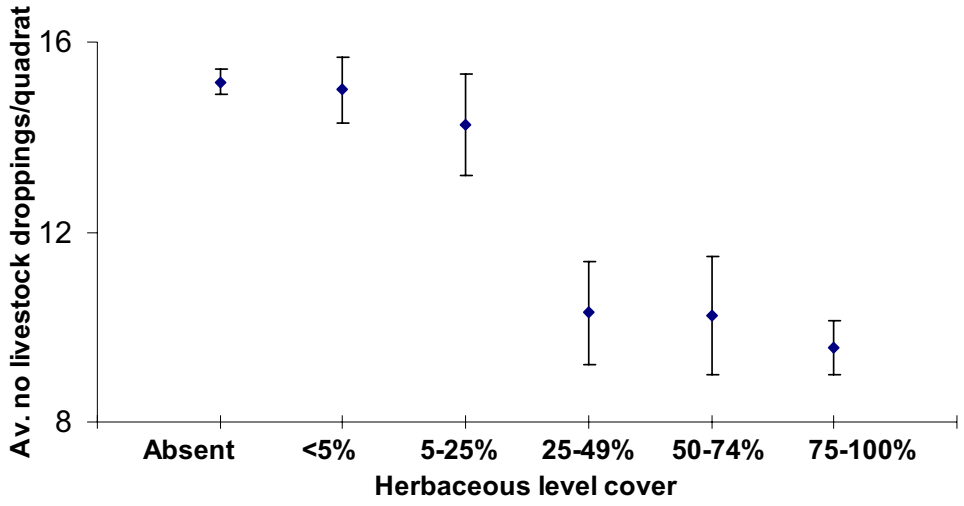
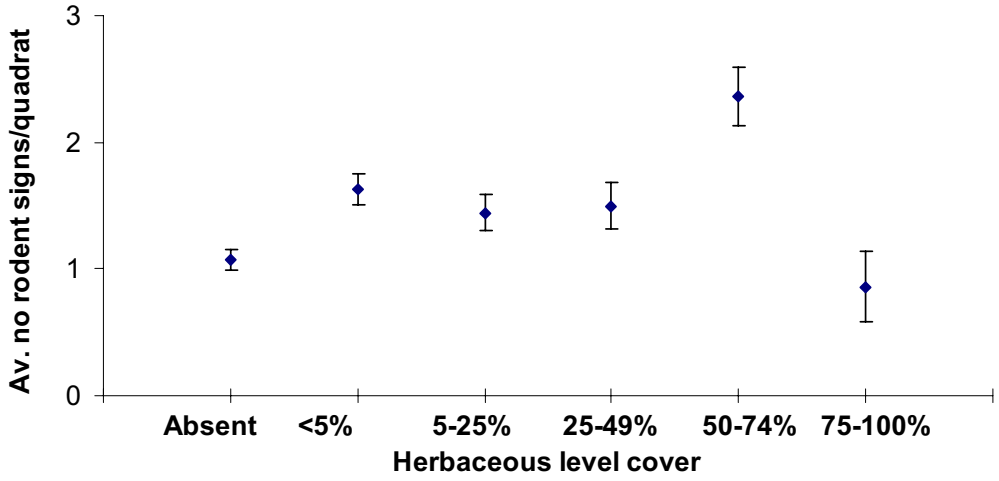


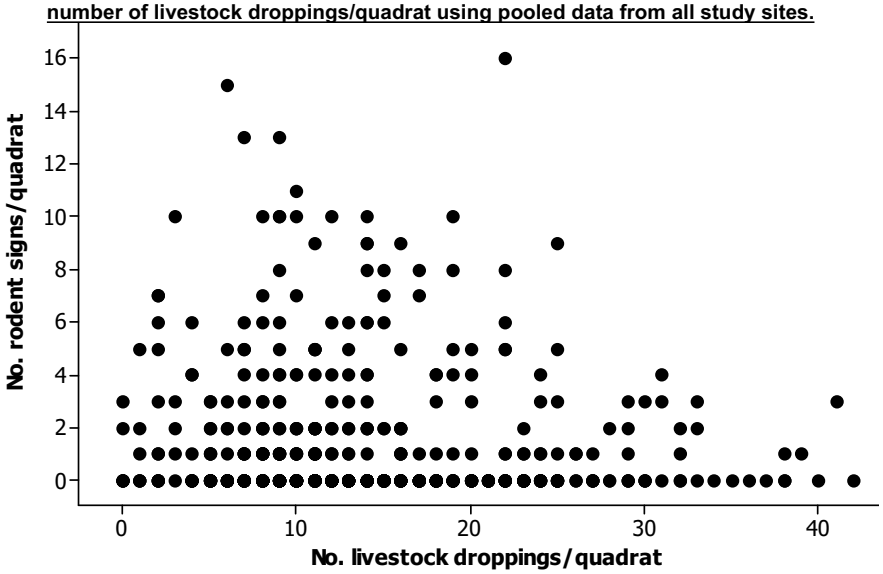
Figure 3.11. Number of rodent signs /quadrat in differing levels of herbaceous level cover, using pooled data from all study sites.

(Error bars ± 1 standard error of mean)



A significant negative relationship was found between the number of rodent signs and number of livestock droppings per quadrat (Figure 3.12.), however, there was substantial variation in the data and therefore the correlation value is very small ($p = 0.049$, $r = 0.09\%$). Nonetheless, it can be seen that quadrats with larger numbers of livestock droppings (>27) never recorded more than 4 rodent holes/quadrat, whereas quadrats with lower numbers of livestock droppings, recorded up to 16 rodent holes/quadrat. The large variation in the data may be partially attributable to the fact that the correlation is based on pooled data across different habitat types, but habitat type is a factor known to influence rodent abundance. Furthermore, the general low abundance and patchy distribution of rodents resulted in a large number of zero's recorded in the data.

Figure 3.12. Pearson's correlation between the number of signs /quadrat and number of livestock droppings/quadrat using pooled data from all study sites.



To investigate the influence of habitat type on rodent distribution, rodent sign data were pooled across the study areas, and plotted against habitat type. This was done separately for rats (Figure 3.13.) and molerats (Figure 3.14.). The differences in abundances of rat and molerat signs between habitat types likely reflect differences in habitat preference between species e.g. Erica moorland had a high abundance of molerats, but low abundance of rats. Considering the influence of grazing on Lobelia it is interesting to note the differences in rat and molerat signs between Guassa grassland, Guassa-Lobelia and Lobelia stand habitats (Figure 3.13., Figure 3.14.). Molerat signs were much higher in Lobelia stand habitat, which likely reflects the tendancy of common molerats to have burrows near Lobelia plants (field observations). Rat signs were similarly high in Guassa-Lobelia and Lobelia stand habitat, however they were considerably lower in Guassa grassland, a habitat that results from intensive grazing. Together these data might indicate that through its effect on habitat, intensive grazing has a negative impact on rat abundance, but that moderate grazing has no effect on rats, and is beneficial to molerats.

Figure 3.13. Mean no. new rat signs/quadrat according to habitat type. (Error bars are ± 1 standard error)

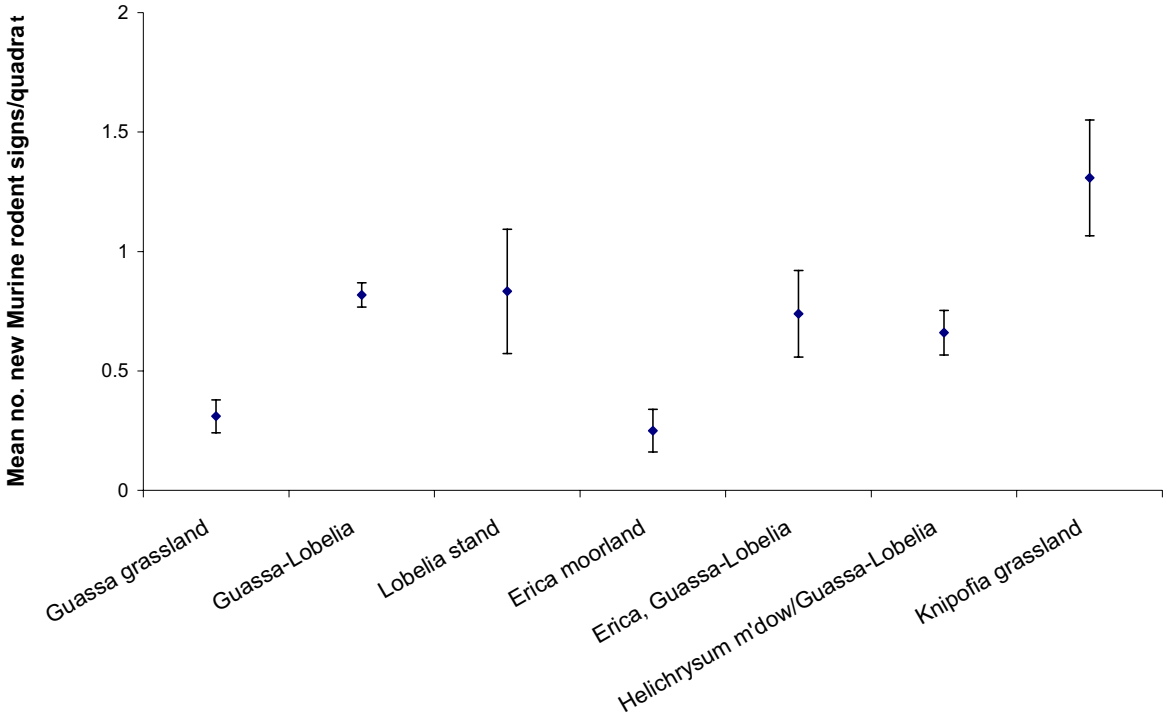
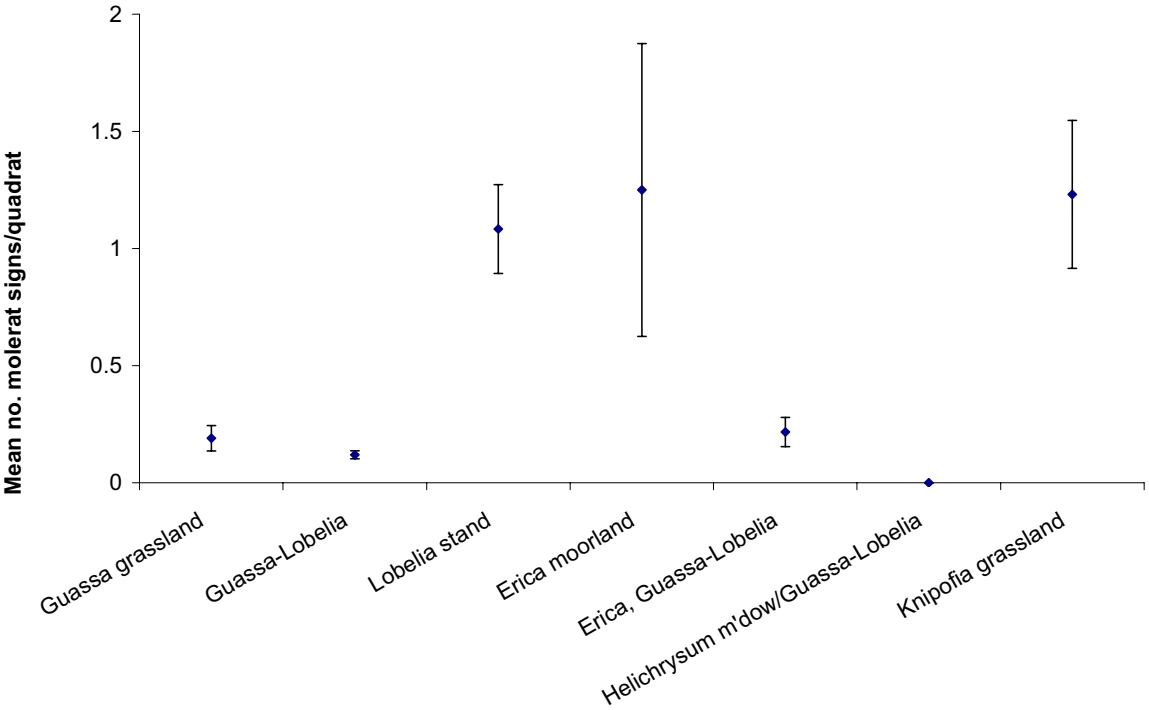


Figure 3.14. Mean no. of molerat signs/quadrat according to habitat type. Error bars are ± 1 standard error



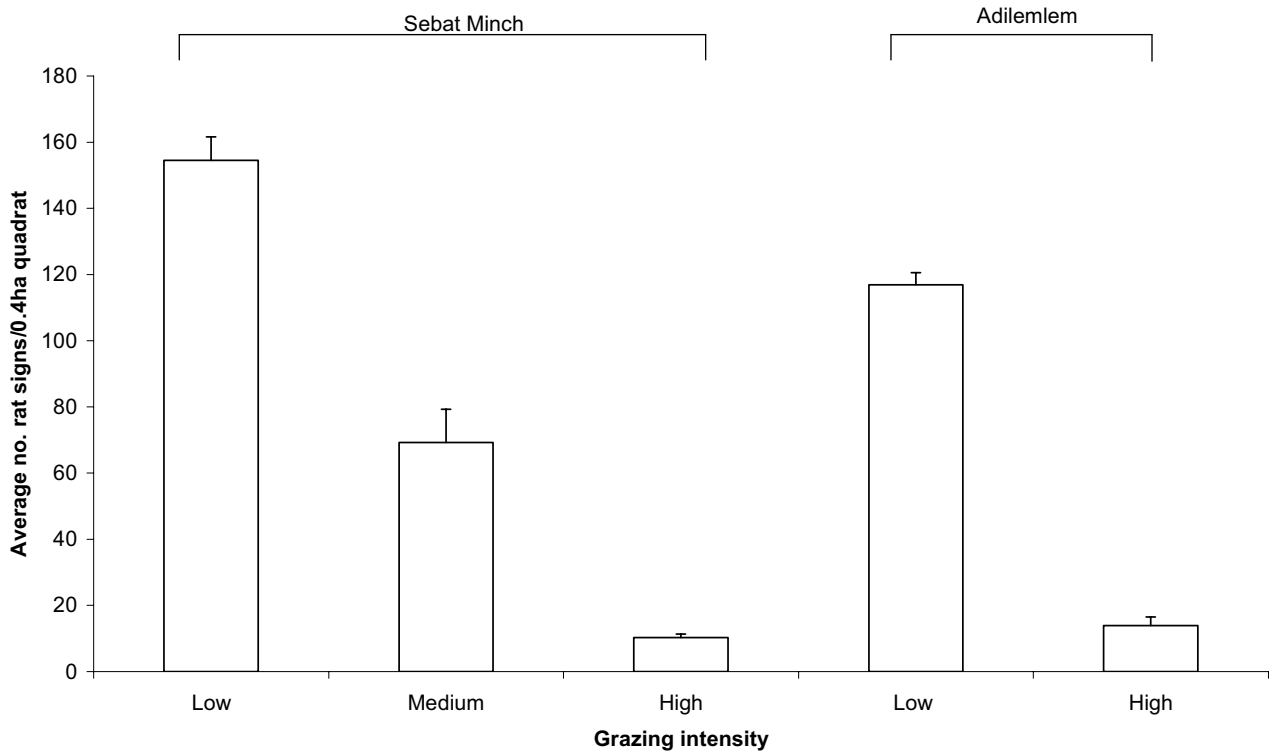
Rodent hole transects

Whilst in the field, we noted that the distribution and abundance of rodent holes appeared to be extremely variable. With the habitat quality assessment quadrats measuring just 5m in diameter, there was concern that this variation would not be reflected in these assessments. Consequently, we decided to conduct rat hole counts every 200 m along a 2 km transect using a 0.4 ha quadrat. To investigate the impact of grazing, the transects were conducted in Guassa Lobelia habitat under differing levels of grazing categorised according to the length of the Guassa grass as low (>30 cm) medium (10-30 cm) or high grazing (<10 cm) intensity. (Since Lobelia can live for up to 20 years, it is possible to have intensive grazing in Guassa-Lobelia habitat.) This methodology was used in two areas; Sebat Minch and Adilemlem. Figure 3.15. depicts the large differences between high and low intensity grazing Guassa Lobelia habitat in Adilemlem.

Figure 3.15. Photographs of Guassa Lobelia habitat under low (left) and high grazing pressure (right), Adilemlem. (Marsden)

The results (Figure 3.16.) show that the number of rat holes decreases as grazing intensity increases in both study areas. Indeed, the number of rat holes was significantly lower under high grazing intensity than under low grazing intensity in both study sites (One-way ANOVA, Bonferroni comparisons, Sebat Minch $p < 0.001$; Adilemlem $p < 0.001$). There were no significant differences in the number of rat holes under the same grazing intensities between study areas (low grazing intensity $p = 0.999$, high grazing intensity $p = 0.18$). These data provide stronger evidence of a negative correlation between grazing intensity and rodent abundance.

Figure 3.16. Average no. rat signs per 0.4ha quadrat (n = 10 quadrats per transect) in Guassa-Lobelia habitat under differing levels of grazing intensity.



Summary

The habitat assessment surveys have highlighted that livestock grazing is widespread throughout the Simien Mountains. Our data indicate that intensive grazing has caused degradation to the Afro-alpine ecosystem; higher grazing intensity is correlated with increased soil exposure, loss of vegetation structure, reduced vegetative species diversity, prevention of giant Lobelia regeneration and possibly reduced rodent abundance. Across study sites, Sebat Minch and Adilemlem showed signs of a greater impact of grazing than Matba and Chennek. Chennek appeared to consistently have the highest Afro-alpine habitat quality, that is, the least impacted by livestock grazing which correlates with the large mammal surveys which show that Chennek recorded the lowest abundance of livestock. In addition, Chennek recorded a comparatively high abundance of two threatened wildlife species, the Walia ibex and Gelada. Together, these findings highlight the need for conservation management if the unique flora and fauna of the Afro-alpine ecosystem of the Simien Mountains is to be conserved.

3.3.2. Rodent Surveys

Methods

The rodents present in the Simien Mountains can be broadly split into

1. Molerats i.e. the common molerat
2. Rats
    a. Diurnal rats e.g. the unstriped grass rat (*Arvicanthus abyssincus*)
    b. Nocturnal rats e.g. the narrow headed rat (*Stenocephalemys griseicauda*)

Diurnal rat species composition and abundance were investigated using live trapping (Sherman traps) as this method has been shown to give the best estimates of abundance when the trapping period is short (Sillero-Zubiri et al 1995; Lucy Tallents *pers comm*). A 0.16ha grid of 25 pairs of traps was laid out at 10m intervals. These were pre-baited for two days with a peanut butter and flour bait. Traps were then set at dawn and cleared at noon and dusk for three consecutive days. All caught animals were identified and marked by fur clipping to prevent overestimates of abundance arising from recaptures (Figure 3.17.). The relative abundance of each species was determined by calculating percentage trapping success, that is, the number of individuals caught per 100 trap checks (recaptures were not included). For each study site, three replicate grids of traps were randomly placed and simultaneously set (Sillero-Zubiri et al.,1995; Derek Yalden *pers comm*). In Chennek, only two grids were set. Data were excluded on occasions where rats escaped before marking.

Trapping was conducted in Chennek, Sebat Minch, Adilemlem and Matba. Grids were placed in either Guassa-Lobelia habitat, or Guassa-Lobelia, Carex habitat. Although these habitats are very similar, their division was justified by the fact that Guassa-Lobelia, Carex habitat has different drainage and vegetation structure characteristics predicted to be important to rodents. In Sebat Minch, time permitted two trapping periods, therefore both these habitats were sampled. Grazing intensity varied between study sites and was classified as Absent-Low or Medium – High.

Figure 3.17. Chalachew and Abraham conducting small mammal trapping. (Marsden, Hoolahan)

Results

Rat trapping was successfully conducted in the study sites, despite three instances where wolves damaged traps and consumed the trapped rat inside (Figure 3.18.). There were two by-catch species, the shrew *Crocidura thalia* (three specimens at Matba), and an unknown bird species (two specimens).

Figure 3.18. Damaged rodent trap as a consequence of a wolf attack. The wolf was observed to pick up the trap in its mouth and throw it into the air a number of times before biting through the metal, and subsequently consuming the rodent inside. This behaviour was noted on three separate occasions (Photographs Marsden)

It should be stated, that although trapping was conducted at each of the different study areas we visited in the Simien, the data are not representative of those study sites because the habitat/grazing intensity sampled was selected rather than random and because due to time constraints only a small number of trapping grids were conducted in each site. Furthermore, the trapping methodology used only sampled diurnal rats, and therefore our data does not give a complete picture of the Simien rodent community.

A total of 156 rats were caught across all study sites. These comprised three rodent species; the unstriped grass rat, *Arvicanthus abyssinicus*, the swamp rat, *Otomys typus* and the harsh furred rat, *Lophuromys spp* (Figure 3.19.; Table 3.5.).[1] Comparison between study sites indicated that both habitat type and grazing intensity influence the distribution and abundance of rodent communities.

A.abyssinicus was the most commonly trapped species (highest percentage trapping success) and was found in all five trapping sites (Figure 3.20.). *O.typus* was the next most common, however this species was absent in Chennek and Sebat Minch 1. *Lophuromys spp* was absent in Sebat Minch 1 and Sebat Minch 2 and was the least commonly trapped species. These differences in species composition across study sites can largely be explained by the specific habitat preferences and tolerances of the species trapped. *O. typus,* the swamp rat for example, shows a preference for damper soil conditions and therefore was more common in *Guassa*, Lobelia, Carex habitat (Guttinger et al*.,* 1998). *Lophuromys spp* shows a habitat preference for long grass cover and is known to be intolerant of grazing (Marino, 2003). This would explain why this species was only found where

[1] It was not possible to identify *Lophuromys* to species level because the current taxonomy of this genus is incomplete and the species found during this study is thought to be undescribed (Yalden, *Pers comm*).

grazing was absent – low. *A.abyssinicus* is know to be tolerant to grazing, and shorter grass lengths, therefore it is not surprising this species was the most common in the Simien, where grazing is widespread.

There was a large variation in trapping success between replicate grids within study sites, this is shown by the high standard error values associated with the mean number of individuals/grid (Table 3.5.). This variation highlights the large spatial variation, i.e. patchiness, in rodent distribution and abundance at a micro scale, that is, even within the same habitat type. Although partially attributable to the inherent patchiness of Afro-alpine grasslands (mentioned below), this heterogeneity may also be linked to seasonal influences on habitats. It is reported that during the dry season rats are distributed broadly evenly, however during the wet season (as in this study) the distribution becomes patchy, concentrating in areas less prone to flooding e.g. near rocky areas and taller grass (Derbe Deksias, *pers comm*).

In addition to differences in species composition, the abundance of different species also varied between study sites with the total number of individuals caught differing by as much as forty fold. Examination of the data indicate that these differences are associated with both habitat type and grazing intensity. *Guassa*, Lobelia, Carex habitat was shown to support higher abundances of rodents than *Guassa*, Lobelia habitat irrespective of grazing intensity (Table 3.5., Figure 3.20.). It is possible that this is related to the greater heterogeneity of the Guassa, Lobelia, Carex habitat which make it more suitable to, or able to sustain more, rats.

Through comparisons within habitat types, that is, between Chennek, Matba and Sebat Minch 1 or Sebat Minch 2 and Adilemlem, it can be seen that both the mean number of individuals/grid and the number of species was lower in areas with medium – high grazing, than absent – low grazing (Table 3.5.). Grazing has a number of detrimental effects which directly impact rodent communities including food competition, trampling of rodent holes, reduced vegetation height and associated reductions in predation cover (Guttinger et al*,* 1998). Thus there may be a negative relationship between grazing pressure and rat abundance. Rodent communities are also influenced by the indirect impacts of grazing on Afro-alpine ecosystems. In the absence of grazing, Afro-alpine grassland ecosystems show spatial cycling with patches of giant lobelias, long and short grass. Under these conditions a diverse and patchily distributed rodent community is supported (Burnard, 1998). As the dominant herbivores in this ecosystem, rodents further perpetuate these cyclical dynamics. Where intensive grazing occurs, this cyclical succession is disrupted, habitat heterogeneity is reduced (Burnard, 1998) and it is predicted the resulting habitat would support a lower abundance and diversity of rodent species. That said, data showing grazing actually causing a negative impact on rodent communities is currently lacking. It is possible that a certain level of grazing has a negligible effect on the overall biomass of rodents because some rodent species, e.g. *A.abyssinicus* are tolerant of grazing. However at higher levels, the negative impacts mentioned would become more profound, and it is difficult to see how these would not have a negative impact on rodent communities. Considering the specialist nature of the Ethiopian wolf diet, it is generally thought that reductions in rodent biomass would impact the wolf, particularly in populations such as the Simien Mountains, which naturally

contain a low biomass of rodents and low density of wolves. The pertinent question of course is, what extent of reduction in rodents can occur before the wolves are impacted?

Comparison with rodent trapping data conducted in the Bale Mountains highlights that the Simien Mountains contains a considerably lower abundance of rodents. The percentage trapping success of the three most common rats[1] in the dominant habitat of the Web Valley (Bale Mountains) were approximately an order of magnitude greater than any of those recorded in this study (Sillero-Zubiri et al, 1995). The lower abundance of rodents in the Simien is likely to primarily be the consequence of the drier climate and the higher altitude of the Northern highlands which results in naturally lower productivity levels (Marino, 2003, Marino *pers comm*). In addition to the naturally lower rodent biomass of the Simien Mountain, the rodent community differs further by the fact that the giant molerat *T.macrocephalus,* which is the primary prey of the Bale Mountains wolves, is not found in the Simien (Marino, 2003). The high abundance of *A.abyssincus* found in the Simien and large size of the common molerat led to the prediction that one of these species would be the dominant prey item in this population (Guttinger et al, 1998; Marino, 2003). However, analysis of wolf droppings found *O.typus* to be the dominant prey species (40%), with *A.abyssincus* and the common molerat *T.splendens* representing considerably smaller proportions of the diet, 17 and 9% retrospectively (Marino, 2003). Comparison with other populations outside of Bale, i.e. where the giant molerat is absent, shows that a diet dominated by *O.typus* and diurnal rats in general is typical. It is interesting to note that the Simien population's diet differed from all other wolf populations in the high prevalence of nocturnal rat species (27%) (Marino, 2003). This shift to nocturnal species could be a behavioural mechanism to avoid contact with humans (Yalden and Largen, 1992 [cited in Marino, 2003]). Indeed, during the expedition wolves were noted to alarm call when near humans or shy away and other researchers have described this population as 'secretive and seldom seen' because of persecution (Gottelli and Sillero-Zuburi, 1992). Alternatively, the abundance of nocturnal species could be high comparative to diurnal species. Since our trapping methodology did not target these species, speculation on abundance cannot be made. The Simien wolf population was also atypical in that droppings contained livestock remains. Indeed, wolves were spotted hunting and attacking livestock by expedition members on a number of occasions. This dietary preference could be caused by the low and arguably declining rodent biomass of the Simien causing wolves to hunt livestock to supplement their diet. However, scat analysis suggests livestock make a small contribution to the Simien diet. Alternatively livestock hunting could simply be the result of a behavioural difference between populations that probably arises because of the unusually high proportion of small vulnerable livestock (sheep/goats)rather than large (cattle) livestock.

[1] *Arvicanthus blicki, Lophuromys melanonyx, Stenocephalemys albocaudata*

Figure 3.19. Photographs of *Lophuromys spp.* (left) and *Crocidura thalia*(right) (Marsden)

Figure 3.20. Mean rat trapping success per study area where n=3 except Chenek where n=2 Error bars = + 1 standard error of mean (***A.abyssinicus*** **– Black :** ***Otomys typus*** **–Grey;** ***Lophuromys spp*** **– White)**

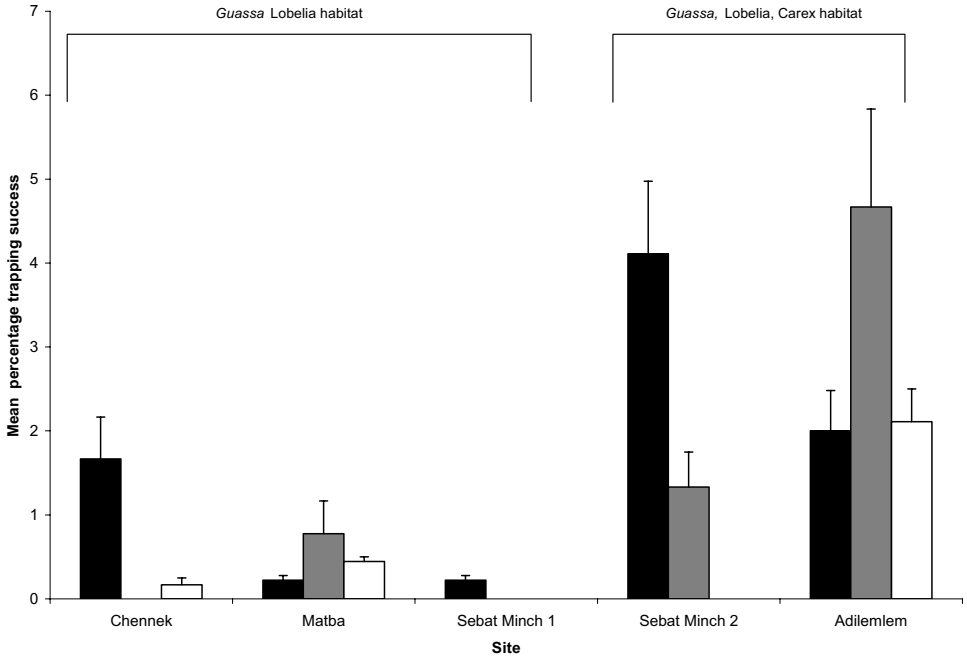


Table 3.5. Trapping area descriptions and trapping success

		Chenek	Matba	Sebat Minch1	Sebat Minch2	Adilemlem
Habitat		*Guassa*, Lobelia	*Guassa*, Lobelia	*Guassa* Lobelia	*Guassa*, Lobelia, Carex	*Guassa*, Lobelia, Carex
Grazing intensity		Absent – Low	Absent – Low	Medium – High	Medium-High	Absent – Low
Total no. individuals caught		11*	16	2	49	81
Mean no. individuals caught/grid (SE)		5.5 (3.5)	5.3 (3.3)	0.7 (0.3)	16.3 (6.9)	27 (10.5)
Mean % trapping success (SE)	*A.abyssinicus*	1.67 (1.00)	0.22 (0.11)	0.22 (0.11)	3.88 (1.64)	2.00 (0.96)
	O.typus		0.78 (0.78)		1.33 (0.83)	4.89 (2.33)
	Lophuromys spp	0.17 (0.17)	0.44 (0.11)			2.11 (0.78)

* Only two trapping grids set, all other sites three grids set

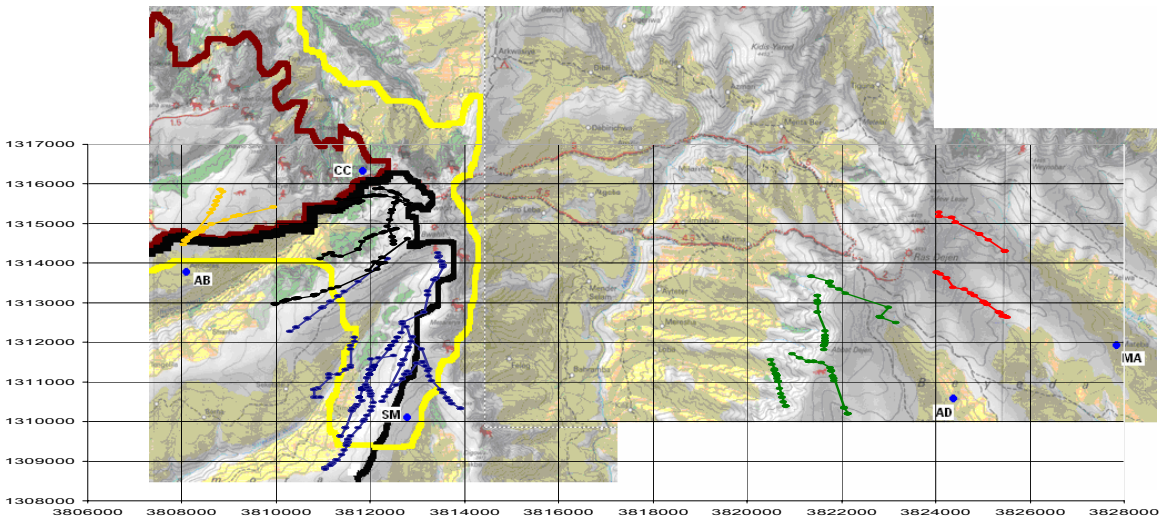
Figure 3.21. Injuries from an unsuccessful wolf attack on a sheep (Marsden)

3.3.3. Large Mammal Surveys

Methods

Large mammal surveys consisted of transects that were carried out from all the campsites that the expedition visited. In order to cover as much of the notoriously difficult and mountainous ground as possible over the course of the short expedition, we decided to pick straight line transects that followed the natural lines of the landscape. Thus, as much as possible, we followed hill sides or walked down through valleys. In this way we were able to cover most, if not all, of the land above the arable agriculture in each of our study sites to give as broad a scope as possible of the wildlife situation in the Simien. Figure 3.2.2. shows the positions of the transects in the Simien. Weather, time and personnel concessions led to different numbers of transects being made in each area. Ideally it would have been best to have covered each area in the same detail and at the same time points over the length of the expedition. This meant that there was no way of telling whether the transects that were performed were representative of the general daily movements of animals in different areas, or whether they were freak results due to adverse weather, the time of day or seasonality. During the expedition, we made 24 large mammal transects in total, many of which included habitat assessments conducted at the same time. Indeed, more habitat assessments were completed than large mammal surveys because they were more easily conducted in the misty clouds and rain that plagued the first few weeks of field work.

Figure 3.22. A map of the Simien with the position of the transects overlaid



The figure shows a very rough approximation of where the transects were in relation to each other on a map of the Simien. As can be seen there is a mixture of transects both within the old and new park boundaries (red and yellow respectively) and also way out to the remote east of the range and around Ras Dejen. The different colours represent the different base camps: black = Chennek, blue = Sebat Minch, green = Adilemlem, red = Matba and orange = Ambaras. Note also how the transects followed the relief of the area. This was deemed necessary due to the time and energy constraints of the expedition.

The transects involved two to three people walking in a straight line noting each occurrence of a large mammal, or group of animals, that could be seen from that line. An example of a sample sheet is shown below.

Time	W	Loc X	Loc Y	Dir trans	Dir anim	Dist	Grp No	Spp	ID	Grp Size	Act	V	H	S	T
1115	CD	1313177	3821508	160	250	400	1	CT	MD	15		13	4	2	9
1115	CD	1313177	3821508	160	250	300	2	CT	MD	12		13	4	2	9

For each positive sighting the following data were collected:

Time
W = Weather
Loc X, Loc Y = position northing and easting of observer from GPS
Dir trans = The direction of the transect
Dir anim = The direction of the animals from the transect
Dist = The distance of the animals
Spp, Grp size = The species of animal and number of individuals
V,H,S,T = The habitat that the animals could be found in: vegetation type, height, slope and terrain
Any additional information of interest

In practice, it was easier for the observers to walk to the position on the transect where the animal, or group of animals, were perpendicular, allowing us to quickly identify in which direction the animals were. It also soon became apparent that the majority of all large mammal observations would be livestock and their associated shepherds. There was therefore little danger of the animals running scared from us. On the few occasions that we did see wolves, jackals, ibex or geladas we immediately stopped and took down all of the necessary data and resorted to leaving the GPS reading and direction / distance of animals from the transect until the animal(s) had fled.

Livestock Numbers

Only animals believed to be within 500 metres of either side of the transect line were included in the analysis. This made the analysis relatively simple as each kilometre walked was equivalent to a square kilometre. The number and species of animals were combined for all transects in a given area. The total length of all transects was then used as a measure of the area covered. The proportion of each different livestock species was also estimated.

Livestock Densities

The density was estimated by combining the number of animals encountered along all transects from a given area and then dividing them by the number of transects in that area. This number was then divided by the mean length of each transect. As explained above, because each transect covered an area of 500 metres to the left and right of the transect line the length of the transect in kilometres is analogous to its area in square kilometres.

This gave a very broad estimate of the mean density of each livestock species in our different study areas of the Simien.

Information about wildlife species was also gathered on each transect. This included any observations of Ethiopian wolves, common jackals. Gelada monkeys and Walia Ibex. The occurrence of these species on transects was however very low and so no real estimations about density or numbers could be made. In order to obtain information about possible numbers and densities of Ethiopian wolves it was necessary to perform other analyses (see chapter 5).

This analysis gave us information about the average large mammal density in each of the study sites, split into livestock and wild species. This information was then combined with the habitat assessments and rodent investigations in order to gain a holistic view of the ecology of our study sites.

Human Encounters

The number of humans encountered on each of the transects was also recorded. These were generally shepherds and travellers. Because of the nature of the team and the relative novelty of the kind of work that was being done in the area, the team tended to attract attention from anyone who caught a glimpse of the investigators. The numbers are thus slightly unreliable in terms of giving a true picture of the amount of human occupation of the higher Simien altitudes during the day, but serve at least as an indication of the level of shepherding and traffic at these altitudes.

Results

Transect Summary

Below (Table 3.6.) shows the summary information for all transects made in the Simien.

CAMP	No of Transects	Area / km sq	Dates	Average Weather	Length / km		Large Mammals		Humans		Dogs
					Average	Total	Average	Total	Average	Total	
Chennek	6	15	16th-20th July	Rain/dark	2.5	15.1	269	1613	10	57	0
Sebat Minch	10	31	23rd-31st July	Bright	3.1	30.9	935	9347	28	280	0
Adilemlem	4	12	10th-15th August	Bright	3.0	12.1	870	3480	29	114	5
Matba	2	7	18th-19th August	Sunny	3.3	6.5	800	1599	23	45	0
Ambaras	2	5	25th-27th August	Cloudy	2.7	5.3	732	1463	22	43	0
Total	**24**	**70**	**16th Jul- 27th Aug**	**NA**	**2.9**	**69.9**	**721**	**17502**	**110**	**539**	**5**

Table 3.6. Summary of the large mammals transects

Total Numbers and Type of Livestock

The total number of livestock in each of the areas is shown in Table 3.7.

CAMP	Cattle	Sheep/Goats	Horses	Mules	Donkeys	All Livestock
Chennek	313	1169	39	6	21	**1548**
Sebat Minch	1898	6796	269	46	323	**9332**
Adilemlem	271	3044	57	6	100	**3478**
Matba	174	1312	78	6	29	**1599**
Ambaras	275	1065	63	6	33	**1442**
Total	**2931**	**13386**	**506**	**70**	**506**	**17399**

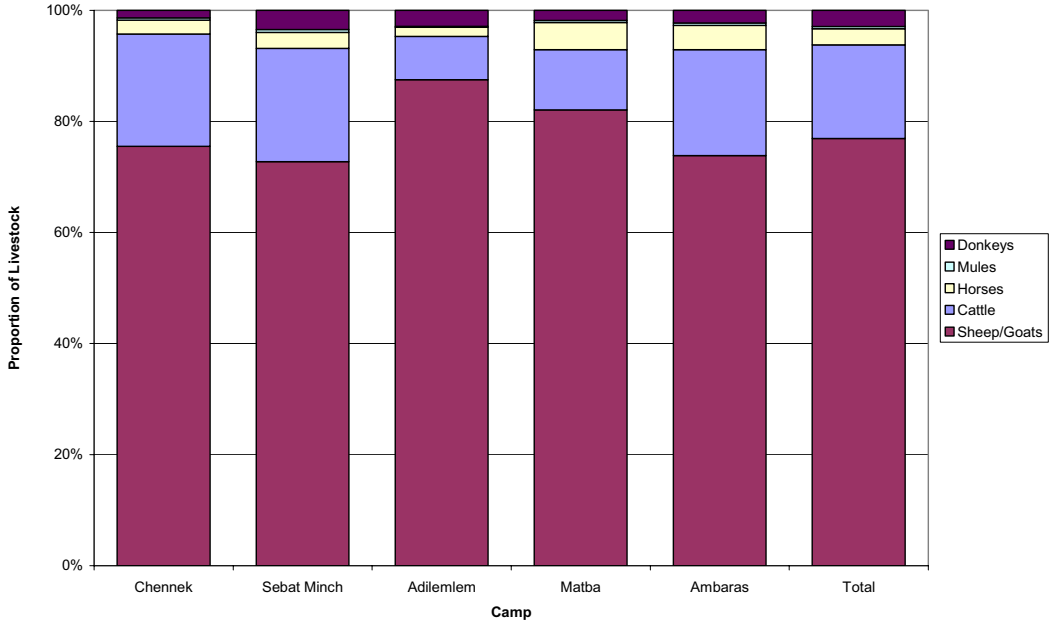
Table 3.7. Shows the total number of Livestock

Figure 3.23.shows the proportions of each livestock species in each area. The most common livestock species encountered were sheep and goats, with roughly 77% of the livestock encountered in all areas being of these species. These data closely match the livestock dropping counts of the habitat quality assessments (Table 3.3.). The remaining 23% of livestock is made up of cattle and beasts of burden. Villagers in the Simien can little afford the luxury of a horse or donkey.

Interestingly, the proportion of donkeys was highest in Sebat Minch. During the expedition's time in this area, the World Food Programme had dropped off its annual grain rations to the town of Janamora, nearby to Sebat Minch. The main road between this town and the villages to the North travels straight through Sebat Minch and this might explain the relative abundance of donkeys in this area, at this time. Donkeys were used to carry the 10-15 bags of grain taken by each family from Janamora.

Figure 3.23. Table and graph to show the proportions of Livestock in each study area

CAMP	Cattle	Sheep/Goats	Horses	Mules	Donkeys
Chennek	20.2	75.5	2.5	0.4	1.4
Sebat Minch	20.3	72.8	2.9	0.5	3.5
Adilemlem	7.8	87.5	1.6	0.2	2.9
Matba	10.9	82.1	4.9	0.4	1.8
Ambaras	19.1	73.9	4.4	0.4	2.3
Total	**16.8**	**76.9**	**2.9**	**0.4**	**2.9**

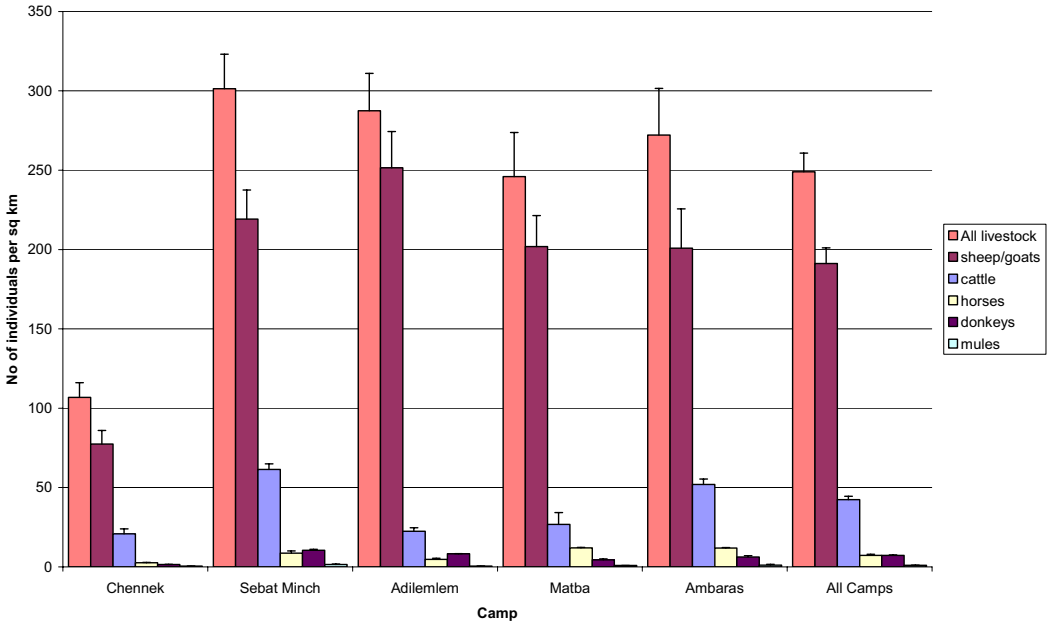


Density of Livestock

In order to assess the grazing pressure in each area, the density of livestock was found for each of our 5 camps. In total 70 km of transect were walked during the expedition and so 70 square km of area surveyed. Therefore, with a total of 17,378 individual livestock animals observed, in the Simien as a whole there was roughly 250 livestock per square kilometre.

Figure 3.24.below shows the mean densities of livestock animals in each of the study areas and in the Simien in general.

Figure 3.24.Livestock Densities in the Simien



The number of livestock in all areas surveyed was high and greater than anticipated. On the graph it appears that Chennek has a lower density than elsewhere, however it is likely that this is largely due to the very poor weather experienced in this camp. The poor visibility through the mist meant that when transects were actually attempted in this area, the true number of animals seen was likely to be less. There are also likely to be inaccuracies inherent in the sampling methodology that meant that we overestimated the densities. Nevertheless, the densities observed were large.

Chennek was however an area where park scouts were present at all times: there was a permanent base there. It has been on the edge of the park since its designation and has also newly been incorporated into the park and as such the grazing rights of local people are restricted and well monitored.

Sebat Minch and Adilemlem had the highest densities of livestock, on average 301 and 287 heads of livestock per kilometre square respectively.

Wildlife Densities

It became apparent early on that the number of wild animals that were going to be seen on large mammals transects was going to be small (Table 3.8.). Indeed, from a conversation with one member of the EWCP we learnt that in two weeks travel in the Simien they had not seen one wolf. Therefore the number of wild animals seen was likely to be small. That being said, over 100 wild large mammals were seen during all transects. The four species observed were the Walia Ibex, *Capra ibex walie*, the Gelada, *Theropethicus gelada*, the Ethiopian Wolf *Canis simiensis* and the common jackal, *Canis aureus*. The numbers of each are shown below.

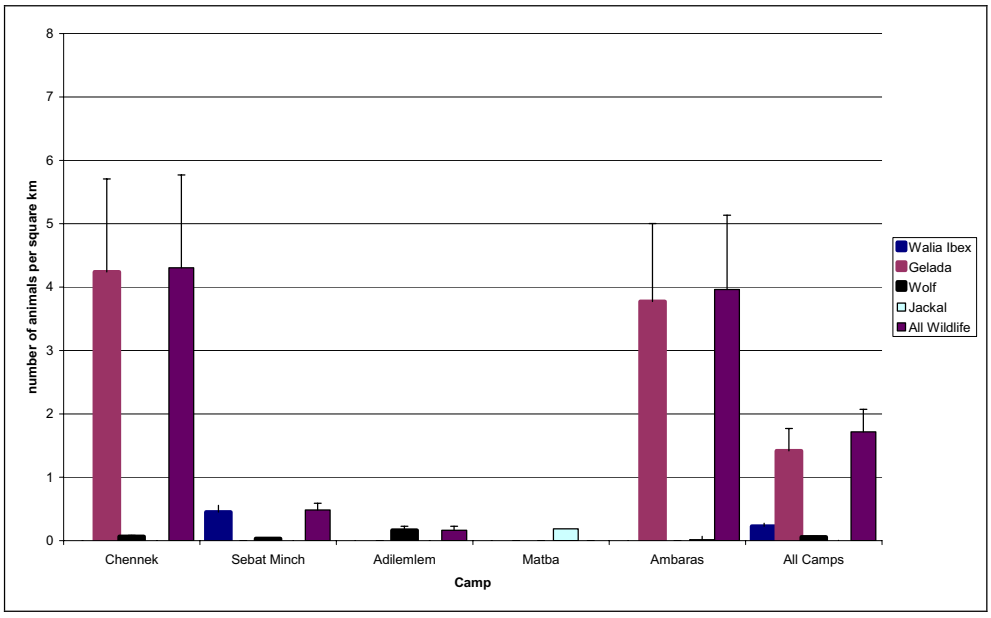
Table 3.8. Wildlife Numbers in the Simien

CAMP	Walia Ibex	Gelada	Wolf	Jackal	All Wildlife
Chennek	0	64	1	0	**65**
Sebat Minch	14	0	1	0	**15**
Adilemlem	0	0	2	0	**2**
Matba	0	0	0	0	**0**
Ambaras	0	20	0	1	**21**
Total	**14**	**84**	**4**	**1**	**103**

Gelada monkeys live in large groups and so it is no surprise to see that these were the most frequently observed large animals. The 14 Walia Ibex seen in Sebat Minch were also all in one large group. Both species live on the steep gorge cliffs and sides of mountains, and were observed many times throughout the expedition in these areas. More Ethiopian wolves were seen than common jackals on the transects and this was also the case during non-transect surveying (see Chapter 5).

Below (Figure 3.25.) showing the densities of wild animals in each of the camps. The small sample sizes and rare observations however lead to ambiguity with interpretation (note the size of the error bars).

Figure 3.25. Wildlife Densities in the Simien



Below (Table 3.9.) shows the numbers behind the graph and shows that, on average, there are roughly 1.7 wild animals per square kilometre. It also shows an estimate of the Ethiopian Wolf density, of 0.056 individuals per square kilometre which is very much less than Marino's (2003) estimate of 0.2 animals per km^2. This is due to several factors, principally a lack of sightings due to the limited time our expedition spent in the field. It is

therefore not deemed to be an accurate approximation. (See chapter 5 for further information on the wolf population.)

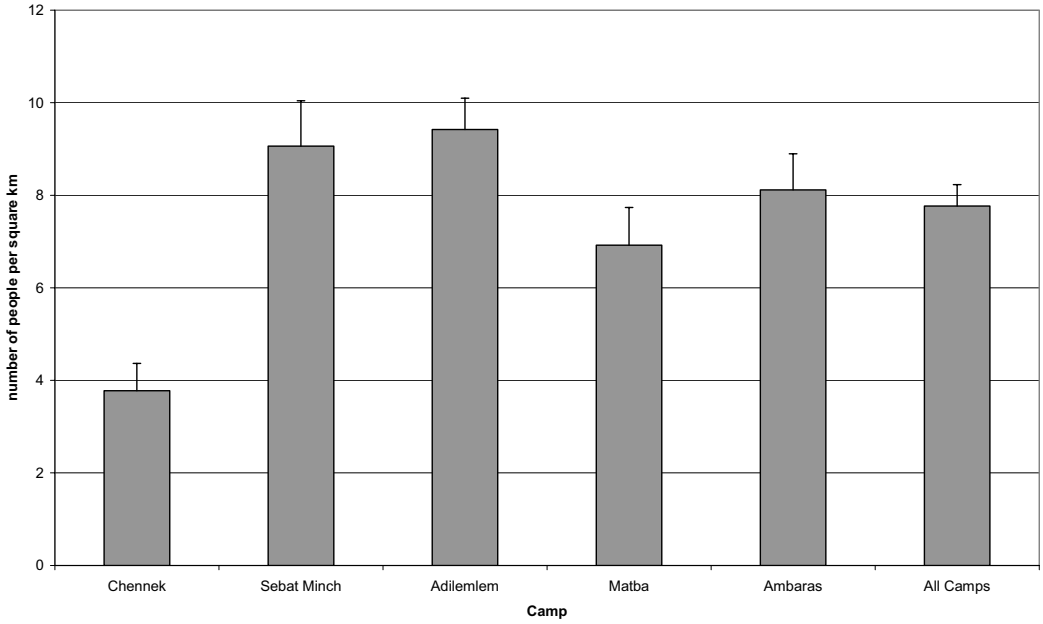
Table 3.9. Actual Densities of Wildlife in the Simien

CAMP	Walia Ibex	Gelada	Wolf	Jackal	All Wildlife
Chennek	0.0	4.2	0.1	0.0	4.3
Sebat Minch	0.5	0.0	0.0	0.0	0.5
Adilemlem	0.0	0.0	0.2	0.0	0.2
Matba	0.0	0.0	0.0	0.0	0.0
Ambaras	0.0	3.8	0.0	0.2	4.0
Total	0.229	1.416	0.057	0.014	1.717

Humans

The graph below (Figure 3.26.) gives a representation of the numbers of humans seen on all of the transects. A total of 543 humans were seen on all transects with an average density of 7.5 humans (+/- 1) per square kilometre.

Figure 3.26. Human densities outside of villages in the Simien



The areas in which the surveys were performed were all away from villages and other habitations and represent the last areas of the Simien not to be used for arable agriculture. It is therefore important to note that even in these areas there are still almost 250 heads of livestock and 8 people per square kilometre.

3.4. Discussion

Habitat status across the Simien

The Afro-alpine ecosystem which has evolved in isolation and under extreme climatic conditions, contains an intricate web of closely linked specialist species. Consequently both individual species and the Afro-alpine ecosystem in general, are particularly vulnerable to disturbance.

The Simien Mountains contain one of the densest rural populations in Africa (Gottelli and Sillero-Zubiri 1992), the majority of which support themselves through agricultural cultivation or livestock rearing. Growing rural populations have resulted in the widespread conversion of Afro-alpine habitat (which occurs above 3,200 m) to agricultural land below 3,600 m, i.e. the altitudinal limit for barley cultivation. Unsustainable agricultural practices have resulted in considerable degradation to this land in many areas (Figure 3.27.).

Figure 3.27. Soil erosion from barley fields, Sebat Minch (Marsden)

Unlike agricultural cultivation, livestock grazing is not restricted by altitude, and as our data shows, grazing is now widespread across the Simien Mountains. Considering that the Afro-alpine ecosystem has evolved in the absence of high density large herbivores, there is significant concern about the how this grazing has, and will continue to impact the Afro-alpine ecosystem. Although our data is correlational, they do suggest that intensive grazing has resulted in the loss of herbaceous and shrub cover, reduced the diversity of vegetative species and increased soil exposure. There is also evidence to suggest that Lobelia regeneration is being impeded by high grazing intensities. These findings are consistent with surveys conducted by Nievergelt (1998) and Burnard

(1998). From these data it can be seen that the Afro-alpine habitat is at considerable risk from the effects of agricultural cultivation and livestock grazing.

Is grazing having a negative impact on the Ethiopian wolf?

As rodents are the dominant herbivores of the Afro-alpine ecosystem, concern has been raised over whether rodent populations have been negatively effected by grazing pressure, particularly as this might have repercussions on the Ethiopian wolf which almost exclusively feeds on this prey. Data conclusively linking livestock grazing pressure with both reduced rodent densities and a resulting impact on the Ethiopian wolf are extremely difficult to collect because rodent distribution is inherently variable and influenced by a number of factors. Consequently, such data were beyond the capabilities of this 2 month expedition. Nonetheless, in this discussion we will cautiously analyse our findings to address these concerns. Furthermore, we will conduct comparisons with the Bale Mountains, where the largest Ethiopian wolf population exists.

Our data suggest that grazing has had a negative influence on the Afro-alpine habitat in the Simien Mountains (i.e. species diversity, vegetation structure, see above). But has livestock grazing had any impact on the rodents, and if so, to what extent does it impact the Ethiopian wolf? Our rodent trapping and rodent sign data, indicate that the rodent densities in the Simien are substantially lower than in the Bale Mountains. However, significant climatic differences from the Bale result in the Simien naturally supporting a considerably lower abundance of rodents, and thus lower density of wolves than in the Bale (Marino 2003). It is possible that rodent populations have been further reduced by grazing pressure. Rodent trapping data and rodent hole transects indicate reduced rodent densities under high grazing intensities, however these findings should be considered in light of their small sample sizes. Theoretically, reductions in rodent densities would result in wolves occupying larger home ranges giving a lower carrying capacity for an area of habitat. Furthermore, there may be metabolic implications for the Ethiopian wolf arising from reduced hunting efficiency. Unfortunately we do not have data to address these theories.

The Situation of Large Mammals in the Simien

Our data show that the density of large mammals in the Simien Mountains is high, around 250 head per square kilometre. Although our results come from a short term study, it had the benefit of breadth of area surveyed. They show that in all areas of the mountains human disturbance is present in the form of arable and pastoral agriculture.

Wolves have shown to associate with cattle, both in the Bale Mountains, as noted above (Sillero-Zubiri and Gottelli 1994), and in the Guassa area of Ethiopia, but are chased away from herds of sheep or goats (Ashenafi et al 2005). The livestock composition of the Simien differs from the Bale in so far as sheep/goats dominate rather than cattle. As sheep/goats are small, they are more likely to be attacked than cattle, consequently, there is a much higher potential for human wolf conflict in the Simien. Herdsmen chase wolves from their flocks, being mostly sheep or goats, fearing that they will opportunistically take their sheep. This effectively decreases the

habitat area that the wolves are able to forage in as the remaining area will be predominantly grazed by sheep and their associated herders, who were observed chasing the wolves away. It is likely that this explains the shy nature of the Ethiopian wolf in this population. Furthermore, the atypical abundance of nocturnal rodents in the Simien wolves' diet may reflect a shift to a nocturnal foraging habitat to avoid interaction with humans.

Throughout the mountains humans were present, an average of 8 were seen for every square kilometre covered. More humans were seen to accompany the higher densities of livestock in Sebat Minch and Adilemlem. Huge amounts of traffic on the slopes of the Simien must affect the areas that the wolf patrols. Given that the majority of the area surveyed was outwith the SMNP, hopes for the future conservation of the wolf lie heavily on the shoulders of local communities. Our wildlife expert Derbe Deksios, is part of an education initiative that involves travelling to the further reaches of the mountains in order to tell people about the Simien ecosystem and its wildlife, and the benefits to them of its long term conservation. Actions like this, and others, such as the common property resource management strategy employed in the Guassa region of Ethiopia (Ashenafi et al 2005), are vitally important if the Simien is to turn the reported decline of its natural habitat (Marino 2003) into a growing and sustainable ecosystem.

Worryingly, the area with the highest livestock densities and grazing damage was Sebat Minch, an area within the recently enlarged Park boundary. Effective control in these areas is not possible due to their distance from both the central scout camps and the main tourism routes (such as the track up to Ras Dejen) and so game scouts scarcely visit the area. There is also widespread discontent among the local villagers who have been told not to graze the land, but given no alternative pasture. There is also some confusion as to who can graze what and where. This situation, however, is likely to be a result of the relative infancy of the park boundary in this area, and the combination of the results of our community questionnaires and the continuing education initiatives, give promise for the future.

In summary, our data provide circumstantial evidence of a negative impact from intensive grazing on rodent populations, which supports similar findings suggested by Nievergelt (1998). However, it is not known whether these reductions have had any impact on the Ethiopian wolf. There is also significant evidence of high grazing densities in all areas of the Simien, from both the habitat assessments and the large mammal surveys. Again, it was difficult to link these findings directly to rodent densities, due to small sample sizes and a limited timeframe. They also highlight a need for longer term studies on the wolves of the Simien. The numbers of wolves that were seen during the expedition and the results of the parks own censuses (SMNP unpublished data) suggest that the wolf population is at least stabilising and at best growing. Long term study will let us understand exactly how this is happening, which will aid conservation in the future.

3.5. Scientific Conclusions

Afro-alpine ecosystem

The Afro-alpine ecosystem in the Simien Mountains is unique, rare and the only refuge for a number of endangered species such as the Walia ibex and Gelada baboon. The intense grazing pressure observed here and the negative impact of this livestock grazing on the plant and possibly rodent communities highlights the necessity to address this issue if this ecosystem is to be conserved. In addition to preventing degradation, it is vital that further reductions in size, sensu number of hectares, to this already small area of habitat do not occur.

Ethiopian wolf

Ecological differences result in the Simien Mountains naturally supporting a lower biomass of rodents than the Bale. Consequently, this less optimal Ethiopian wolf habitat supports a lower density of wolves than a similar area of habitat in the Bale. More recently however, human populations have resulted in conversion of Afro-alpine habitat to agricultural land at the more productive lower latitudes and widespread livestock grazing elsewhere. Consequently, only approximately 270km^2 of the of potential 960 km^2 of Ethiopian wolf habitat remains in the Simien Mountains (Marino 2003), and the majority of this is being influenced by livestock grazing to some degree. With one of the densest rural populations in Africa found in the Simien, there is an urgent need to protect this fragile and rare ecosystem from further degradation and loss (Gottelli and Sillero-Zubiri 1992), if the Ethiopian wolf is to continue to be sustainable in this area.

The Simien Mountains National Park encompasses only a small percentage of the Afro-alpine ecosystem. Our data suggests that both the abundance of livestock and the impact of grazing was lower in Chennek, the only study area historically within the National Park. Consequently, expansion of the National Park may increase protection throughout the rest of the Simien Mountains, if properly policed. However, for this to be successful, the needs of local people must be adequately considered and addressed.

3.6. Further Work

A running theme in the results and discussion of this study is the lack of power we can afford our results, ostensibly due to small samples and short timeframes. We believe that the Simien is in need of serious long term research. It is understood that the Frankfurt Zoological Society, through the employment of Dr Zelealem Tefera, hope to set up studies in the near future that will start to build a long term dataset. This work is greatly welcomed.

4. Ethiopian Wolf Surveys

George Busby

4.1. Introduction

Very early on in the expedition it was necessary to adapt our planned investigations if we were to not only see, but usefully record the presence of wolves in the Simien. Getachew Assefa, our chief mountain guide had worked with Dr Zelealem Tefera and the EWCP in the region before and was well practiced in wolf monitoring principles. Initial conversations between myself and Getachew in Gondar led me to believe that a certain amount of wolf monitoring would have to be included in our studies. After our first few days in the field it became ever more apparent that this was the case. Essentially, the large mammal transects were not going to give us the desired amount of coverage of wolf numbers over the relatively short time scale of the expedition.

Together with Getachew, Derebei, our resident Ethiopian Wildlife expert and Abraham Silehsi, a monitoring programme was instigated in the field. This involved rising before first light and moving around the areas near our camps, and beyond, with the objective of finding wolves during their morning social interactions. Ethiopian wolves observed in the Bale Mountains, forage on their own during the day, but come together at night to spend the night as a pack (Gottelli and Sillero-Zubiri, 1994). We therefore went out in small groups at the end of the day before supper, in order to find wolves and try and observe and record their numbers.

Table 4.1. Summary of Wolf Monitoring effort

Camp	Pack	Approximate Area / km^2	Max	Min
Chennek	BW - Bwahit	20	3	2
Sebat Minch	SM - Sebat Minch	40	8	3
	ZA - Zana		4	2
	KB - Kechemo-Bwahit		1	1
Adilemlem	AR - Arbarugrug	25	7	5
	AT - Atterie		4	2
	TL -		2	2
Matba	GB - Gaganbahar	15	1	1
	GM - Gaudymada		4	3
Ambaras	GA - Geech-Aynamda	10	4	2
TOTAL	**10**	**110**	**38**	**23**

4.2. Monitoring Methods and Results

During monitoring trips, and at any other times that wolves were seen (on transects or travelling) we recorded the GPS position, time, sex, number of individuals, activity and type of habitat of the wolves. We also recorded all positions where Ethiopian wolf droppings were found. With these data we were able to build up a picture of the behaviour of the wolves in the Simien. Sitting on the hill sides, watching the sun rise onto the cool plateaus was one of the highlights of the trip for all those keen enough to get out of the warmth of the tent to brace the alpine temperatures.

At first, in Chennek, while we were still acclimatizing there was little monitoring activity. During the descent of our first climb of Bwahit we were fortunate enough to see a pair of wolves on the side of the mountain. This was our third full day in the mountains and the surprise of seeing wolves so early in the trip was encouraging.

In total, from 53 different sightings, we saw between 23 and 38 wolves (Table 4.1.). The expedition covered a good amount of the available wolf habitat, but often in less than ideal detail. Combining the observations from the area covered in each campsite, with those observations made when moving around the mountains, as a group we covered approximately one third of the 270 km^2 of the reported wolf habitat in the Simien (Marino 2003). This however provides a useful number to be used in the future.

Wolf Abundance and Behaviour in the Simien

It is difficult to make any solid estimates on the density of wolves in the Simien from the numbers that were seen by the LWP. Studies such as Ashenafi (2001) and Ashenafi et al (2005) in other areas of Ethiopia based wolf abundance and density estimates on data collected from repeat transects in the same areas over much longer timescales. These analyses appear to be the most effective in giving comparable estimates for wolf numbers.

We saw roughly 30 wolves in under half of the available habitat surveyed. Allowing for our non-random sampling methods and our biased choice of area to search as well as the shy nature of the wolf, a figure of at least double this for the total population of the area. While in Debark, at the Park headquarters, we were shown the results of the annual Park wolf census which makes an estimate of 80 to 90 wolves. Therefore we estimate the total population of wolves in the Simien as roughly 75 to 90 individuals. This is however tentative and in need of proper ratification. It does however imply that the population of wolves is growing, which is certainly the impression given by Getachew, Derbe and our scouts.

Getachew, our field guide, was keen to enforce his opinion of pack membership based purely on where the wolves were seen. In his experience, the wolves had such large ranges that there was a high probability that the area in which the wolf was seen was probably the area where its pack resided. This was especially true during early morning and evening observations, the wolves having retired to more central areas of their range. On one occasion a male wolf was observed chasing another on what we believed to be the edge of the Gaganbahar and Gaudymada pack ranges in Matba. Observing from the hillsides above, we watched as one wolf assumed

classic prey stalking behaviour. It was actually hunting down another wolf, which must have been from a rival pack. He chased the intruder out towards the south into what we believed to be the Gaudymada territory. After the chase the wolf was visibly incredibly tired, heaving and out of breath.

On one other occasion we saw an adult female crossing between the boundaries of two of our putative territories: on the spur of Atterie we saw the female return from what was possibly an extra-pack copulation foray into the neighbouring area of Arbarugrug. The two territories are divided by a deep valley, and the wolf walked tentatively down from Arbarugrug in to the relative safety of her own territory.

These two examples highlight the dynamism of the social life of the Simien wolves and lead any keen zoologist to ask further questions on the inter- and intra-pack relationships between such a small total population. They serve as an incentive to future researchers of the Simien as a glimpse of a potentially different mode of life for these wolves, contingent on the different problems and pressures at work in this unique landscape.

Our monitoring also allowed a much larger area of the Simien to be covered in a shorter time. At most there are two guides / field workers working on behalf of the wolf in the Simien, and even then can only work for 12-15 days every month.

More than15 years of study of wolves in the Bale Mountains has given a clear picture of the behavioural ecology of the wolf; that is of a territorial animal living in large, multi-male packs, that hunts diurnally for its specialised rodent prey (Gottelli and Sillero-Zubiri, 1992; Sillero-Zubiri and Gottelli, 1994). In the Simien, however, it appears that wolves rarely aggregate in large packs, staying in groups of two or three. Only twice did we see groups greater than 3. The pack of 5 individuals was observed in an area of Guassa which was specifically protected from grazing, in order to grow thatch for houses. We showed that this area of Guassa, Lobelia and Carex also had the highest trapping success for all species of rodent. Thus wolves might prefer the combination of a relatively diverse habitat, a lack of disturbance and higher rodent numbers.

Wolves and Livestock in the Simien

Wolves have been reported as spending time with cattle in Bale (Sillero-Zubiri and Gottelli, 1995) and in the Guassa region (Ashenafi et al, 2005). This is in direct contrast to the time they spend with sheep and goats, which is much smaller, presumably because cattle are too big for wolves to chase and kill, while sheep and goats present an easy snack. In accordance with this we observed herders chasing wolves away.

However, as can be seen from our results in the previous chapter, the majority of livestock in the Simien is sheep and not cattle. This effectively reduces the amount of available foraging habitat even more as wolves are positively discriminated from areas where sheep are grazing. In an already resource-low environment, this must have an effect on the numbers of wolves that are able to survive in a given area. One suggestion, by an Ethiopian guide, was that perhaps the wolves have switched to feeding at night. This correlates with the

atypically high abundance of nocturnal rodents in the Simien wolves' diet, comparative to all other Ethiopian wolf populations (Marino, 2003).

The preponderance of sheep might also explain a larger perceived threat from the wolves to livestock. If the majority of herders have sheep then the majority of humans seen on the hills will have preconceived negative ideas about the wolves, as they will only be aware of them in this conflict situation. Although we were reassured by the scouts and wildlife expert that persecution is decreasing, it is certainly feasible that it might take longer because of this factor. We even saw the result of this conflict, when some members of the expedition came upon a sheep that had recently been mauled by a wolf (Figure 4.21.).

Wolves were generally very timid of humans in the Simien. Every time an observed wolf caught sight of humans (n = 13) they produced an alarm call and retreated to a distance. On one occasion we stumbled upon a wolf at very close range and this produced a very agitated and nervous behaviour and a fast retreat. Ethiopian wolves in the Simien are very afraid of humans. That being said, we did on two occasions see wolves close to flocks and their shepherds. This must have been an act of desperation on behalf of the wolf, which was either moving to a safe place or perhaps trying its luck with an opportune killing.

4.3. Discussion and Conclusions

Simien wolves potentially live in smaller packs with very much larger home-ranges than described elsewhere, hence the low densities recorded in this report. This, coupled with a very low abundance of rodents, suggests that Simien wolves have survived in this part of the country due to the large ranges afforded to them in the past by the lack of humans on the high, lofty plateaus. A stable, but small, population probably survives because in former times there was little threat to the wolves. Even disease, which has been shown to have an effect on the population dynamics of wolves in Bale (Haydon et al, 2002) might not have been a problem here because the population density has always been low and contact between neighbours small. Even so, Bale populations have rebounded from crashes caused by disease relatively well (Haydon et al, 2002).

It appears then, that the wolves are hanging on in the Simien. Indeed, the SMNP reports are positive, implying an increase in population size over the past five years. (This might, however, be a result of better sampling procedure and effort in recent years). The status of the wolf in the Simien can be aided by increased awareness in the future. We certainly saw more wolves than we expected to see over the course of the expedition and, in this respect, they seem to be surviving. In the future also there is reason to be positive. Local people are becoming more aware of conservation and people, such as Dr Zelealem and Derbe Deksios, are increasing their efforts in the Mountains. An increasingly holistic approach to wildlife conservation appears to be occurring in Ethiopia (Ashenafi, 2001; 2005) and this provides a glint of hope for the future.

5. The effects of living in the SMNP for communities and wildlife

Julie Grant

5.1. Introduction

One aim of the Lone Wolf Project (LWP) was to document the effects of the Simien Mountains National Park's (SMNP) wildlife conservation policies on the people of the Simien Mountains. We wanted to determine if the policies are beneficial or detrimental to the livelihoods of local communities. Furthermore, we aimed to establish if local communities perceive the policies as detrimental to their livelihoods and if so do the policies lead to an increase in wildlife persecution by the locals. If the SMNP's policies are detrimental to the local people and result in wildlife persecution, the park may need to consider re-thinking its policies as their conservation practices may not be conserving the wildlife after all.

In addition to the above concerns the LWP also aimed to determine how successful the SMNP's wildlife conservation practices are at protecting the area's wildlife, especially the Ethiopian wolf. The project intended to establish what protection the park offers wildlife living within the park as opposed to outside it and also to determine if these protective measures do actually protect wildlife, leading to an increase in wildlife numbers through less premature wildlife deaths and more births.

In order to address these issues 29 interviews were conducted with local people from the villages of Argin (near Chennek camp), Timirk (near Sebat Minch camp), Adilemlem, Mateba and Ambaras. The village chairmen for Argin/Ambaras, Timirk and Adilemlem were also interviewed along with four SMNP scouts from Chennek and Sebat Minch. Additionally, participant observation was used to gather information while living in and around villages. Local villagers and members of the team, many of which regularly work in and for the SMNP, contributed to this information.

5.2. The effects of the SMNP's wildlife conservation policies on local communities

Beneficial effects of the SMNPs conservation policies on local communities

As the SMNPs wildlife conservation policies protect many rare and often-endemic species, tourists are attracted to the area not only to view the scenery but also to see the unique wildlife. As a result there is an opportunity for local communities to generate income from tourists. This is usually done by hiring out mules or donkeys to carry tourists' luggage while the tourists trek. Alternatively money can be made from the sale of souvenirs, usually in the form of traditional shepherds' hats, to tourists.

Although some local communities benefit from the tourism which the SMNP attracts, this is not widespread. Which villages benefit most from tourism is determined by how close the villages are situated to the tourist centres or routes. Even where villagers benefit from tourism, income is usually small and only benefits a small

number of people within the community, such as mule and donkey owners or souvenir sellers. Furthermore, due to the limited infrastructure and facilities for tourists, tourism is by no means a regular occurrence in the Simien Mountains and therefore it is not a reliable income source for communities at present.

In addition to the tourist trade, communities benefit from the park in other ways. Within the Simien Mountains there is a shortage of wood for use as fuel and building materials. To combat this, eucalyptus nurseries have been established to grow and supply local communities with eucalyptus trees, which can be used for such purposes. As these nurseries are only established in or near to the SMNP, not all communities within the mountains have access to them. Therefore although people benefit from the park through the nurseries, the nurseries are only beneficial to the few local communities which exist in or near to the park. From this it can be seen that the SMNP conservation policies do seem to offer some benefits to people living within, or in close proximity to, the Simien Mountains but these benefits are minimal and unequally distributed.

Detrimental effects of the SMNP conservation policies on local communities

Local people in the Simien Mountains not only consider the benefits of tourism to be minimal but also believe that wildlife often benefits from the existence of the park at their expense. This is because people have witnessed the reduction of their grazing, crop and guassa (roof thatch) land, during both the parks establishment and its recent expansion. This retracted land then becomes protected land for wildlife, free of people and livestock, including domestic dogs, all of which can compromise wildlife habitat. By retracting this land from local communities and allocating it for wildlife conservation purposes, local people frequently find themselves lacking enough land to grow adequate amounts of food, graze enough livestock or cut guassa for their roofs. This often results in members of the local community being forced to use protected land for the aforementioned purposes in order to survive.

People also believe that wildlife is treated better than humans due to the fact that if wild animals attack or kill livestock, villagers are prohibited from killing the perpetrator, or allowing their dogs to chase or kill the culprit, even if the livestock taking happens continually. The local community can report livestock killing by wild animals to park authorities. However the authorities do not take any action in regard to such complaints nor do they offer compensation to replace the loss. The loss of even just a few livestock can be detrimental to villagers' livelihoods, as they often own little livestock to begin with. From this it can be seen that the SMNPs conservation policies can be detrimental to the livelihoods of local communities and that local villages also perceive them as such.

Do the SMNPs conservation policies lead to increased wildlife persecution?

Overall every one interviewed was aware that it is illegal to kill wildlife both in and outside the park. Even so there were still some reports of wildlife persecution. A common jackal has been killed earlier in the year in response to livestock taking; this was reported in Mateba but happened in nearby Weno. In Adilemlem it was reported that twice in the last 5 years people have tried to poison the Ethiopian wolves by leaving poison laced

meat for them. Both times the meat was found before any harm came to the wolves. As it was difficult to determine who was responsible for the attempted poisoning no prosecutions were ever brought. Furthermore while the LWP was working in Sebat Minch, scouts had to shoot two dogs for chasing Ethiopian wolves which had been seen stalking livestock. It is difficult to know if the dogs carried out this activity on their own initiative or if they had been sent by the local livestock owner!

However, in general it would seem that wildlife persecution, such as above, is not widespread even when people lose livestock. It has been suggested that the common jackal and the spotted hyena are the biggest problem in this respect. However while the LWP was working in the Simien Mountains we did hear reports of Ethiopian wolves attacking sheep in both Mateba and Adilemlem and a horse was killed in Argin by either a leopard or hyena. As already stated, the loss of livestock can be significant to villagers' livelihoods and as a result many people feel that some form of compensation from the national park or the government would be fitting. Indeed if the authorities were seen by the local community to be dealing appropriately with individual animals responsible for livestock killings or offered compensation for losses, this could reduce the wildlife persecution which exists at present.

People were also asked about the use of wildlife parts in traditional medicine or magic. Although most people are aware of what the various animal parts were used for, people believe this to be an activity of the past and today people feel that it is better to preserve the wildlife for tourists, as tourists will bring work and money to the area in the form of mule hire and souvenir sales. It would therefore seem that people are not supplementing their income through selling wildlife parts for medicine or magic.

Does the SMNP need to re-think its conservation policies?

From the above it can be seen that the wildlife conservation policies of the SMNP do have both beneficial and detrimental effects on local communities. Although some communities benefit from additional wood for fire and building, this initiative could be expanded to include more communities. Many local community members would also like additional land allocated to them in order that they can grow enough crops, graze enough livestock and cut enough guassa to allow them to subsist at an adequate level. If land was awarded for such purposes, people may stop using the protected land illegally. In regard to wildlife persecution, the parks wildlife conservation policies do not seem to lead to any significant increase in purposeful wildlife persecution. Overall people in the region do seem to respect and obey the law, however perhaps the SMNP should consider revising its policies to allow some form of compensation to be awarded to people who lose livestock. Additionally, the park should make provisions to deal with wild animals which repeatedly cause problems for local people.

5.3. The Effects of the SMNP's wildlife conservation policies on wildlife

Throughout Ethiopia wildlife is protected whether it lives inside or outside the national parks. It is illegal for anyone to kill wildlife in Ethiopia, with punishment taking the form of either a prison sentence or a monetary fine. The severity of the sentence or fine depends on the rarity or value of the species of wildlife killed. As much of Ethiopia is remote however, there is little policing in many areas, resulting in the distinct possibility that people are killing wildlife, but that these crimes are never uncovered, reported or investigated.

The SMNP's wildlife conservation policies

As previously stated wildlife within the SMNP is protected. Overall people are prohibited from living, grazing livestock, growing crops, collecting guassa (roof thatch), and gatherering wood within the park. Furthermore people are also prevented by law from disturbing, chasing and killing the parks wildlife. In addition the SMNP has also banned the presence of dogs within its borders (Sieber and Hurni 2003). All these measures are to ensure that the park's environment is as amenable to the wildlife as possible. As there are 41 paid scouts who police the park, there is always the possibility that people who break the law will be caught and punished either through other community members reporting incidents to the scouts or through direct observation by the scouts. Additionally, the tourist guides who work within the SMNP also help to protect the wildlife and report any suspicious activities to either the park scouts or the park authorities. The guides recognise that if the wildlife diminishes, there may be fewer tourists attracted to the area and therefore less work for them. As a result the law is often enforced better within the SMNP than outside it due to the presence and accessibility of the scouts and guides.

Intended beneficial effects of the SMNPs conservation policies on wildlife

As the SMNP restricts the occupation or utilisation of its land from people and livestock, this should result in the land remaining undisturbed. Undisturbed land allows small animal species (such as rodents) to thrive, as they have plenty of vegetation to feed on and hide from predators in. This in turn results in there being ample small prey (rodents) for carnivores such as the Ethiopian wolf and the golden jackal (Sillero-Zubiri and Gottelli 1995, Sillero-Zubiri and Gottelli 1994, Newey and Sillero- Zubiri 2002).

Additionally as domestic dogs are banned from the park, this should result in less resource competition for wildlife species with which dogs compete for prey, again this would be species such as the Ethiopian wolf and golden jackal (Newey and Sillero- Zubiri 2002). The banning of domestic dogs should also limit the spread of disease from domestic livestock to wildlife, which can often be lethal. It is suspected that diseases, such as the deadly rabies virus, is spread to wildlife by the domestic dog (Gottelli and Sillero-Zubiri 1992, Nowell and Jackson 1996, Laurenson, Cleaveland, Artois and Woodroffe 2004, Hoffer 1998). The banning of domestic dogs from the park may also limit interspecific hybridisation which can occur between wildlife populations and domestic animals where the two are sexually compatible and in close contact. It is believed that interspecific

hybridisation between domestic dogs and the Ethiopian wolf is a real threat to the unique genetic qualities of the highly endangered wolf (Wayne, Geffen and Vila 2004, Gottelli and Sillero-Zubiri 1992).

All the above measures are designed to increase wildlife births and decrease premature deaths in a number of ways. By limiting resource competition through the exclusion of people, livestock and domestic dogs, this should lead to plentiful food and habitat resources to ensure that wildlife does not die due to lack of resources. Additionally, as domestic dogs are unlikely to come into contact with wildlife, disease is less likely to be introduced into wildlife populations, again resulting in fewer premature deaths. Finally, by protecting wildlife from interspecific hybridisation, populations will continue to produce thoroughbred viable offspring, as opposed to the unviable offspring which is often the result of hybridisation, which would result in the dilution of species and in the long term fewer births. This is of particular importance in regard to endangered species such as the Ethiopian wolf. If the domestic dog was to continually interbreed with the Ethiopian wolf, it could lead to the loss of the species altogether (Gottelli and Sillero-Zubiri 1992).

Possible detrimental effects of the SMNP conservation policies on wildlife

As this research did not find substantial evidence that local communities are persecuting wildlife, it would seem that overall there are few if any detrimental affects on wildlife from the SMNP conservation policies. However this may change in the future, especially local if people continue to feel that they have lost or are losing valuable grazing or cropland (which may result in loss of food or income) for wildlife conservation purposes. If local communities continue to perceive that wildlife is being given preferential treatment over them they may try to supplement their income through hunting wildlife and selling it for either meat, fur, souvenirs or medicinal purposes. Alternatively, the local community may kill wildlife to show their discontent with the authorities and their policies (Robinson 2006).

5.4. Do the SMNP's wildlife conservation policies actually work?

Initially it would seem that the wildlife conservation measures implemented by the SMNP should be beneficial to the wildlife. People and livestock are officially excluded from occupying land within the park, and people are no longer allowed to disturb, chase or kill wildlife. However in reality people still utilise land within the park mainly for the purposes of livestock grazing and wood collection. As there are no barriers between the park land and other land local communities can easily access these resources. Although the park scouts and guides police the area there are by no means enough of these personnel to adequately police the park all the time.

Nevertheless, the SMNP conservation policies do seem to be having a positive effect. In the Chennek area, which is part of the park, unlike any of the other study sites, this research found the highest levels of wildlife. This may be as a result of the lower people and livestock numbers and the resulting lower grazing damage (see chapter 3). The Ambaras area which is near the historical park boundary showed relatively high human habitation and livestock numbers, as is allowed, but it also showed the second highest wildlife densities after Chennek. This may be because the people live outside the park and do not significantly encroach on the land

inside the park where the large mammal surveys were conducted (see chapter 3). Sebat Minch, which is near the new park boundary showed high people and livestock densities with low wildlife numbers. Local people in this area may still be seriously impacting wildlife because there is some ambiguity as to where local people are allowed to graze their livestock. Mateba and Adilemlem, both far from the park, indicated low wildlife numbers in general with relatively high figures for people and livestock (see chapter 3).

These findings suggest that the protective measures of the SMNP may be having a beneficial impact on wildlife numbers as can be seen from the Chennek figures. However wildlife populations could increase further, within the park, if the illegal use of land by local communities was curbed. The situation in Sebat Minch may improve over time as people become more accustomed to living near a national park and understand which areas they should and should not graze their livestock on. At present the main reason people continue to use protected land as because they believe that they have a land shortage. If people were to be offered adequate land to maintain their livestock, grow crops and wood for fuel and building materials, wildlife numbers would perhaps increase in the future.

5.5. Conclusion

Local people do seem to recognise that the existence of the SMNP is of benefit to some members of the local community, through income from tourists who visit the area, and the wood nurseries which have arisen as a result of the parks existence. However they are also aware that the parks wildlife conservation policies can be costly to them. Local people suffer livestock losses to wildlife, for which they receive no compensation nor are they allowed to take action against the culprits. Furthermore, people have lost and continue to lose valuable grazing, crop and resource land for wildlife conservation purposes. As a result many local communities still continue to utilise prohibited land for these purposes. However although local people break park regulations in this manner they still obey the law in other respects as it would seem that wildlife persecution or utilisation is not a significant issue in the area at present.

Although the parks wildlife conservation policies may be justifiable as they do seem to be resulting in the existence of more wildlife within the park than outwith it, this could change in the future if the above issues are not addressed. The SMNP needs not only to consider introducing a compensation scheme for locals when livestock is lost, but it may need to assess land distribution, to ensure that both wildlife and local communities have enough land to provide adequate food and shelter. Otherwise local communities will continue to use protected land, which may be detrimental to wildlife. Additionally people may resort to the utilisation of wildlife and its products to supplement their income, or to show their resentment at park policy.

6. A brief ethnography of the Simien People

James Busby

6.1. Introduction

I was asked to join the Lone Wolf Project as an anthropologist and I view my contribution to the expedition and now ultimately to the write up, as one of providing a background to the rest of the project. In order to compile my simple ethnography, my initial decision was to examine the five main areas of social interaction which are present in all societies and cultures, these being the legal, kinship, economic, religious and marriage systems in order to gain a sound understanding of how these people lived their lives and to bring to mind the basic points of their culture.

I used interviews to gain most of my information, but by spending a lot of time with the people in a less formal environment I gleaned an insight into the culture of the people which would not have been possible by solely relying on the interviews.

During the weeks that we were in Ethiopia it became clear that to even cover those five areas would be a huge task, therefore I decided to focus on specific areas of the people's customary and religious life, for example the coffee ceremony and their commitment to Christianity. I shall begin my piece by outlining the methods I used to gain my results, then I shall examine the outcome of my interviews in more depth, and finally I shall conclude and discuss any limitations to the work.

6.2. Methodology

We were in the field for seven and a half weeks and I spent that time conducting interviews. I also spent a week in the village of Timirk and during this time I was invited to visit my neighbours in the evening. At theses times, although I did not formally note the responses to my constant questions, I shall use my recollections in the main body of text.

In selecting my interviewees, I tried to choose individuals from as diverse backgrounds as possible. One method I used was to ask the first person I met in the village! However I did need to talk to certain members of the community such as priests and the chiefs. I did this to demonstrate my respect for the communities I visited. The chiefs would often request that they were interviewed seeing it as a matter of course that anyone conducting interviews of any nature should first speak to them. As it turned out, not all the chiefs were able to meet me during the time that I was there so that is the reason why I did not interview all the chiefs of all the villages.

6.3. The *buna* ceremony

The word for coffee in Amharic is *buna* and the *buna* ceremony is one of the most integral parts of Ethiopian social interaction. When inviting a stranger into your house, entertaining guests or simply when your friends come round to your house for a chat, the host will always prepare *buna*.

When we first arrived in the mountains on a cold, misty day, our luggage truck was about an hour behind us. Our first camp was in Chennek, a village totally inhabited by scouts. One of them invited us into his hut to have coffee and I could think of nothing I would have preferred to do more. The process of preparation is very particular and it was done in exactly the same way in all the villages, huts and towns we visited. The precise method is explained below, and it was one I got to learn very well over the following weeks. I saw this as an olive branch to us as a group. We were in a place we had never been before, some of us suffering from the effects of ascending to a great altitude very quickly and were obviously cold. There was no obligation for the scout to invite us in, but in the mountains there is no room for selfishness; everyone helps each other, and we needed help settling in.

A woman in Ambaras pouring *buna*

The houses in Chennek were different to most of the huts in the mountains. They were built with concrete and metal and were well insulated. They housed a man's entire family. In this particular hut, a scout lived with his wife, his sister and about five children. The floor can have been no more than ten square feet in area, and with all of us in it, it was quite a squeeze. In the centre of the hut is the hearth or *midja*, and is constantly kept alight. It is the heat source as well as where the cooking is done and therefore is a very important area of the hut. Seating around it therefore is done on a hierarchical basis, the men and the elderly sitting closest, then the elder women then the younger, then the children, although often the children are sat upon the knees of the men and women. Although there is this hierarchy, there is no feeling of oppression in the hut, no malice or indifference between the sexes. It's just the way things are done. We as guests were given very good seats. This was an uncomfortable thing to accept and I said to our interpreter Friew, that I was not happy taking the seat of one of the women, forcing her to sit further away from the fire. He assured me that she would be offended if I had not taken the seat! Therefore we sat, asked questions (through Friew) to the family and others who had joined us, and enjoyed *colo. Colo* is a snack which accompanies the coffee and is usually roasted nuts or beans, however I did have popcorn in a few places as well. This is roasted on a thin, metal, circular plate or *biret mitad*, over the fire, and is then put into a huge hand-woven basket and passed around. When the *colo* is beans or nuts, it is important to sort the uncooked ones from the cooked as the former are extremely hard and in fact our leader chipped his tooth on the first day on an uncooked piece of *colo*. This is done by the Ethiopians with a practiced flick of the wrist. The *colo* is placed in the palm of the hand, and the flick separates the harder, heavier uncooked colo from the lighter cooked selection. (Over the expedition I still had not mastered this technique.) Then after a long period of time the first round of coffee was distributed. But first let me explain the preparation.

***Preparing the* Buna**

It is the job of the woman of the house to prepare the *buna* and they take great pride in making sure theirs is the best. *Buna* is prepared always from actual coffee beans which are first roasted on the *biret mitad*, and are

spread around the disc using a thin metal rod with a kink in the end. This kink allows the woman to collect all the beans in one area of the disc and then spread them out evenly. Once roasted the beans are ground with a pestle and mortar or *mugecha lige* and *yebuna mugecha*. This is done by hand. The pestle is a large piece of cylindrical wood (sometimes metal) about a foot long, and this is brought down from above the head and bashed into the mortar and beans. The mortar is held firmly in place with the other hand, the palm and last three fingers of the hand grasp the side of the mortar, whilst the index finger is hooked over the rim for extra stability. It takes ten to fifteen minutes to grind the beans fully. The women are so well practiced in this art that they can do it without even looking at the mortar. I often thought this looked rather dangerous as one false move and a woman could crush a finger easily.

Our first *buna* ceremony in Chennek

Once the beans are crushed they are placed into the kettle known as a *berad* or *jebana*. This will have been filled with water and placed on the *midja* after the beans had been roasted and by this point will be boiling. The kettle is swilled around every now and again to distribute the grounds through the water. At this point it is imperative that the fire is kept as hot as possible. The people of the mountain, as I am sure any person from a society which relies heavily on a hearth, are experts in fire lighting and maintenance. They are able to pick up and distribute white hot coals around the hearth with their hands and not burn themselves. They blow the embers with a great amount of force, thus creating an intense heat, without disturbing the ash and coals. I offered to help and do this on a number of occasions and was put to shame by even the children.

As the coffee is brewing it is tested intermittently to check its strength, until finally it is ready. The kettle has curved sides and is shaped like a raindrop. The spout runs from about a quarter of the way up and is conical, the exit point being quite thin. This presumably is to make sure only a limited amount of grounds escape during pouring. The kettle spout is held close to the cup or *finjal* for the initial pour, and is then drawn up at a rapid rate as the cup fills. The *finjal* are small, just bigger than an egg cup, and are made from china. They are prized possessions and are kept in a Hessian sack until required. This is the first round of *buna* known as *abol*. It is the strongest and best cup. The coffee is bitter but refreshing and is piping hot. The beverage is drunk slowly in order that you appreciate the taste and, as a matter of respect. Because of the temperature of the *buna* and the fact that the liquid contains some grains, the preferred technique is to slurp the coffee out from the top rather than pouring it into one's mouth. Slurping is not bad manners and is in fact encouraged as it helps to filter the liquid. Whilst drinking one is plied again with *colo* and the two make an irresistible combination.

Once the first round is finished, you pass your cup back to the woman or one of the children who have been sent to collect them. This is done by extending the arm which is holding your cup (the right hand) and your left hand is placed on top of that arm at around the elbow. In this way you are thanking the preparer. The woman then either

refills your cup if there is any left, or washes it in preparation of the second round or *tona*. For the *tona*, (and for the third round) the kettle is refilled with water and boiled and the whole process begins again. Then finally there is the third round or *bereka*. Once *bereka* is completed the ceremony comes to a conclusion and more often than not so did my interviews.

The more affluent people of the Simien have coffee three or four times a day, each at a different house. It is their favourite drink (although some men like *tela*, the local beer, just as much) and is one of the few luxuries they can enjoy. The poorer people, such as those who live in Timirk or Matba have it maybe only once a week. When asked, the poorer people said that they remember as children having *buna* much more frequently and if they could they would have it as much as the richer people. Due to some of the land pressures talked of elsewhere in the project this is now impossible, yet it remains an integral part of the social structure. It is a way of bonding with each other as well as providing a chance to talk which all Simien inhabitants love to do.

Buna *and the Church*

The priests of the mountains discourage people from drinking *buna*. They claim that it is written in the bible that drinking coffee is bad and that it harms people's faith. One priest I spoke to by the name of Kies Amara Molaliga, from Matba, was quite embarrassed to tell me that he remembered drinking it as a child (children are not prevented from having a cup, as long as there is enough to go around) but that he never drinks it now, in fact priests are forbidden to drink it. He also claimed that "Even doctors say it is bad for you".

Religion, as we shall see, is taken very seriously by the Simien Amhara, yet when I pressed Worku Sahilie of Adilemlem, he said that although he is very religious, he goes to church every Sunday and respects the Saints days, he does also enjoy *buna*, he just doesn't tell his priest. He never goes to other people's house for it, and only has it once a day to keep him awake when he is working in the morning.

Buna *and Fortune-telling*

Fortune-telling in the Simien is an underground profession. No one admits that they go to see fortune-tellers, yet if they did not, there would be no fortune-tellers! I visited two whilst I was there and asked them both if they got a lot of visitors. Unsurprisingly they said yes.

A Fortune teller

One of the tellers (they were both women) used coffee grounds to predict ones future. She lived in Timirk (the village I stayed in for seven days) and was told by our guide, Bogart, where she lived. Bogart used to be chief of Timirk and was a respected member of the community. Possibly for this reason, he only told me that he had visited the teller after lengthy but gentle interrogation. When I entered the hut I was confronted by an old wrinkly woman slumped against the back wall. She looked content and had a wide toothless grin which was very welcoming. I was advised not to come straight out and ask her if she was a fortune-teller, and I had to skirt the issue whilst we enjoyed our *abol* round of *buna* made by her

daughter. As it came to an end, I asked if fortune-telling existed in the village to which she replied yes, and then asked her if she was one herself. Again the answer was affirmative. Fortune-telling is done in the second, *tona*, round of *buna*. Therefore when I had finished my cup, I passed it to her and from the grains she determined that we were not staying in the area for long, that we were using traps to catch something, that we were scientists and that I would go on to have a long life filled with riches and many children. Make of that what you will, but I was perplexed that she knew some of that information such as the traps.

This was an important interview not solely because of the interesting nature of it, but also to see what sort of answers she gave to my *buna* granules. The people of the mountains are very religious and place their prosperity in the hands of God. Therefore they are predisposed to searching for answers to the unknown and relying on fate to determine their future. This is a distinctly different approach to life than the western view that a person determines their own fate, but obviously an equally valid one. I believe that the nature of their religion is that it actively purports the idea that one's prosperity is in the hands of God, and therefore he must be kept pleased, inducing people to visit individuals such as the fortune-teller. They want to find out if their commitment to God has been noticed and rewarded. Not only this but they are also subject to that need common to all humans, that of wanting to know the future. Think of all those people who read their horoscopes in the daily newspaper. It may only be seen as a bit of harmless fun, but the desire to know the unknowable is a fundamental human instinct.

Visiting fortune-tellers is patently opposed by the Church, and this could be the reason why hardly any of my interviewees admitted to visiting one. It is seen as devilry and is strongly discouraged by the priest in much the same way as the drinking of *buna* is. I found it interesting that both *buna* and fortune-telling were both discouraged by the priests and the church, and those two institutions were melded into one in that hut. Maybe the association of one with the other lead the church to discouraging them both.

To fully understand the reason why the church takes stances such as these we must examine the role religion plays in Simien society.

6.4. The Church and superstition

The Church

Religion plays a huge role in the lives of the people of the Simien. They are devout in their worship and visit Church to pray at least twice a week. They place their hands and livelihood in the hands of God, Jesus and Mary, the Mother of God, plus a whole pantheon of saints, who all must be honoured, lauded and placated. Religion and superstition are inexorably entwined as I found out during my time in the mountains, therefore I thought to examine them concurrently would highlight the way each affects the other.

I started my research by merely asking about the religious practices of the people of the Simien. Each Sunday most, if not all, of the inhabitants of the mountains travel to their nearest church which, for some, can be a four hour hike across the valleys. Once there they listen to passages from the gospels (read in *Geez,* the ancient language of the church which only those trained as priests, monks or nuns can read or even understand) and the sermon spoken by the priest in Amharic. They pray and chant religious mantras but they do not take communion. The services last for three to five hours. Everyone dons white *shema*, a large piece of homespun cloth which covers the head, body and legs. When the service is over the people travel home and do not work for the rest of the day.

However religious worship is not confined solely to Sundays. The people also honour many Saints' days during the month, as Kies Amara Molaliga (a priest) explained to me. During a thirty-day month there are as many as sixteen saint's days. The list he gave me can be found in the table below.

1. Lideta Mariam	11. Kidos Yarled	21. Mariam
2. Yohanis	12. Mikial	22.
3. Bata Mariam	13.	23. Giorgis
4.	14.	24. Tekle Haymanot (once a year)
5. Abo	15.	25.
6.	16. Kidane Mihiret	26.
7. Silasie	17.	27. Medihanralen
8.	18.	28. Amanuiel
9.	19. Gebriel	29. Bale Egziabuler
10.	20.	30. Yohanis

A table of the days of the month with their corresponding Saint's day

On Saint's days the people of the Simien are encouraged to visit the church to pray. However of all the people I spoke to only a handful actually did this. Most choose to stay at home and refrain from work. This is seen as an acceptable way to honour the days by the priests. However as you can see from the chart above, there are many Saint's days in the month, and those listed are only the ones which occur every month; all months also have their own specific Saint's days. This means that on average, a farmer in the Simien has only around 10 days a month in which to tend the fields. Therefore when the farmers attended church, the welfare of their crops is always at the forefront of their minds.

I asked Meguanit Alemu, a farmer, what he prayed for at church he replied, "For the health of my family and the success of my crops". Sustenance depends highly on the harvest as it will feed the people and their families for the rest of the season, therefore praying for a good yield at harvest time ranks highly in all Simien people's minds. Praying for one's economic welfare may seem an obvious conviction, however I mention it to try and instil in the reader not accustomed to the existence endured by human beings living in such abject poverty, the essential nature of the harvest and its yield. It literally is life or death. These people find comfort in placing their salvation in a higher being which perhaps is a reason why superstition is rife amongst the mountain folk.

Superstition

The people of the Simien are extremely superstitious although they may not admit it, as we have already seen when considering the fortune-teller. However there are many other forms of superstition, some of which are looked at here.

During the course of the weeks, my interpreter Friew, saw that I was interested in the fortune-teller and superstition and suggested I asked the people about the evil eye, the *bala zarr* and the *bala coli*. Intrigued I quizzed Friew as to what this was. He explained to me that the evil eye is the watchful eye of the devil. It is not some intangible ethereal, presence but a menacing spirit that inhabits the bodies of human beings. Through these individuals, the devil observes the world looking for people to possess. Make no mistake, those who were used by the devil in this way were not evil themselves, and had no knowledge that they were being used. They are merely instruments used by the devil for his evil games – so Friew made clear. Friew advised me to be cautious when asking about it though as, although not all the people of the mountain believed in it, the evil eye was something which people were very afraid of.

The Evil Eye

In Matba I spoke to Ato Meguanit Alema about the evil eye. He told me of an occasion when he had witnessed at first hand the effects of the evil eye. He explained that if a person within whom the evil eye was present looked at you, the effects would be sudden. By looking at an individual, the devil is able to possess or *eat* that person causing them to fall ill that very day. Once a person has been *eaten* the devil is in control of their body, making them do unthinkable things. They swear profusely and become violent lashing out at their family, friends, even spouses without cause or reason. Then they fall into a trance-like state and experience nausea and fits.

Mistopher Sualik in Sebat Minch

The cure for ridding a person of the evil eye is bizarre and unique. I asked people in Matba, Adilemlem and Sebat Minch, and they all told me the same procedure. When the victim is brought home, they are held down so that they cannot move. To aid this restriction a *liguam* (horse's bridal) is placed over the individual's head so that his movement can be controlled. Next a poker is warmed in the fire until it is red hot, and is then placed on the head of the individual. Rubber, feathers and plastic are burnt and the victim must inhale the fetid fumes. Then the victim is quizzed in an attempt to find out who the evil eye is and what he wants with the victim. The evil eye is evasive and will mislead the interrogators as to his real identity, as Mistopha Sualik from Sebat Minch explained. Once the evil eye has been identified the victim shouts his name, and once this has happened the evil eye will leave the victim's body. However before the evil eye leaves the victim must do one last grotesque chore for him. Those caring for the victim must find the faeces of an animal (dog, chicken, gelada baboon and donkey faeces were all mentioned to me) and hide them somewhere in the

room. Then the victim must be set loose to find the faeces and then, once found, consume them, which they will do. Once this is done the victim will stop fitting, calm down and pass out. In the morning they do not remember anything about their experience.

Those who have the evil eye within them without their knowledge are often strangers or *farenjis* (westerners). However there can be outcasts from within the community such as tramps, beggars or the diseased. This can be compared with the findings of Evans Pritchard in his study if the Nuer tribe of the Sudan (1940). In his classic ethnography he gives an account of when a man was killed by a granary collapsing whilst he was sitting under it. The stilts of the granary had been decimated by woodworm, causing it to collapse. We in the west would attribute this to a tragic case of bad luck. Not the Nuer, who believe that the reason the granary fell on that person at that particular time was due to him incurring the wrath of a witch, due to some past misdemeanour. The witch, who was usually an outcast of society, would use sorcery to punish the victim.

In the Simien the evil eye can be seen in the same light as the Nuer witch with one difference. The people of the Simien do not believe that those *eaten* by the evil eye are being punished. It is just a random occurrence, which is not attributable to any reason. To try and avoid being the subject of an attack by the evil eye, the people of the Simien purchase and wear charms and talismans in an attempt to ward off the evil eye. Such charms are fashioned from blocks of sulphur, jewellery made from white sea shells or even just simple Christian crosses. A charm that is worn by a lot of children constitutes a small piece of manuscript, about five centimetres square, upon which prayers are written in *Geez*. This is folded up, bound in a leather pouch and worn around the neck. This is purchased, not from a priest, but from a *deftera* – a sort of pseudo priest. However, the reputation of the *deftera* is one of mixed beliefs. As Kelebe Nigusie from Adelemlem told me, the *deftera* is 'close to God and the Devil'.

***The* Deftera**

In Philip Marsden's 2005 account of his journey from Lalibela to Axum, *The Chains of Heaven*, he talks of the *deftera*. He states that they are religious figures who are unofficial priests; very holy and committed Christians who assist the priests in their duties. My experience of them was quite different. Although they are seen as religious men, they are also seen as men who are experienced in the more sinister side to worship and superstition. Ato Zewdu Chanyelew (Matba) was staunch in his disapproval of all those who believed in the powers of the *deftera* to ward off the evil eye and said that any man who believed in them was 'betraying God'. However not all people did renounce the *deftera* in this way. But if they did admit to visiting them, they did not seem proud of it. When speaking to the interviewees about this subject they became very quiet and did not particularly enjoy telling me about it. I was met with a similar response to my inquires about the fortune-teller. This, I believe, was due to the fact that the people were mildly ashamed of the fact that they visited the *deftera*. Like the fortune-teller, people saw the patronising of these individuals as occult and against the will of the church. Many, like Mengesha Mesfin, said that they used to believe in the *deftera*, but now they have stopped. To gain a full understanding of this characteristic of Simien religious life, I would have needed to spend much

more time with the people: to build their trust and gain a rapport with them before they would divulge more information about them. Regardless of this however, I was left unsatisfied as to why the *deftera* especially was held in such a low regard.

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On the penultimate day of the expedition, I decided to interview one of our guides, Ato Getachew Assefa. His main role within the expedition was as a wildlife and plant expert. I originally spoke to him merely to discuss his marriage and the structure of the ceremony. However I also quizzed him about aspects of Simien superstition discussed above. He informed me that he himself had been a victim of the evil eye and confirmed all that I had learnt from my previous interviews. But he also told me the reasons why the *deftera* were so feared.

He told me that the *deftera* had supernatural powers and it was important to placate them. People believed that they could cause bad weather to destroy their crops and turn *duro watt* (a speciality of Ethiopian cuisine - chicken in a spicy sauce) into faeces. “If you get on the wrong side of a *deftera* you must go to another to get protection”, he told me. This made me think that maybe the people of the mountains were too afraid to talk to me about this subject for fear of infuriating the *deftera*. He told me that one of the charms one can acquire from a *deftera* is made from a *teketsela* orchid. This is an extremely rare plant. He said that the *deftera* would use their evil powers to find it. Many other charms which can be purchased include: parts of a hyena’s body (especially the eyebrow and liver) which if buried under a field would protect its crop from the weather and pests; patches of Ethiopian Wolf or gazelle skin which have prayers in *Geez* inscribed on them, and are then hidden in one’s house to ward off the evil eye; and certain plants know as *Altit* and *Artimisia* are crushed and then strapped to the left arm (the arm of the devil)[1] to ward off evil spirits. Getachew knew so much about this because he grew up in the mountains, but more importantly, his mother is a *bala coli*, (see below) and someone who sells similar charms, (although she did not have the power to do evil acts as the *deftera* can).

These revelations went a long way to explaining why the *deftera* were seen as ‘close to God and the devil’ and why people were afraid to speak with me about them. Coming from a culture that has lost a lot of its spirituality and where magic and superstition is almost frowned upon, I found it hard to comprehend the power that these holy men had over the people. In a country that has gone through so much political upheaval and turmoil, it was fascinating to see that some of the ancient beliefs had survived.

***The* Bala Zarr *and* Bala Coli**

The final aspect of the superstitious nature of the people of the Simien I shall discuss is the *bala zarr* and the *bala coli*. It took me a while to note the difference between the experience of being eaten by the evil eye and the *bala zarr* and *bala coli*. They are similar in many ways, yet there is one subtle difference; I shall explain.

[1] The Right arm is the arm of God
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The *bala zarr* is a spirit which only affects someone who is a *bala coli*. When the *bala coli* is under the influence of the *bala zarr*, like an individual who is affected by the evil eye, they fall into a trance. However, when the *bala coli* falls into a trance they become able to solve the problems of people who come to them and sometimes tell the future. However this is not a nice experience for the *bala coli* as they become ill. As Getachew told me "it is stressful for the individual and the observers". The only way to placate the *bala zarr* (which causes the illness) is to bring whatever the *bala coli* asks for. This is usually *buna*, sheep of a certain colouring[1] or other types of food and drink. Once the *bala zarr* has been placated it will leave the *bala coli* in peace. It happens around four or five times a year usually around religious holidays. It is again frowned upon by the church but not in the same way as the belief in the evil eye or the acts of the fortune-teller.

6.5. Conclusion

Superstition plays a huge part in the belief system of the people of the Simien. However contrary to the view of the church of Ethiopia, rather than it having a detrimental effect on people's faith, I am of the opinion that it helps to strengthen the belief of those who trust in it. Where Christianity fails in satisfying the people's hunger for answers to the unanswerable, superstition steps in to fill the void. This does not detract from their belief in God, which is the main reason the church is afraid of it but merely completes their worldview. However I am not advocating that the church is of the wrong opinion in this matter. They must oppose superstition to retain any genuine authority over the people in terms of supporting them and helping them through a time of famine, poverty and political uncertainty.

I went to the mountains with a clear idea of what I wanted to research when I got there. However it was the undercurrent of folk superstition that really fascinated me and eventually became the focus of my ethnography. It became apparent after a short time that my original plan was far too ambitious given the amount of time I had there, and focusing on a couple of aspects of the culture was the most productive method of gaining any real results from the expedition.

What I have written about is my experience of the mountains, with an attempt to add some anthropological theory to what I found. In my preparation for the trip, I merely read up on the history and basic culture of the region. I did this so that the findings and interests of others who have studied in the area would not taint my mind when tackling my first attempt at a basic ethnography. I hope I have given an idea of the totally alien yet absolutely mesmeric culture that I encountered in the Simien and if this monograph inspires others to look at the people of the Simien in more detail then my writing has been worthwhile.

The mountains are a remote location, yet the influence of the West is growing all the time. This region, the people and the wildlife, which have for hundreds of years lived in isolation is in real danger of being lost. Let those who read this be stirred to try and help preserve the province and all that it contains, so that future generations can enjoy it and experience this most magnificent country of East Africa.

[1] A *bala coli* will ask for a sheep with a black head, or a red sheep with white patches etc.

6.6. Epilogue

I am indebted to the people of the Simien for the way they took me in during the expedition. Their amicability made me feel extremely welcome and their generosity humbled me. I have come away from Ethiopia with a love of *tela*, *injera* and *tibs* and memories that will never leave me. I especially want to thank Friew Kidane for his interpretation and companionship. He became a true, lifelong friend during the expedition and I could not have written this piece without him.

I also want to thank my brother George and the rest of the team, Clare, Richard and Julie for inviting me to join their adventure. Many thanks must also go to the rest of the members of the Lone Wolf Project. I hope you remain well and happy.

7. Logistics, Equipment and Communications

Richard Antony Hoolahan

7.1. Pre-expedition Preparation

Acquisition of Knowledge

In the Lone Wolf Project's early preparatory stages, we were aware of only a handful of past studies and expeditions to the Simien Mountains, such as the University of Zurich Flora and Fauna Survey and Robin Dunbar or Chad Hunter's work on the Gelada monkey. These ventures were all aimed at areas within the park boundaries, as opposed to outside the park where a large portion of the project focus was.

Baseline information was acquired through various internet sources, such as the FCO[1] and tourism websites[2]. Email was the primary means of communication between advisors. Due to the relative lack of available knowledge about this part of the world, information was also acquired from some unlikely and surprising sources, such as the local children's charity 'GondarLink' and a University of Edinburgh politics post-doc, Dr Sarah Vaughan. Some members had also previously attended the Royal Geographical Society's annual 'EXPLORE' conference which provided guidelines on how to think about pre-logistics.

Since few groups had travelled into the Simien and reported on their experience, we were bargaining on learning much of the knowledge we needed as we went along, and were fully prepared to change our plans as new information came to light.

Travel

International and domestic flights were booked through STA Travel. We were informed that travel to the SMNP was only possible by hiring a tourist minibus or land cruiser, and travel within the park only possible by walking and mules, since roads within the Simien are few and far between.

Accommodation

In Addis Ababa and in Gondar, we planned to stay in a reasonably priced hostel. Tents were proposed as the primary accommodation throughout the expedition and then village huts when offered.

Equipment

We planned to purchase as much equipment as possible within the host country, to minimise problems with baggage allowance and to ease overall expenditure. We organised a freight service with Lufthansa to deliver a substantial amount of expedition gear to Ethiopia, but were only able to do so as far as Addis Ababa. Some equipment, unavailable in Ethiopia, was obligatorily bought in the UK. From the UK and USA we obtained:

[1] www.fco.org.uk
[2] eg www.selemat.net

General Equipment

1 five person Vaude Division Dome camping tent – from *Alltimus*
2 four person Vaude camping tents – from *Alltimus*
1 MSR Waterworks EX Micro filter water pump – bought on internet
2 Mill Bank Bags (Silt Removal) – from an Army Outlet Store
2 Medical Bags (refer to Health and Safety Chapter)
12 Iodine crystal bottles – from a friend
1 Thermal blanket – from *Its Great Outdoors*
1 Freeplay Driven Sherpa X-ray wind-up torch – from *Its Great Outdoors*
1 Compact spade/pick – from *Its Great Outdoors*
Assorted waterproof tough sacks – from *Its Great Outdoors*
Assorted bungees – from *Its Great Outdoors*
Waterproof Matches – from *Its Great Outdoors*
Several emergency glow-sticks – from *Its Great Outdoors*
Spare tent pegs – from *Its Great Outdoors*
Personal equipment – from *Its Great Outdoors* or previously owned

Scientific Equipment

1 Panasonic Toughbook CF-27 laptop computer – from *EBay*
2 Garmin Etrex Summit GPS handhelds – bought on internet
2 Measuring Tapes (50m) – borrowed from *University of Edinburgh*
1 Box sterile gloves – bought from a pharmacy
2 Pairs of rodent handling gloves – bought from a garden shop
2 Spring balances – borrowed from *University of Edinburgh*
2 Pairs of fur clippers – borrowed from *University of Edinburgh*
50 Plastic arm covers – bought from a garden shop
Clear plastic bags (for rodent examination) – bought from garden shop
Waterproof notebooks – ordered through *University of Edinburgh*

Food

We were aware that expedition food would be very basic, but were unsure of what ‘special’ items would have to be purchased at exactly what stages in the expedition. For example, peanut butter and porridge oats (for the rodent traps) needed to be purchased from the capital, as the availability of these items further a field was supposedly unlikely.

The project planned to acquire the majority of staple foods (pasta, rice, vegetables) in Gondar. We assumed that food and further staples (chickens, lamb, eggs, and vegetables) could also be purchased from nearby communities. Additional vitamin supplements were taken as personal luggage to help with nutrition.

We decided that a cook would be hired once in Gondar, since the team would number up to 18 people at various stages on the expedition. This would allow team members to fully focus on the expedition work and be able to rest after long days in the field, as well as provide temporary employment to at least one local person.

Water

Water in Ethiopia can be detrimental to the health of foreign travellers. *Guardia*, *Cryptosporidium* and *Bilharzia* are all pathogens we were conscious of. At the altitude of the Simien, water boils at less than 100°C, and therefore does not kill all infectious organisms. Thus appropriate treatment equipment was purchased before departure (Iodine and a filter pump). Due to the fear of *Bilharzia*, we planned to bathe in clear running water (less chance of infection than stationary water; see also the chapter 13).

Labour

Local labour was not only needed but also required by the regional wildlife department in order to conduct research legally within and around the park. Guides, scouts, an interpreter and a cook were all noted by the project as absolute necessary labour before departure, and a 'Wildlife Expert' was mandatory if we were to follow park rules.

We organised with the local university to have 4 third year Applied Biology students to assist the expedition. Due to the political situation at the time of departure, universities around Ethiopia were on strike, leading to later examination dates. Gondar University therefore informed us that the students would be unable to join the expedition at the originally intended date. This included our translator, so for the earlier stage of the expedition, and subsequently later as well, we hired an extra interpreter.

Communications and Power

We were well aware of having little communication whilst in the field and that the expedition would be almost completely independent during the course of the expedition, due to the isolation of the Simien. In case of an emergency we purchased satellite phone and an emergency locator beacon (EPIRB). The following communications and power equipment was obtained from the UK and the USA:

1 Iridium Satellite Phone – rented from *Adam Phones*
1 Emergency Locator Beacon (EPIRB) – bought on internet
2 32-Watt Expedition Backpack Solar Panels – from *CT Solar*
1 16 Amp/hour Power Centre and battery – from *CT Solar*
2 Nikkai 12V Invertors – from *Maplin Electronics*
1 Uniross Universal 120 Battery Charger – from *Maplin Electronics*
Assorted rechargeable batteries – from *Maplin Electronics*

7.2. Field Notes

7.2.1. General

Acquisition of Knowledge

As expected, there was a steep increase in the acquisition of knowledge once resident in the host country. Further help was obtained from the EWCP in Addis, Gondar University, GondarLink via Friew Kidane, local people and tourist guides. Throughout the expedition, we received a wide variety of information from labour and local people. Often, because of disparities in the information that we received, we felt the need to confirm this from a variety of sources whenever possible.

Travel

The project flew from the United Kingdom to Addis Ababa, Ethiopia, via Frankfurt, with Lufthansa. Three team members flew from London and lost their main luggage on arrival in Addis Ababa, which was later discovered to still be in Frankfurt. Baggage was not returned until 3 days later. Adequate compensation was given by Lufthansa.

Travel within Addis Ababa was made possible by local taxi and, apart from various attempts at over-charging, there were no problems.

We flew with Ethiopian Airlines to Gondar in the North of Ethiopia. Travel from Gondar Airport was provided by Gondar University, and within towns we used local taxis or walked.

We travelled into the Simien to the first base camp at Chennek by a Land Cruiser. At the time of writing, there was a monopoly on this type of transport into the Simien, meaning that negotiation was difficult. We also hired a truck within the park that had originated from Debark, to reach the second base camp at Sebat Minch, and a second truck to travel part of the way to the third base camp in Adilemlem.
We used mules to travel most of the way to the third camp, Adilemlem. The first hired set of mules and mule-handlers were inexperienced and the mules became out of control, running off with much of our equipment. We retraced all our equipment and the expedition was set back a day. We hired another truck to reach Bwahit Pass, where we had sent a scout ahead to organise a more reliable, 15-strong mule team with 10 handlers. A two day trek along a tourist route, stopping for one night in Ambiko allowed us to reach the third base camp at Adilemlem. One member's t-shirt was 'mislaid' whilst drying at Ambiko.

The fourth (Matba) and final (Ambaras) camps were reached in a similar fashion, each time with fewer mules because of our diminishing food supplies. No problems were found with either travel period.

It should be noted for future expeditions into the Simien, that it is park regulations to pay mule handlers for twice the travel time, since they spend an equivalent time returning home as they do working.

Accommodation

In Addis, we stayed at the Tiatu Hotel, which while basic, was reasonably priced. In Gondar, we originally found accommodation at the friendly Quara hotel. However after four days we relocated to the Circle Hotel to make meetings easier and for more equipment space in their larger rooms.

The Vaude tents were found to be mostly suitable, with some slight water leakages in the smaller tents. In Chennek a circular hut was used as labour accommodation and as a kitchen/dining area. In Sebat Minch, a smaller metal hut was used, again as a kitchen/dining area and some sleeping space. We also used the kitchen tent over the top of two of the guide's tents for labour accommodation.

In Adilemlem we used a hut to store some equipment and we rented the owner's garden to pitch our tents. The kitchen tent was used for dining and cooking. Apart from the owner attempting to charge one extra day's stay, and camp being situated on a slight slope, no problems arose.

In Matba the camp was based on common land and there was no charge for our stay. The upside to base camp four was tents being pitched on flat land, the downside that this was of a moderate swamp quality. Trenches were dug for some of the tents to prevent flooding. No huts were available at Matba, but with considerably less supplies there were no space problems.

In Ambaras, a new health clinic had recently been erected but was not yet operational. A request to hire the clinic as a kitchen was met with an inappropriate rental fee. After erection of the team's kitchen tent a more reasonable price was offered and the kitchen was set up inside the clinic. After one night there was discussion among the locals that the kerosene stoves may blacken the ceiling. Eventually we were asked to completely move out since contractors were arriving soon to continue work. No contractors arrived during the team's stay. The team found Ambaras probably the noisiest and most bothersome of all camps.

Equipment

As well as problems with lost luggage, we encountered a serious setback when we were informed that the freight, containing essential equipment, would not arrive for a further *week*, as it was still in Frankfurt. We were also advised to purchase a kitchen tent, as there was no guarantee that huts would be available. Due to the lack of availability of camping equipment in Ethiopia, the team leader was required to design the tent himself and have it made in Addis.

The project bought or collected the following equipment in Ethiopia:

General Equipment

Self-designed kitchen tent	
Nailbrushes	Soap
3 Clothes washing powder	1 Savlon disinfectant
4 Kerosene lamps	1 Large spade
1 Tarp (4 x 5m)	1 Tent groundsheet
10 Hessian sacks	48 Toilet rolls

Scientific Equipment

184 Sherman rodent traps (from EWCP)	
Coloured material	Clipboards
Stationery	String
Rope	Notebooks
Yellow card	Blue card
Blue/yellow plastic sheeting	

Food

Peanut butter (18 jars for rodent bait), porridge oats (20 kg) and cheese (0.84 kg) were all acquired in Addis Ababa. As it turned out, all of the above was available for purchase in Gondar. It also turned out that tinned fruit could in fact be purchased in the town of Gondar.

The students were not to arrive until the 27th June, so from the 13th June until then the project needed to feed 11 people, and thereafter up to the 29th August roughly 16 people, not including scouts and guests. A cook was hired once in Gondar, and an assistant cook joined the project a few days after entering the field. The following foods were purchased in Gondar:

Meat

Corned beef (2.72 kg)	Tuna (1.765 kg)
Sardines (1 kg)	

Vegetables

Tinned peas (1.64 kg)	Tinned mixed vegetables (1.64 kg)
Tinned sweet corn (1.4 kg)	Potatoes (20 kg)
Onions (10 kg)	Cabbage (10 kg)
Carrots (10 kg)	Chilli (5 kg)
Lentils (20 kg)	

Fruit

Tinned tomatoes (3.28 kg)	Tinned fruit cocktail (1.695 kg)
Tinned fruit salad (1.695 kg)	Tinned peach halves (1.24 kg)
Tinned pineapple (24 tins)	Dried sultanas (3 kg)

Miscellaneous

Soup (9 packets = 752 g)	Spaghetti (52 kg)
Rice (16 kg)	Salt (0.74 kg)
Sugar (15 kg)	Flour (30 kg)

Milk powder (3 large tins)	Marmalade (2 tins)
Tea bags (250 bags = 0.5 kg)	Coffee (2 kg)
Cooking oil (12 litres)	Washing-up liquid (3 litres)

The project restocked supplies with the arrival of the students and additional food was secured on occasional trips by labour back to Debark or Gondar. Some food was in fact available in the Simien, such as the occasional sheep, cow, or chicken, eggs, and 'injera' - a local staple. The only food item the project felt it over-purchased was pasta. We ate far too much stodgy pasta in those 7 weeks! The project also bought the following cooking equipment in Gondar:

4 Kerosene stoves	3 Medium-sized pans	2 Small jugs
1 Large pan	1 Large kettle	2 Small washing-up bowls
1 Medium kettle	18 Bowls	4 Large washing bowls
2 Large kitchen knives	2 Ladels	5 x 20 Litre kerosene canisters
2 Serving spoons	12 Spoons	2 x 30 Litre water canisters
5 Teaspoons	2 Colanders	3 Chopping boards
2 Tea strainers	18 Metal mugs	2 Small food containers

Water

Eighteen 1.8 litre distilled water bottles were purchased in Gondar for emergencies and when team members became ill. At the first two camps, water came from an underground spring, and therefore only iodine treatment was used. There were no health problems with this water. At the third, fourth and fifth camps water came from a natural spring, hence the filter pump was used in conjunction with iodine (refer to pre-expedition equipment section for treatment equipment details). Again, there was no health problems associated with water use. Our previous plans to bathe in running water were quickly forgotten about. Quite simply the running water in the streams of the Simien in the wet season is ice cold. We had to wash in basins inside tents using water that to our best judgement contained no hazards.

Labour

An interpreter, Friew Kidane, was recommended by GondarLink. He proved to be very friendly, honest, extremely reliable, very flexible, and efficient. The EWCP highly recommended Getachew Assefa, who worked in Bale as a wolf monitor officer for 3 years, and is also a qualified Simien Park guide. He too was very useful, already having a scientific background. Derebe Deksios was required by the park to be hired as a Wildlife Expert, and brought to the project an amazing wealth of knowledge (and was by far the best wolf-spotter). The expedition also took on Abera Getachew, a Simien Park guide with 12 Ras Dejen climbs under his belt. Abera had an amazing level of fitness, was highly flexible and his consistent upbeat outlook was great for the morale of the team. Mengistu Hialle was hired as the cook, could conjure up a wide variety of meals from the basics we had, and threw in special treats here and there to boost the spirit of the team. With the help of Yeshewondm Kassa (a.k.a. 'Beri'), who waited on us hand and foot at all times, fantastic meals were created for up to 18 people at a time.

Anagaw Meshesha of Gondar University helped organise the students and gave initial advice. All the students filled their roles as required. Eskedar Kelele acted as interpreter for the anthropology; Chalachew Godebo mainly helped Clare Marsden with the rodents. Abraham Silehsi helped George Busby with the mammal surveys and Abraham "Dembecha" Birara assisted Richard Hoolahan with filming and all other components of the project with great enthusiasm. Different scouts were hired at each campsite and were very friendly.

Overall the project was very lucky to have such warm and varied personalities on the expedition, and is very, very, grateful to all participants. The expedition would never have been possible without all the aforementioned.

7.2.2. In-Field Review of Equipment

In general, most equipment worked well in the field but the project felt there were some niggles and unnecessary purchases.

General Equipment

Vaude tents – no problems when erected correctly, apart from some broken zips.
MSR Waterworks EX Micro filter water pump – did not work at the rate the manufacturers claimed, even after primed, but otherwise filtered water efficiently
Mill Bank Bags (Silt Removal) – filtered water at a slower rate than stated by manufacturer
Medical Bags (refer to Health and Safety Chapter)
Iodine crystal bottles – easy to use, and worked perfectly
Thermal blanket – not used, good as safety precaution
Freeplay Driven Sherpa X-ray wind-up torch – fine, low-light setting best
Compact spade/pick – relatively useless, but looks nifty
Waterproof tough sacks – essential, great asset
Assorted bungees – not used
Waterproof Matches – soaked one night, thereafter useless
Emergency glow-sticks – as light when kerosene ran out, useful
Spare tent pegs – useful to have
Personal equipment – insufficient space to fully describe, useful overall
Nailbrushes - essential
Soap – essential, biodegradable if possible
Washing powder – essential, biodegradable if possible
Kerosene lamps – one faulty, energy saver
Large spade – much better than compact
Toilet roll – better than leaves

Scientific Equipment

Panasonic Toughbook CF-27 laptop computer – excellent, hardy and uses battery efficiently, good option to input data as collection progresses but could not handle transfer of high quality video footage to hard drive
Garmin Etrex Summit GPS handhelds – suspicious altitude readings
Measuring Tapes (50m) – no problems
Box sterile gloves – no problems, essential for infection prevention
Pairs of rodent handling gloves – rodents bit through

Spring balance – no problems
Pair fur clippers – no problems
Clear plastic bags (for rodent examination) - no problems, better than cloth
300 Sherman rodent traps – mostly operated perfectly, tempting to steal
Coloured material - fine
Clipboards – fine, waterproof cover would be useful
Stationery –fine, pencils preferred in rain
String – fine
Rope –fine
Notebooks – fine, waterproof preferred

Communications and Power

Since there is virtually no electricity in the Simien, the solar panels proved to be an invaluable piece of equipment for the expedition, but needed much care when transporting, due to their sensitivity. The project was able to keep the laptop charged to enter data as we progressed, charge batteries for the GPS (essential to data collection), keep the satellite phone fully charged, and charge the camcorder and digital SLR camera batteries to enable filming of the documentary and photography. Following are comments on each piece of equipment:

Iridium Satellite Phone – never used, but always with reception
Emergency Locator Beacon (EPIRB) – never used, but essential
32-Watt Expedition Backpack Solar Panels – at first high state of charge even under cloudy weather, efficiency then deteriorated after regular use
16 Amp/hour Power Centre and battery – does not work as efficiently at colder temperatures, some readings difficult to understand even with 'instruction booklet', which in itself is very vague
Nikkai 12V Invertors – worked fine
Uniross Universal 120 Battery Charger – lost instruction booklet, test function difficult to understand, very slow to charge batteries even with full power available and temperature 'warm'
Assorted rechargeable batteries – due to slow power input, rarely fully charged

N.B. Overall temperature of the Simien during the wet season is very low, and noticeably affected the performance of the above equipment.

7.3. Post-Expedition Notes

Following is some extra information post-field that may be helpful to future travellers in Ethiopia.

Travel

The project travelled for a short time after the expedition to take in some of the sights of Ethiopia, such as the Steles of Aksum and the rock-carved churches of Lalibela. Travel was made possible either by government bus or domestic Ethiopian Airline flights. Return flights to the UK were through Lufthansa.

Equipment

The Lone Wolf Project decided that the best thing to do with the team's more practical equipment (e.g. tents, cooking equipment) would be to distribute it amongst Ethiopian organisations or Ethiopian team members continuing to work with the wolf and in the Simien Mountains.

Gondar University received the large dome tent, some general and scientific equipment, and some cooking equipment. Friew Kidane, currently a tourism management student at Gondar, hopes to open a fairly-priced tourist company, "Real Image". His company will benefit the local people of the Simien by bringing tourists to the villages (current tour companies do not consider this as something tourists want to do), and hence was donated one of the smaller tents. The team wishes him the very best of luck. The other tent was donated to a new initiative, "Conservation of Afro-Alpine Ecosystems", linked to Frankfurt Zoological Society, with emphasis on a preference for it to be used in wolf studies. Mengistu, our cook, received the kitchen tent along with some cooking equipment, as did 'Beri'. British team members also donated various items of their own equipment to team members.

7.4. Useful Books and Maps

The Lonely Planet Guide to Ethiopia & Eritrea Lonely Planet Publ. 2003

The Bradt Guide to Ethiopia. Bradt Travel

"*Simien Mountains Ethiopia World Heritage Site*" 1:100000 Map ©2003 Centre for Development and Environment, Institute of Geography, University of Berne, Steigerhubelstrasse 3, 3008 Berne, Switzerland (www.cde.unibe.ch)

"*A Survey on the Flora and Fauna of the Simien Mountains National Park Ethiopia*" Group for Wildlife and Conservation Biology, Institute of Zoology, University of Zurich, Switzerland

7.5. Useful Websites

www.fco.org.uk

www.selamat.net

http://www.exodus.co.uk/mappages/tye.html

www.gondarlink.org.uk

www.kilimanjaro.cc

8. Reconnaissance and Permissions

George Busby

8.1. Initial Thoughts

After the initial conception of the project, it was necessary to get some expert advice on both the Ethiopian Wolf and the country itself. The Ethiopian Wolf Conservation Program (EWCP) had been running in the south of the country for over ten years and seemed the best place to start. After initial email contact with Claudio Sillero-Zubiri, the founder of the EWCP, now a researcher in Oxford, and Dr Stuart Williams, the most recent Co-ordinator of the EWCP, Clare and I went to WildCRU in Oxford for a meeting with Claudio. Here we discussed possible methods and problems that we were likely to discover whilst in the field and this acted as an introduction to the EWCP, who were to prove vital in their help given to LWP throughout the continued planning and field stages of the expedition.

At this stage the decision was made to keep to the EWCP methods as much as possible, so that our results could be compared to the EWCP's long term data sets. It was also hoped that our investigations could add new light to an area of Ethiopia that had not received as much attention as the more populous south.

8.2. Reconnaissance

A reconnaissance trip is always essential to the smooth running of an expedition and in this case, especially so. Although the timing of the 'recce' was not perfect as it coincided with the expedition's interview with the Royal Geographical Society's (RGS) Expedition Advisory Panel, I nevertheless travelled to the Bale Mountains in Ethiopia for a symposium on the Bale Mountains ecosystem.

The Bale Mountains are the stronghold of the Ethiopian Wolf, with over half of the world population surviving in the high plains there. The symposium gave the me the chance not only to network with all the major players in the history of Ethiopian Wolf research, but also to listen to and meet international and Ethiopian scientists speak about their current and active research on Ethiopian ecology.

During my time in Ethiopia I met again with Claudio Sillero and also with Dr Zelealem Tefera, the interim co-ordinator of the EWCP, Dr James Malcolm, the co-ordinator elect of the EWCP and two PhD students, Lucy Tallents and Deborah Randell, who were living and studying the wolf in the Bale Mountains. From this trip, I agreed with Lucy to loan some EWCP rodent traps and skins which greatly reduced the costs of buying our own and freighting them across to Ethiopia.

I also met with Anagaw Atickem, a lecturer from the University of Gondar, Northern Ethiopia. Anagaw had performed some research on domestic dogs and their affects on the wolves of Bale for his Master's thesis.

Through this union, we were able to arrange for four of his best final year Applied Biology students to come on the Lone Wolf Project.

I also managed to visit the Fanuel Kebede at the Wildlife Conservation Department (WCD) in Addis Ababa to discuss the proposed project and the methods with which permissions should be gained. This face to face encounter greatly speeded up the permit application process.

8.3. Permits

In order to perform any scientific research in Ethiopia an expedition needs three levels of permission:

1. A Memorandum of Understanding (MoU) with the WCD. This is granted after a detailed proposal is handed to them and costs US$500.
2. Permission also needs to be sought from the Regional Government. In the case of the Simien, which is in the Amhara Region of Northern Ethiopia, this can only be facilitated through a trip to the Amhara Region Parks Department in Bahir Dar on the shores of Lake Tana.
3. Permission from the management of the National Park in which the work is to be carried out, in this case the SMNP.

Only with all three permits can research be performed in Ethiopia. It was also necessary to obtain business, as opposed to tourist, visas for all the British members of the team.

On arrival in Addis, Clare and I visited the WCD and met again with Fanuel Kebede. Over a glass of sweet, spicy tea we discussed the proposal, which had been sent through in advance, and waited for the MoU to be drawn up and then signed.

At this point it became apparent that I would have to fly to Gondar via Bahir Dar in order to meet with the Amhara Region Parks Authority. This involved changing my flight plan causing a delay to the proposed start date of the field work. However it was vital that we obtained the necessary paperwork from the Amhara government. We were also told that a condition of the MoU was that we hire a government Wildlife Expert to take with us, who would be found in Debark at the Park headquarters. The expert was to teach us about the local flora and fauna and in return we were to discuss and train him in our field techniques, something that we were more than happy to do.

I spent a long afternoon in Bahir Dar with Mulugeta Woubshet, head of the Amhara region Parks Authoritiy, and discussed the potential benefits of our work and the expedition process, after a three and a half hour meeting we had the second signed agreement which would allow us to enter the park. The contacts made in March were vital in all stages of the permit application process. The help of Dr Zelealem Tefera in particular, cannot be overemphasised. Having been a previous Northern Field Officer for the EWCP, his influence allowed for speedy and efficient local and regional permit application before we entered the field proper. He was a close friend of

Mulugeta and had worked extensively with him in the past, a phone call from Dr Zelealem to Mulugeta greatly increased the brevity of our meeting. It can often take upwards of a fortnight to secure permission at the regional scale.

The final piece of bureaucracy needed was permission from the Park itself. In theory, this should have been an academic exercise, the Park was aware of our arrival and had been briefed about our expedition. In the few days prior to entering the field, I had sent for a local mountain guide who had worked for the EWCP in the past, Getachew Assefa. It was imperative that he was part of the expedition as he had trained in the skills similar to those that we planned to use. He is also the local expert on the wolf and knew their numbers and whereabouts. Getachew told us that it would be the Park, and me, who would choose the numbers of guides, cooks and scouts that would accompany us. The Park operates a strict rotation with their guides, as the work is well paid, and it would be difficult for us to ensure that Getachew could come with us, unless we gave them a few days warning that he was who we wanted.

And so it was that when we arrived at the Park headquarters at the beginning of the field stage we were welcomed and accommodated. We picked up the new members of our team, paid their wages to the Park office and, as a group of 12 ventured into the mist.

Many other people were helpful during the logistical and diplomatic planning of the project including: Dr Robin Dunbar, Dada Gottelli, Chris Grant of GondarLink, Lucy Tallents, Dr Stuart Williams, Dr Simon Thirgood, Dr Dan Haydon and Friew Kidane.

9. Media

Richard Antony Hoolahan

This chapter outlines details of the project's photography, film and web site. Where possible advice is provided on how other expeditions might want to approach the application of these various media to their project.

9.1. Photography

www.lonewolfproject.org.uk/photo.html

9.1.1. Background

Photography is a must for any expedition. The Lone Wolf Project's stance on photography was primarily to document the expedition's progress and secondly to get as many good photos of the mountains and wildlife. We were under no false impressions about getting lots of close-up photos of the wolf: quite simply, the wolf is so rare and un-habituated, and the Simien so big it is not feasible to get great shots of this unique animal. We were lucky though, and managed to get some distant shots of the wolf that we could digitally zoom in on. The only wildlife that proved easy to get photos of were the thick-billed ravens and the Gelada monkeys at Chennek. We managed lots of photos of the local culture, the team, and the great views the Simien has to offer (when it wasn't too cloudy or misty). Please see the photography section of our web site for various galleries.

9.1.2. Equipment

The main cameras on the expedition were both SLR (single lens reflex), which any half-serious photographer must have. While George kept it old school with his film-based **Minolta 404 Si Dynax** (using a Tamron 28-300mm lens), Rich used a **Canon EOS 350D** Digital, changing between an 18-55mm EFS lens and a 75-300mm Ultrasonic. George carried an almost pocket-sized telescopic tripod while Rich used the **Velbon Sherpa 300**, sharing it between his SLR and the camcorder.

George was well acquainted with his Minolta and found no problems whilst operating. Rich was new to his digital Canon but since it allowed him to see the photo straight away, learned quickly how to use it efficiently. George found that a lens ranging from 28mm-300mm was very useful. Rich had to change between the two depending on the shot, which sometimes made him lose a good photo when trying to capture wildlife. Although the pocket sized tripod was very transportable, it fell over in the wind one time and cracked the extra UV lens on George's camera. The Velbon Rich used was found to be bulky and rigid. For more comments on Rich's equipment please see the documentary section below.

9.1.3. Advice for photography in the Simien

George and Rich are by no means professional photographers but a few tips may help future camera care and pictures:

1) Take a lot of silica gel and waterproof camera bags, with pull-out rain covers
2) Take at least a 300mm lens if you want to capture wildlife, preferably larger if possible
3) Take a tripod that won't blow over in the slightest wind, extra luggage weight is better than a broken camera. Otherwise just don't leave your tripod standing solo!
4) Take several skylights/UV lenses for extra lens protection
5) Be prepared for your camera to experience temperatures below 0°C
6) If you want photos of the wolf's natural behaviour, keep a distance of about 50 metres. If possible, wait in places where the wolf is known to roam and let them come to you. If you want closer photos go to the Bale Mountains.
7) If you want photos of the Gelada one of several ideal places is Chennek
8) Ask local people if it is okay before you photograph them.
9) Transport your camera equipment yourself or have it very protected if you're letting it be strapped onto a mule or thrown about by handlers. Fragility is not a concept in the Simien.

9.2. Documentary

www.lonewolfproject.org.uk/film.html

9.2.1 Background

During preparation for the Lone Wolf Project, no member had seen or heard of a documentary outlining a student expedition. This was never an original aim of the expedition, but a component that came into play in the latter stages of organisation. After an initial suggestion the idea was enthusiastically welcomed by the other members. Originally there were several ideas about what approach to take with this opportunity, such as a video diary or 'Big Brother' complaints camera, but this was thought to perhaps lead to the breakdown of relationships between members. It was agreed unanimously that the possibility of bringing the work of the expedition to a wider audience through visual means would be a great advantage not only to the project, but to the conservation of the wolf and the potential of future expeditions. Eventually the following aims evolved:

1. Outline the progress of the expedition, logistics, and problems and difficulties
2. Detail the highs and lows of a student/scientific expedition
3. Cover each component of the project (2 science parts, 2 anthropology parts)
4. Show what life as a field biologist is like
5. Acquire as much footage as possible of the highly endangered Ethiopian Wolf
6. Portray the Simien as the extremely scenic setting that it is
7. Explain the problems of the wolf, the park, and the local people
8. Briefly touch on the lives and customs of the local people

It was never the original intention to make a Hollywood blockbuster, but at the same time we were looking to produce something more than a home video. Exactly what the final outcome was to be was not fully established before the expedition, as it would entirely depend on the progress of the expedition and the events caught on camera.

9.2.2. Equipment

The Media Officer was already a keen cameraman and purchased all the necessary equipment in order to accomplish the making of a documentary, thus there was no need for an extension of the budget and the donated funds could be used solely for the intended research. In order to be able to edit our own film, a digital camcorder was essential, unless we planned to hire an editing suite after the expedition. Digital film can be edited with even the simplest of software on a personal computer or laptop (see below). The documentary aspect of the expedition was taken a bit more seriously than the average home video, with the following 'prosumer' equipment being procured from these establishments:

1 Canon DM-XM2 Digital Video Camcorder – *www.ebay.com*
1 Canon Battery Pack BP-945 – *Amazon*
1 Sennheiser MKE 300 Microphone – *Edinburgh Camcorder Centre*
1 Rycote Muffler – *Edinburgh Camcorder Centre*
1 Velbon Sherpa 300 Tripod – *Warehouse Express*
1 Canon EOS 350D Digital SLR Camera – *Amazon*
1 Canon EFS 18-55mm SLR Lens – *Amazon*
1 Canon Ultrasonic EF 75-300mm SLR Lens – borrowed from Brian Bouglas
3 Hoya 58mm Skylights – *Edinburgh Cameras*
12 JVC MiniDV 60min Video Cassettes – *Dixons*
1 Buffalo 7200rpm 250GB USB External Hard Drive – *Ideal Computing*
1 Lowepro CompuTrekker AW Backpack – *Warehouse Express*
1 Lowepro Nova Mini AW Camera Bag – *Jessops*

Equipment review

Overall the filming equipment used on the expedition was found to be very suitable and useful for its purpose. Assuming that future expeditions take the same due care (silica gel, no filming in heavy rain, and self transport) documentaries of the sort produced by the Lone Wolf Project should present no problems. Following is a short review of each item used to film:

Canon DM-XM2 Digital Video Camcorder – overall superb, but motor noise is recorded when not using an additional microphone, digital zoom is not recommended
Canon Battery Pack BP-945 – lasts very long time, about 4 hours if not using view finder
Sennheiser MKE 300 Microphone – only records mono but this can be corrected later. Easy to forget to switch on!
Rycote Muffler – essential for filming in the Simien (reduces wind interference)
Velbon Sherpa 300 Tripod – either too rigid or too loose in movement, rather bulky but relatively lightweight, probably would not recommend

Canon EOS 350D Digital SLR Camera – simply amazing, battery lasts suitable length of time, many functions, steep learning curve

Canon EFS 18-55mm SLR Lens – no problems

Canon Ultrasonic EF 75-300mm SLR Lens – no problems, essential for un-habituated wildlife photography. Less photo opportunities would have been lost if lens went down closer to near 18mm though.

Hoya 58mm Skylights – essential to prevent damage of camera lenses

JVC MiniDV 60min Video Cassettes – 1 malfunctioned

Buffalo 7200rpm 250GB USB External Hard Drive – fine, and survived the Simien with appropriate care

Lowepro CompuTrekker AW Backpack – brilliant, could fit XM2 camcorder, digital camera with additional lens, laptop, and much, much more, only drawback being the shape of the bag going out back more than up

Lowepro Nova Mini AW Camera Bag – doubled as a hard-drive bag, perfect, no complaints

9.2.3. Filming techniques

Apart from home videos and two keen film-goers, no member of the expedition had any prior documentary experience. Therefore the project did not have any knowledge of any specialised filming techniques, just what angles and moving the subject around did to the viewer's impression, and what they saw in some indie-flick last summer. Although a home video was definitely not intended, a type of raw and basic filming was hypothesized to bring a realism to the film appropriate to what we were doing – a real expedition. With interviewing being a large part of the footage, the Media Officer attempted to set scenes in as varied and interesting a setting as possible. Most of the time full wide-angle magnification was utilised, to allow for a sense of the magnitude of the Simien. In order to get spontaneous and natural answers, 'off-the-cuff' questioning of subjects with no prior knowledge of topics being addressed was thought as suitable. As well as the standard pans and zooms, filming on the move (low, normal and high angle) was used in the hope of giving the audience an idea of the project's daily trekking. Instead of trying to create something glossy that viewers would find distant, the idea was that an amateur film approach would translate into a something that the watcher could imagine themselves doing.

9.2.4. Problems and Difficulties with Filming

The project was very lucky with the climate during the expedition considering that our time in the field was during the short wet season of the Simien. Of course when there was heavy rain filming was impossible, even with the shelter of an umbrella, due to strong winds. One item the Media Officer felt he should have purchased was a 'dust blower', particularly after filming in the villages.

The original idea of using up a one hour tape, then copying onto the external hard drive, failed due to the expedition laptop specifications. Although the laptop was perhaps the most efficient piece of technical equipment in terms of power, the screen resolution was too low to be able to handle the quality of film. Thus the computer was not able to transmit any digital film onto the hard drive. Luckily 12 one hour MiniDV tapes were taken on the expedition so this allowed for a maximum of 12 hours of footage, which I thought to be more than enough to make the documentary in mind. Future expedition film-makers should be fully aware of the capabilities and limitations of all the necessary equipment before entering the field, and if possible, to test it in a similar environment.

The main difficulty with the documentary was taking care of the expensive and highly sensitive equipment used. 'Luggage handlers' seemed to have no concept of fragility and thus there had to be stern points made about the handling of video equipment bags. Most of the time the Media Officer himself had to carry the majority of filming gear to prevent damage, which weighed about 5-6 kilograms total. Since there is literally no electricity available in the Simien backpacking solar panels were used to power batteries, the laptop and hard drive (the hard drive was able to be used for photo storage). Since no one person could carry the filming materials and the solar panels, an extra labourer had to be paid for transit between base camps to ensure the safety of the equally fragile power source.

For the quality of film recorded, the Canon XM2 was relatively light to carry. However trekking in the terrain of the Simien everyday with the camcorder, along with the digital SLR, extra lens, tripod, spare batteries, and tapes etc. made daily walking much more of a challenge

Although any film-maker must remember that one of the greatest challenges of producing a film is communicating with subjects what exactly is wanted on camera, the director felt this could have been much more of a problem than it was. Apart from a few instances of catching people at the wrong moment, filming the British members was easy. However because of the language barrier with the Ethiopian members there was sometimes difficulty expressing what was required from them for a given film sequence. It must be remembered that having a camera pointed in your face everyday can be somewhat of an annoyance.

9.2.5. Editing

A simple editing program such as that usually comes free with office-type programs allow for absolute basic editing. Slightly better programs that often come with the purchased digital camcorder give you a little extra power in editing capabilities, but not much more. Programs specially designed for video editing are recommended for more sophistication, but you need to take time to learn how to use them. Remember that for however great a film editing program is said to be there will always be some basic feature that is either almost non-existent, or needlessly awkward to use, and you'll probably have to combine your use in order to do everything you want.

For editing 'The Lone Wolf Project' I used a combination of 'Windows Movie Maker©' which normally comes free with Office, 'ULead Video Studio SE 8©' from the digital camcorder purchase and 'Sony Vegas 5©' to give me all the little features I needed.

The production of the full length cut has been nothing short of an epic; and at the time of writing this chapter (August 2006) was still not complete. Since the 'script' of the film was not pre-written, 12 hours of raw footage was recorded to allow for the eventual 2 hour documentary.

Following is a rough outline of the process of making an off-the-cuff documentary, when you are originally unsure of the final result, post-field:

1) Upload all the footage in real time to the 250GB hard drive
2) Re-watch and make a rough summary of all the footage, indexed with tape number and time, and indicate possible uses in the film
3) Review summaries and re-watch film making small notes on each usable clip
4) Pin all the notes to a board and look at them, trying not to drown in confusion
5) From looking at the notes and your own ideas, write the screenplay (the sequence the film will play in)
6) Divide the screenplay into manageable chapters
7) Begin editing each chapter one by one, pulling the sections of footage you need from the hard drive
8) Re-arrange the clips into an order that is 'watchable'
9) Try and edit in the audio
10) Cut clips down to size and edit audio again
11) Pull other footage that you realise you need to fill in the gaps
12) Adjust clips again so the film runs smoothly
13) Keep re-watching and editing
14) Let someone else watch and make comments
15) Re-edit
16) Repeat for all chapters
17) Review to get overall picture
18) Adjust/move footage and audio around
19) Insert video and audio fades
20) Change sound from mono to stereo
21) Add various filters as needed
22) Add titles to entire film and credits
23) Let several people watch and make comments
24) Go back and make necessary adjustments
25) Render film into a single digital file
26) Burn onto VCD or DVD

Believe it or not, it's a lot more complicated than that, but it all depends on how good you want the film to look, and how complicated your editing ideas are – for instance, do you want just big blocks of continuous film or quick cuts of many different sequences running along to music with overlays of interviews?

9.2.6. Documentary possibilities

Three 1 minute clips were made to supplement George's presentation of the project's findings at the Royal Geographic Society's "In the Field" conference in November 2005. We are hoping that the RGS will be interested in airing the final cut at one of their conferences, such as "EXPLORE". The film could be used to give attendees a visual idea of what it is like to do an expedition in a remote area.

Depending on the quality of the final cut, there is the possibility of an educational film being produced. This would be offered to expedition societies and biology departments that are looking for a visual aid, to explain what field work in isolated places actually entails. Although it may be a somewhat far-fetched idea now, if it became a reality a percentage of the profits could go into a trust. If a suitable amount was reached, the trust could make available a grant to an expedition looking to build on the Lone Wolf Project's work, to help further conserve the wolf in the Simien.

It is unfortunately far too common for groups of people to journey to far off places with good intentions, find out interesting information and begin to help wildlife and people, and then for it all to be forgotten about. Hopefully the Lone Wolf Project can encourage further work on the foundations they have laid, and set an example for change in this trend.

9.2.7. Credits

Director, Producer and Screenplay -Richard Antony Hoolahan
Primary Cameraman -Richard Antony Hoolahan
Secondary Cameraman and Advisor -James Busby
Filming Assistant -Abraham Birara

9.3. Website

www.lonewolfproject.org.uk

9.3.1 Background

Quite simply, every expedition should have a web site. If no one in the team has any web site capabilities then approach a friend that does or your university's IT department. Most universities and even some expedition societies have space available on the World Wide Web and can assist with getting something online. If none of the above is possible, it is worth considering including a basic web site designer fee in the expedition budget.

A web site is invaluable for directing people towards information on your expedition, for example as a quick reference to include in funding applications, or on your expedition's contact card if you choose to have one. Post-field it can act as a reference in future CVs for team members, help towards continuing the work of the project and make public the expedition's findings.

9.3.2. Design

Various software is available for web site design, but no one package is vastly greater than another, they all have their strong points. Software can be expensive, so see if your department or IT group has anything you can use. I was able to use a friend's copy of *Dreamweaver MX 2004* for the overall design and *Fireworks MX 2004* (to manipulate images). Although Dreamweaver allows for a lot of power and flexibility, it is not the most 'user friendly' and takes time to get your head around.

Time is an important factor in design. You can make your web site the best thing since sliced bread, but it'll take you far longer than you probably have. A basic web site puts less strain on you and your available time and should be easier for people to use. Remember that the more images, video etc. you have on each page the more time it takes for it to load up. If the user has a bad connection they might just forget about viewing your page and move onto viewing something else.
Before you start think about what you want to show and design the site on paper. Many sites have an opening page, all have at least a home page, and lots of sites have both. A navigation bar or links of some kind will be necessary if you want users to be able to view more than one page. Think of the broad concepts/sections of not only your expedition, but the general information every expedition has. A page for the team/personnel will be needed. 'Aims' could have its own page or be part of the home page, and so forth. Most software packages have pre-designed sites; these are great to get to the ball rolling. Design the site pre-expedition in a format that can be easily updated post-expedition, so you can enter photos and results without too much hassle.

If you choose to use *Dreamweaver* then a good guide is '*Dreamweaver for Dummies'*. Similar books should be available for other packages.

9.3.3. Getting online

Unless you get some free space from your university on the web, you'll have to budget for getting the web site actually online. First you'll have to purchase a domain name. This is what viewers will put into the address bar to access your site. Prices vary, but the cheapest I could find one for was at www.lowcostnames.co.uk, where they charged around £7-£8 for a 2 year rental. You choose the name, but only if it is available. Try and get something not too long and something easy to remember, so those times when you're telling someone about the project or the site and don't have a pen may still result in a visit to your site, or a '*hit*' as the jargon goes.

You also need hosting too. A host is a server (a big computer somewhere) that stores the information needed to view your site, and that supplies this information to anywhere where someone requests it (puts your web site name in their address bar). This takes a little bit more effort on their part so accordingly it costs more. We used '*Streamline hosting*'. A google search should find them easily. It cost around £30-£40 for 2 years of service, and they supply all the details on how to get it up and going.

NB. A word of warning – when asked for your email address for domain name access and to the host, use a hotmail or other email account, not a university one. After the 2 year (or however long) expiry you won't be able to prove you are the holder and keep the site going if you've left university (which is likely to be the case) or will have to pay a fee to change the email address in your account (which can sometimes be an unreasonable amount).

The Lone Wolf Project may have to change their web site if I can't get around the above. If this is the case, please Google 'lone wolf project' and you'll be able to find us. At the time of writing the project's web site is still at the original address:

www.lonewolfproject.org.uk

We look forward to your visit!

10. Personnel

George Busby

From an early stage it was clear that we were going to need a strong and quite large team in order to achieve our aims and conduct a multi-disciplinary expedition. After initial discussions and planning about the feasibility and logistics of taking an expedition to Northern Ethiopia late in 2004, the expedition leader recruited two members from Edinburgh University to assist with grant applications and logistical planning. As the preparation developed it was deemed necessary that an extra member with an anthropological background should join from the UK. We ended up recruiting two extra team members from the UK, one from Edinburgh and one from Durham University in order to effectively cover a large amount of interview topic areas.

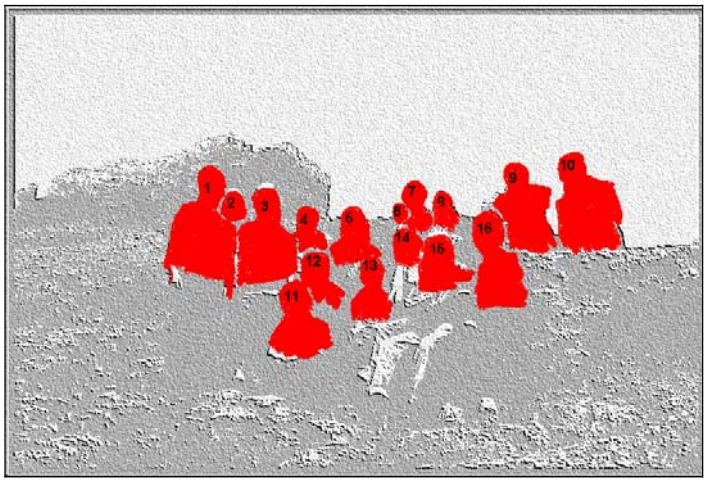
Following the expedition leader's reconnaissance trip in March 2005 and the subsequent collaboration with students from Gondar University, we decided to have one Ethiopian student counterpart for each member of the expedition. Four Applied Biology students joined us from Gondar as well as a tourism post-graduate student whom we had met through a separate contact and who would act as an interpreter before the students joined us midway through the expedition.

We were also required to take an Ethiopian Wildlife Expert into the field with us from the Simien National Park (SMNP) headquarters in Debark. Derbe had been working on the Simien for over ten years and, although he specialised in birds, he had joined a previous Swiss expedition that had been studying the Walia Ibex and knew the mountains intimately. He was also involved in the park's local wildlife education initiatives and so was a valuable community liaison officer. We also employed two SMNP guides in Debark, one of whom had been working for the Ethiopian Wolf Conservation Programme's (EWCP) northern field officer for three years and was thus experienced in wolf tracking in the area.

With the expedition now numbering some thirteen members, not including the additional three scouts who were required to accompany us at all times in the field, we decided to take two cooks with us in the field who could prepare what were going to be large meals while the team was away from camp collecting data. This was especially important because the expedition was going to be living at altitudes of between 3500 and 4000m and, because of the reduction in air pressure, boiling water would take longer. Therefore the final number of members in the team was 18, including three scouts who rotated every one or two weeks.

Figure 10.1. The Lone Wolf Project Expedition Team

1 George Busby
2 Rich Hoolahan
3 James Busby
4 Ato Bogart
5 Ato Mehde
6 Abraham Birara
7 Derbe Deksios
8 Getachew Assefa
9 Abraham Silehsi
10 Friew Kidane
11 Julie Grant
12 Chalachew Godebo
13 Clare Marsden
14 Abera Getachew
15 Mengistu Hailu
16 Eskedar Kelele



George Busby BSc (Hons) (23) Expedition Leader, Chief Scientific Officer and Treasurer

George finished his BSc (Hons) in Zoology at the University of Edinburgh a month before the trip left from the UK. He is now continuing his studies in ecology and conservation and doing a Masters at Imperial College London. Among his achievements at school, being a member of many sports teams including being vice captain of the rugby 1st XV and captain of the 2nd XI cricket teams rank highly in his memories. He was also head boy and deputy head of school. At university he has followed his interests from playing rugby for the University and continuing to sing in the University Opera Society.

George was part of the successful 2003 Biosearch Expedition to the Nyika Plateau in Malawi which investigated, among other things, the impact of poaching on large mammal numbers. He has travelled extensively in India, China and East Africa as well as shorter trips to Morocco and the Philippines. It was a short trip to Abu Dhabi when George was nine however that really sparked his fascination in travel and exploration.

Getachew Assefa (30) Field Assistant to the EWCP and SMNP Guide

Getch was the undisputed expert on wolves and was very disappointed when for a period of over a week towards the end of the expedition he did not see one wolf. He had recently got married, just one month before the expedition started, but still agreed to come, and it was fantastic that he did. Among his many interests are reading English books about 'Brave War Heroes' and light-heartedly indulging in traditional stories about witchcraft and magic. He was a real asset to the team and was always ready to look for his favourite animal, the Ethiopian wolf. It was an honour to have such a knowledgeable man on the team.

Abraham Birara (21) General Assistant, Assistant Cameraman

Abraham, or Dembecha, as he was more affectionately known, was a very spirited member of the team. He had the unenviable role of being a kind of general dogsbody, but relished the opportunity of getting involved in all aspects of the expedition. He impressed everyone with his knowledge of long and complex English words, which put to shame most of the other members' vocabulary.

James Busby BA (Hons) (23) Field Anthropologist (cultural), assistant Media Officer

James is a recent graduate of University College, University of Durham, with a degree in social anthropology. While at University he took an active role in sport and theatre. He was vice-captain of the 1stXV Rugby side and captained the college darts team, as well as playing hockey and cricket. He was a member of the cast 2003 Castle Theatre Company production of Richard III. At Christ's Hospital School he was a member of the 1st XV Rugby side and 1stXI cricket and hockey sides. He was head of the school marching band and was House Captain of Middleton A. He is an experienced leader and team player.

During his studies at University he worked intensely on the African tribes of the Nuer and Azande, both of the Sudan, North Africa. He is a keen traveller and has visited Australia, Indonesia, Malaysia, Thailand, Singapore, India, Morocco, Abu Dhabi, the West Indies and many countries in Europe. James is passionate about anthropology and greatly enjoyed his first major fieldwork since graduating.

Derbe Deksios (38) SMNP Wildlife Expert

Derbe was the fastest man in the Simien. He ran up hills with the energy of a Walia Ibex and did not seem phased by the lack of air at altitude. He was recruited on the first day of the field research and, without any prior warning, given an hour to collect his belongings for 7 weeks in the field. He managed magnificently and was a real help in the field, both with identification of flora and fauna and with talking to people. Derbe has for the past four years been involved with the SMNP's wildlife education programme, and as such has been visiting the many distant villages in the Simien, where he was always revered and respected.

Abera Getachew (27) SMNP Guide

Abera was without doubt the fittest man on the expedition. Unbeknownst to us until we met some local children who recognised him, Abera is actually the star striker of the Gondar Town Football team. Among his achievements he claims to have climbed Ras Dejen, 'which is the highest mountain in Ethiopia' over 50 times. Abera had a habit of running up hills and mountains while the rest of us could hardly breathe, which for those of us with a competitive streak was quite frustrating. Abera became a father for the first time during the last week of the expedition for which we all offer him our continued congratulations.

Chalachew Godebo (21) Assistant to the Rodent Survey

Chalachew is a fourth year Applied Biology Student at the University of Gondar. His selection to join the expedition was based on his outstanding academic record, he came top of his year at Gondar. He hopes to continue his studies to at least Masters level, possibly completing further studies on rodents in the Simien. Chalachew hails from the Awasa region of Southern Ethiopia and his dancing was particularly appreciated when the tent's musicians got going late at night.

Julie Grant BSc (Hons), MSc (33) Field Anthropologist (wildlife), assistant Health and Safety

Julie is an MSc (by research) student at the Centre for African Studies, Edinburgh University. At present Julie holds a BSc Hons in Psychology (specialising in animal behaviour) from the University of Stirling. Julie also spent the third year of her undergraduate degree studying ay the University of California (Davis) which enabled her to take additional animal behaviour courses. While in California Julie worked as a research assistant collecting data from ground squirrels. During the course of her studies, Julie gained experience of working with both humans and animals and has studied captive, free ranging and wild animals. Following her MSc, Julie is

planning to continue her research to establish the effects of animal conservation on local people (she will undertake a PhD at Edinburgh University following completion of her MSc).

While Julie studied in USA she took advantage of the opportunity to travel extensively. She has also travelled in East Africa, South Africa, South East Asia and Australia. While in Australia Julie worked and lived alongside an aboriginal community. These experiences have enabled her to interact with and learn from people of different cultures. Due to her past work involving both people and animals Julie was a valuable asset to the expedition team.

Richard Hoolahan BSc (Hons) (23) Media Logistics and Communications Officer, Medical Officer, Website design

Richard completed his BSc in Zoology from the University of Edinburgh in 2005. He offered to take on the role as logistics officer having already had contacted Dr Dunbar previously about the Gelada monkey, and therefore had some knowledge of the Ethiopia and the Simien. He has always been interested in orienteering and has worked as a delivery driver for an outdoor wear company, making deliveries across most of Scotland. He has been to South Africa once where he worked at the baboon sanctuary, CARE. He has also been lucky enough to visit Indonesian Borneo, where he volunteered as a field assistant for OuTrop, after which he travelled some of Thailand.

Richard has used computers actively for about 10 years now, having previously created his own pilot website for proposed research on Geladas. Whilst at CARE and OuTrop he learned how to use simple multi-band radios, and GPS. Much of the work he has been involved in or applied for has been communicated via email and the World Wide Web, therefore he has sufficient knowledge of the benefits of the internet medium.

Eskedar Kelele (19) Assistant with Wildlife Interviews

Eskedar was spirited from a young age. When her parents sent to school at the age of 3, she claimed in fact that she was five. So, even though she was younger than the three other Applied Biology students she was still on the same year as them. Eskedar was particularly helpful as an interpreter and female voice during the interviews. She also got involved in wolf monitoring forays, and enjoyed the experience of trekking around the mountains enormously.

Friew Kidane (24) Expedition Translator and Assistant with Cultural Interviews

Friew joined the expedition in Gondar and was a lifesaver with his help in the final preparations before leaving Gondar. Having completed his Tourism degree at Bahir Dar University, Friew is now studying for a further diploma in Tourism at Gondar University. Friew has been involved with GondarLink, a British charity that aims to help and support young people in the Gondar region of Ethiopia. Friew is an excellent translator and has been

working in Gondar as a tourist guide for three years. He hopes to start his own tourist company in Gondar, called 'The Real Image' and so particularly appreciated the opportunity to work with an international research expedition and guides from the SMNP. A man who is not afraid to speak his mind, Friew was a true asset to our team. We all feel privileged to have had the opportunity to get to know him.

Clare Marsden BSc (Hons) (23) Scientific Officer, Health and Safety Officer, Medical Officer

Clare also completed her BSc in Ecology at the University of Edinburgh in June 2005. She has spent much time abroad, including a year of schooling and work in Australia and a four month teaching placement in Belize. In addition she has travelled in Central America, South Africa and Australasia.

Clare is passionate about ecology and conservation and has actively pursued her ambitions within these fields both practically and academically. She has conducted extensive and varied field work in the UK, South Africa and Australia. The most recent being a research assistant placement studying predator (African wild dogs, leopards, lions and cheetah) ecology on a small game reserve in South Africa. This field experience, in addition to a strong academic background, helped in planning a scientifically sound and safe research project.

Abraham Silehsi (21) Assistant to Large Mammals surveys

Abraham also studied Applied Biology and was in his fourth year of studies. Coming from the capital city, Addis Ababa, he had spent little time in the countryside. He says that he greatly enjoyed his time in the Simien and hopes to keep working in biology in the future.

HONARY TEAM MEMBERS

Anagaw Atickem Mesheshe, Lecturer in Biology at Gondar University

Anagaw was our initial contact at the University of Gondar and helped enormously with this collaboration. From selecting suitable students to join the expedition to arranging food in Gondar, we couldn't have succeeded without him. Anagaw is now on a 6 month placement at the University of WHERE in Sweden, where he hopes to gain enough experience to conduct a PhD on Simien wildlife in the future.

Lucy Tallents, Oxford University PhD student and member of WildCru (Wildlife Conservation Research Unit)

Lucy is studying for a PhD on the behavioural ecology of Ethiopian Wolves in the Bale National Park in Southern Ethiopia. Initially she helped with methodological and logistical enquiries, but we were able to meet her on arrival in Addis Ababa, where she continued to help with our preparations for the field.

Dr Zelealem Tefera, Interim co-ordinator of the EWCP

After working as the EWCP's North Ethiopian Field Officer, Dr Tefera was the Interim coordinator of the EWCP in 2005. Communication with Dr Tefera has led to the offer of collaboration with the EWCP. He has also helped to direct our research onto the areas most in need of additional work.

Dr Tefera and the EWCP greatly assisted in the acquisition of appropriate permissions from the Wildlife Department of the Ethiopian Government. Through the EWCP's links with the Simien Mountains National Park, Dr Tefera will also assist with the logistics of travelling in the park.

EWCP in UK:

Dr Claudio Sillero-Zubiri (WildCru at Oxford University), Director of the EWCP and former African Conservation Officer for the IUCN Canid Specialist Group and ex-Coordinator of the EWCP

Dr Sillero-Zubiri welcomed the proposed research in the Simien. He is now based in the UK and a meeting in Oxford is planned for early in February 2005. He helped to refine the research methodologies and increase the links between the Lone Wolf Project and the EWCP. He has also written our foreword.

Other Contacts:

Dr Derek Yalden, University of Manchester, honorary reader in Zoology and the Life Sciences
Dr Yalden has spent much time and written many papers and books about the rodents of Ethiopia. He was especially helpful with post-expedition rodent identification.

Dr Robin Dunbar, University of Liverpool
Dr Dunbar has been involved with several studies in the Simien National Park, he has been very helpful in providing scientific and logistic advice.

Chris Grant, Director of GondarLink
Chris helps run a charity for the young people of the Gondar region and encourages projects that help improve the lives of local people. He has advised us on internal travel within Ethiopia.

Dr Jorgelina Marino, WildCRU
Lina gave us a lot of help with the post-expedition write-up, particularly with the analysis of the rodent work. She was also the most recent member of WildCRU to visit the Simien and her comments on the area were much appreciated.

Dr Pat Preston and Dr John Deag, University of Edinburgh.

11. Fundraising and Money

George Busby

11.1. Fundraising

There are various funds made available upon application from the University of Edinburgh, for expeditions of this nature. We were fortunate enough to obtain University of Edinburgh approval early in 2005 which also helped with fund applications from outside the University. This was greatly enhanced by our successful application for approval and support from the Royal Geographical Society (RGS) and approval from the Royal Scottish Geographical Society.

Outside the University and the RGS, we applied to other grant giving bodies for funds to be specifically used for ecological fieldwork. The British Ecological Society, Gordon Foundation and Thriplow Charitable Trust were all especially generous to the Lone Wolf Project and we owe them all a great service. Dr Dan Haydon of the Glasgow University also helped the expedition by securing funds from the Glasgow University, which were used as payment for the symposium in Bale, attended by the expedition leader in March 2005.

11.2. Expenditure

11.2.1. General

The table below, table11.1, details the Lone Wolf Projects accounts for the expedition period. Our total income of £19540 was slightly over our projected budget. However as we approached our departure date we soon realised that we had greatly underestimated the labour costs in the field, as we gained more information about exactly what kind of labour was necessary and essential to fieldwork in Ethiopia. We also had increased equipment costs in the UK, as the scale of the expedition, in terms of the number of participants and remoteness of the work became clear. For example, we discovered that if we were to take Ethiopian students with us into the field then we would need to supply tents for them to sleep in. We also decided that in order to produce power for the laptop, cameras and light in the field we would need to find a source of power in the field. We therefore bought solar panels and battery chargers.

Field costs were higher than budgeted due to an increase in the number and cost of labour in the mountains. It was necessary for us to take one wildlife expert, two Simien mountain guides, two cooks, three scouts as well as the four students which we had agreed to take. They all needed to be fed and paid and this occupied most of the ‘in country’ expense. Travel within the country was also underestimated as there were few suitable vehicles in Gondar which could be hired to carry the team into the field. This lack of competition meant that local car and truck owners could charge whatever they liked for their service. It was also the height of the wet season when we were in the Simien which also caused prices to rise due to the added danger of getting stuck on the muddy tracks or breaking down.

Other unforeseen costs included a return plane journey from Gondar to Addis for the expedition leader, in order to collect delayed freight, and several trips by members of the expedition from the field back to Debark during the 7 weeks in the field. We also had to pay for the students from Gondar to come into the field. By the time they met us we were a good day's travel from Gondar and so had to pay the additional day for the car hire.

The equipment used by the expedition bought both before and during the expedition are detailed in the Logistics and Equipment chapter.

Lone Wolf Project Accounts

MONEY IN

source	amount / £
Dr Dan Haydon - Glasgow	300
UoE Davis	6000
UoE Weir	2000
UoE Barnson	1000
UoE James Rennie	1050
UoE Carnagie	690
UoE British Assoc Travel	1500
Thriplow Charitable Trust	2000
RGS	2500
BES	1000
Gordon Foundation	1500
TOTAL IN	**19540**

MONEY OUT

source	amount / £
Reccie	1000
Symposium	300
Training	1174
Flights	2630
Freight	280
Visas	155
Vaccines	632
Medical	377
Admin	260
Equipment	4856
Insurance	890
In country	6620
Post-exped	366
TOTAL OUT	**19540**
Balance	**0.00**

Pre-expedition

Table 11.1. Shows the Finances of the Lone Wolf Project

11.2.2. In Country Expenses

Table 11.2 below shows a break down of our costs in the field.

In country expenses

expense	amount / £	
labour	1720	guides, interpreters scouts
food	1500	
accommodation	500	
travel	1000	mules, cars, trucks, leader plane
permission	300	
equip	1400	
students	200	
TOTAL	**6620**	

Table 11.2. In Country Expenses

12. Health and Safety

Clare Marsden

12.1. Introduction

The health and safety officer for an expedition must consider the risks that might be encountered, how these might be reduced and finally ensuring that the expedition has the resources to manage health and safety situation that may arise. For the Lone Wolf Project, this involved a number of tasks ranging from organising insurance, inoculations and medical training to planning water purification methods and writing a formal risk assessment. A number of sources were consulted including the RGS expedition advisory centre and various associated publications, the Foreign and Commonwealth Office (FCO), the Control Risks Group (the leading specialist international business risk consultancy), Edinburgh University Expedition Society, and an experienced expedition organiser (Mark Brazier - Expedition Director of Wilderness Expertise).

This chapter details the health and safety considerations made for this expedition. It ends with the pre departure expedition risk assessment, which has been annotated with comments post expedition.

12.2. Ethiopia

Violence and Political instability

Despite its turbulent history, Ethiopia is considered a relatively safe country to travel within. There are some areas with violence and instability, but these are well documented by the FCO and thus easily avoided. At the time of expedition planning, Ethiopia was governed by the Ethiopian People's Revolutionary Democratic Front. Pre-departure it was known that elections were to be held on the 15th May and results due to be released on the 8th June 2005. Our sources advised us that the elections were predicted to run smoothly, but if violence occurred, that this would be over by the time of the expedition's planned arrival date of the 29th June. Unfortunately unrest followed the release of election results. In Addis Ababa this culminated in a protest, where clashes with police resulted in a number of deaths on the 8th June. The release of election results were then delayed until the 8th July and there were further delays in the release of some results until the 5th September. Despite these events, advice from the Foreign Office maintained it was still safe to travel.

Preparations

Before departing the UK, both the Foreign Office and Ethiopian Embassy in the UK had been informed about the expedition. On arrival in Addis Ababa, the expedition members registered their passports with the British embassy. The UK FCO website was constantly monitored for updates on the safety of travel to Ethiopia.

To ensure the safety of expedition members, the preliminary expedition route was checked against the foreign office website and discussed with the Control Risks Group (CRG) to ensure that dangerous areas were avoided. Once in the country, further advice was sought from workers at the National Park who had a more detailed

knowledge of the area. They suggested that we do not use one of our study sites (Silki), due to problems with rebels in the past and so our route was changed.

12.3. Medical safety

Medical arrangements

Details of medical training and medical equipment taken on the expedition are detailed in the medical chapter.

Vaccinations

Malaria is not a risk in Ethiopia above 2000m and therefore no malaria prophylaxis was taken by expedition members. The University travel clinic advised British team members to receive vaccinations for: Diphtheria, Tetanus, Poliomyelitis, Meningitis ACWY, Hepatitis A and B, Yellow fever, Typhoid and finally Rabies. There was considerable discrepancy in advice over whether team members who had previously been vaccinated for rabies required a further three doses or just a booster. Considering previous rabies outbreaks in the study area, the distance from medical help, and the unclear advice, it was decided that the most cautious course of action would be taken in all cases.

Insurance

Acquiring insurance for the expedition was more complicated than anticipated because as a research expedition occurring in a remote location there were a number of specific requirements. A number of different types of insurance companies were considered ranging from 'high street' insurers, University insurance (provided through Aon), specialist companies such as Campbell Irvine that offer policies for expeditions and companies that deal with just emergency evacuations e.g. International SOS. University insurance proved the cheapest option, but would not cover one team member who was not at Edinburgh University. Consequently, alternative insurers for the whole team were investigated.

It was known that the expedition would be taking place in a remote region of a country with limited facilities for emergency evacuations, and at altitudes inaccessible to certain helicopters. Consequently it was vital to purchase insurance through a company with adequate resources. Based on advice from a number of sources (RGS; Campbell Irvine; Aon) it became clear that many standard high street insurers may not have had sufficient cover for more remote locations such as the Simien Mountains. On this basis, companies offering policies specifically for expeditions were investigated (RGS Expedition Medicine offers useful advice concerning insurance). Campbell Irvine provides a comprehensive policy for expeditions, with evacuation cover through Speciality Assist. External advice deemed this policy sufficient for the Lone Wolf Project. At one time the expedition had considered purchasing International SOS, a specialist company which offers cover for medical evacuation and treatment expenses. Such cover would have cost ~£1,000 for the 5 person team, not including the cost of a further general insurance policy which would have also been required. In light of the sufficient cover from Campbell Irvine, International SOS was deemed unnecessary.

It was extremely difficult acquiring insurance for the equipment taken on the trip. A number of pieces of expedition purchased equipment exceeded the maximum value per item limit of the insurance policies (normally £250-£350) including the laptop (£400) and solar panels (£650). Borrowed items (180 rodent traps @ $20US/trap) and hired equipment (satellite phone, £1000) were also not covered. Lastly due to the absence of ATM's, all expedition money (£5000) had to be carried in cash. Such a large sum of cash was impossible to insure. Consequently, although our insurance gave us full medical cover, the expedition was under insured in terms of cover for equipment and money carried.

Insurance was only purchased for British team members and no claims were made. The only possible claims were related to damage and stealing of some rodent traps which were not covered by the insurance policy.

12.4. Emergency preparations

The Simien Mountains are a relatively remote area found in Northern Ethiopia. A small section on the Western side of the Mountain range is governed as a national park and one mud road of variable quality passes through this area. Outside of this however, there is no infrastructure, with all movement occurring via foot or mule along narrow paths of often steep and difficult terrain. After amendments, the expedition route planned to pass through five study sites; 1. Chennek found within the Simien National Park, 2,3. Ambaras and Sebat Minch on the fringes of the National Park, 4,5. Matba and Adilemlem on the far side of the Simien mountains near the Ras Dejen area. At the furthest, the expedition would be approximately a 1-2 day trek to a road head, in addition to a further half day travel via road to a hospital.

External communications

Due to the remoteness of the expedition, it was necessary to carry a means of communication should a serious medical situation arise. It was decided that both an EPIRB (Emergency Position Indicating Radio Beacon) and satellite phone would be taken. The satellite phone provided a means to communicate verbally with emergency services. This made it possible for the medical officer to attain medical advice if necessary and also to enable accurate details about any emergency situation to be given to the appropriate persons should medical evacuation be required. By contrast, the EPIRB had only the capacity to send a signal of the location of the EPIRB to an emergency centre in the UK. If triggered the signal is taken to indicate there is a life threatening situation, but gives no details of the emergency which limits the capacity in which emergency services can prepare their assistance. However, since EPIRB's are only triggered in emergency situations, they are unlikely to run out of battery power like a satellite phone and because the EPIRB can be moved, the location of the casualty is constantly known and updated. More importantly, EPIRB's use a more reliable system of two emergency frequencies which means it does not suffer periods with a lack of signal like satellite phones. As a consequence of the limitations and benefits of these two pieces of equipment and the location of the study sites, it was decided that both means of communications would be taken.

Evacuation plan

Despite having evacuation cover insurance, it was known that it could take several days to mobilise the necessary emergency equipment e.g. helicopters/doctors, to our remote location. Consequently, the expedition had contingency evacuation plans. This included contacts with 4WD owners in the nearest major town (Gonder), the use of local runners to raise an alarm/send messages (if external communications were not working). Local resources including man power and mules for transport were always available for evacuation out of the field by foot.

An emergency pack was prepared for each expedition member, to be taken with them in the event of an emergency. This included insurance details, medical history/current medications/allergies, photocopies of passport and visa, emergency contact details of family and a list of useful telephone contacts in Ethiopia including the British Embassy and Western standard hospitals. The expedition also had nominated one person to be the emergency contact in the UK.

12.5. Road safety

Due to the remote location of our field sites, the expedition only used roads and vehicles to enter and leave the field for which we hired 4WDs and drivers. Livestock as well as rocks placed by children to discrupt/damage vehicles were a constant hazard on the roads.

The road into the Simien was of low quality due to recent rains. Our drivers had difficulty negotiating the steeper and muddier sections of road/track using 4WD and our vehicles became bogged twice. Despite taking the best 4WD vehicles available, vehicle condition was not high and mechanical problems arose. At one point this resulted in both drivers being needed to drive one of the vehicles, and so Richard (RGS 4WD trained) had to drive the other.

12.6. Camp safety

Water

Water in the Simien Mountains is regarded as unsafe for travellers to drink and has been reported to have caused a number of cases of water borne related illness in travellers in the past (Briggs 2002; Gordon and Carillet 2003). Boiling is commonly regarded as the most effective sterilisation treatment for water (even at altitude), but was logistically impossible because of the large fuel requirements. Treatment therefore involved a combination of iodine and micro-filtration based on the fact that iodine has a low efficacy at removal of Giardia and Cryptosporidia which were considerable risks in the Simien Mountains where livestock populations are high. The choosen filtration system (MSR Waterworks Ex Water Filter) removed particles larger than 0.2 microns and therefore effectively removed all organisms except viruses, which were killed by the iodine treatment. The filter itself stated that it ‘easily filters 1 litre/minute’. We found the rate much slower, especially as the filter became clogged. However, the pump was ‘easy to clean’ as stated, and if done regularly, substantially increased filtration rate. Iodine treatment used iodine crystals, rather than tincture. This involved a small vile containing iodine crystals. The vile was filled with water and left for an hour so that some of the iodine could dissolve. Then

half of the solution (not the crystals) from the vile was added to 1 litre of water and left for a further half hour. The undissolved crystals remained in the vile and were then reused. This method of iodination was simple, effective, and more economical than tincture for an expedition because the crystals were reusable. Furthermore iodine was barely detectable by taste, which ensured team members sustained adequate fluid intake. All expedition water was sourced from surface water springs in areas close to camps. This gave relatively clear water thus negating the necessity to use a millbank bag which had been brought for instances requiring the use of river water. Water was only treated using the methods mentioned above for the British team members' as guides informed us it was safe for Ethiopians to drink. No health problems arose as a consequence of this decision. Water for other purposes e.g. tea/coffee, cooking water, or washing food was not treated, but this water/food was subsequently boiled.

Food

When working on a project with a strenuous work schedule and in a cold environment the importance of food should not be underestimated. It has a role in provision of warmth, energy, essential nutrients and finally morale. With knowledge of the famine occurring in the area of study, 95% of food was obtained before entering the field. Most team members found substantial increases in their appetites whilst on the expedition as a result of the exercise, cold temperatures and altitude. Three substantial meals were provided each day, all with high carbohydrate content. Spaghetti formed the basis of the expedition diet, although variety was added wherever possible. Meat was provided through tinned tuna, sardines and corned beef and occasionally by local sources of mutton, beef and chicken. Fresh vegetables were more difficult to acquire in the field, being limited to cabbage, carrots and chillies, and only on the rare occasions when villagers had sufficient food spare to sell. Team members had brought multi-vitamins and minerals to supplement any deficiencies in their diet. Soup was provided every day at supper. This was a good aid to hydration, especially among the Ethiopian team members who drink very little water.

A cook and assistant cook were hired to work on the project. The cook hired, was specifically requested because he had worked with both National Geographic and the BBC in the past, and had therefore a good reputation regarding food hygiene. The use of a cook might be seen as extravagant, but due to the large team size and the altitude (lower boiling temperature of water), provision of meals took at least 2-3 hours/meals and in the absence of the cooks, expedition research would have been severely impeded. On reflection all British team members agree that the hiring of the cook was one of the wisest decisions made by the expedition.

Environmental impact

With the altered study sites, four out of five sites were due to occur in areas where tourists do not visit, and therefore there was a lack of official campsites. However, by camping adjacent to scout huts or villages, damage to the environment was greatly reduced.

In two study sites, long drop toilets were available. In the other sites, guides suggested the most suitable areas and these were used.

Despite the size of the expedition, the quantity of litter produced was small because cans/tins/plastic bottles were requested and taken by local villagers. All other rubbish was burnt and buried as advised by the National Park.

There has been significant deforestation of protected species such as Erica *spp* in the Simien. On this expedition campfires were not used and all cooking was conducted on kerosene stoves. There were a three circumstances when firewood was required.

1. When walking boots had become wet or individuals had no dry clothes remaining.
2. When baking bread (the cook used wood on a borrowed stove in a village hut).
3. A crack in our last canister of kerosene resulted in the expedition running out of fuel.

In these instances when firewood was needed, Eucalyptus *spp*. was used, a plantation species grown specifically for this purpose.

12.7. Fieldwork safety

Fieldwork was split into 3 broad categories:

- wildlife transects
- rodent surveys
- anthropological interviews

General

All work was conducted with a local guide and or scout. These personnel were vital in assisting with orientation in the often extremely misty conditions. The armed scouts also afforded protection against potential attacks/robbery and the extremely aggressive domestic dogs. Unless in close proximity to the camp (e.g. some rodent grids), for safety reasons, work was conducted in groups of 3 or more, and always with either a scout or guide.

Rodent surveys

Latex gloves were used when handling traps or other scientific equipment that had been in contact with the rodents because of the risk of zoonses. Hands were thoroughly washed using disinfectant (savlon) and soap once back in camp, or using an alcohol based soap which did not require water, if remaining in the field.

Rodents were handled using leather gloves which protected hands from more aggressive specimens. Plastic arm sleeves had been carried to give protection from any parasites, fleas or urine, but proved unnecessary in the majority of cases.

Anthropological interviews

Some of the areas visited on this expedition were extremely remote, and consequently resulted in the situation of interviews occurring in villages where ‘white people’ had never been seen before. This resulted in a high level of attention and a constant presence around expedition members. However, the local villagers were extremely

welcoming and friendly and there was never any perceived threat of violence or crime. Guides considered there to be the possible threat of theft and therefore in accordance to National Park policy a scout accompanied anthropologists at all time.

Weather conditions

The expedition was due to take place during the wet season. It was very difficult however, to ascertain more specific information about the weather conditions the expedition was likely to experience. Our first study site, Chenek, had less than 7 hours of sunshine in the 10 days we camped there which was demoralising for the entire team. The area was constantly covered in mist/cloud, it rained throughout the day and temperatures were as low as 4/5ºC. In the absence of a camp fire, these conditions made it virtually impossible to dry clothes/boots that had become wet whilst in the field and many of the team had difficulty getting warm. One Ethiopian team member suffered a resurgence of a serious chest infection at this site, collapsing whilst in the field (although it can not be known if this was directly the result of the conditions). He was successfully treated with antibiotics. Weather conditions showed improvement for the other campsites, although rain was still frequent.

Preparations

British and Ethiopian students were told to bring waterproof and warm clothing and boots for the expedition. A high quality tent and knee length waterproof coats were provided for the Ethiopian students who did not have this equipment, or the means to acquire it locally. The hired Ethiopian workers regularly spend time in the Simien and therefore were expected to be suitably equipped, which they were.

12.8. Risk Assessment

This risk assessment was constantly updated both prior to, and during the expedition. Below was the last pre-expedition risk assessment made, and contains annotations made in hindsight.

Hazard (s)	Risk	**Control Measures** (i.e., alternative work methods / mechanical aids / engineering controls, etc.)
General hazards:		
Permission to be in the country	L	Six month/1 year business visas have been obtained to enter Ethiopia in the UK. Retributions are severe for remaining in Ethiopia beyond the granted period. We will not remain in Ethiopia beyond the visa periods. Permissions to conduct our research have been granted. A meeting has been arranged with Ethiopian government wildlife department on the 30th of June in Addis Ababa to collect these permits. Both the Ethiopian government and British embassy in Addis Ababa have been informed of our expedition. *After obtaining all the planned permits in Addis, the expedition was informed that an additional permit had to be picked up in Bahar Dar. This area was outside of the planned route, and required a 1 ½ day stay in a low risk malarious region. Repellent, long clothing and mosquito nets were used, but no prophylaxis was taken.*
Violence and instability within the country: The foreign office advises against travel in particular areas of Ethiopia due to recent unrest and violence. These are the Gambella region the West, the Eritrea border and East of Harar to Gode line.	M	This expedition is not situated within any of the areas where the foreign office advises against travel. The Simien is approximately 150km from the Eritrea border. The Control Risks Group (CRG - the leading specialist international business risk consultancy) has advised us that the areas where we intend to travel are relatively low risk as they are along areas frequented by tourists. The British Embassy and foreign office have been informed of our trip. *Discussions with personnel from the National Parks Authority led to the discovery that one of the planned study sites had previously had problems with rebels. Due to safety concerns, the planned study sites were amended.*
Land mines	L	Landmines are known to occur in the areas of unrest in Southern Ethiopia. The CRG has advised us that landmines are not a risk along the routes this expedition will be traveling. We will not enter or travel through any areas with landmines.
Political election: Ethiopia is governed by The Ethiopian People's Revolutionary Democratic Front.	TBA	General elections took place on 15th of May 2005. Release of results has been delayed from the 8th of June to the 8th July due to allegations of vote fraud. There has been some unrest as a result of the election. On the 8th of June clashes between civilians and police resulted in several deaths. The Foreign Office notes tension to be high in Addis at present. They advise vigilance whilst in the capital. If the political situation was to destabilise, we would not go to Ethiopia. We are continually monitoring the FCO website.

		The CRG will be consulted concerning this risk. The expedition is expected to be out of Addis Ababa by the 3rd of July, 5 days prior to results release. *The arrival of expedition freight from Addis Ababa was delayed by two weeks, thus arriving after the 8th of July i.e. election results day. Due to the violence on the 8th June, it was decided that the team would leave Addis, so avoiding results day, and return at a later date to pick up the delayed freight.*
Terrorist attack: The Foreign Office classifies Ethiopia as at high risk of terrorist attack. These attacks have been concentrated on trains and in the capital, Addis Ababa.	H	The CRG has likened the risk of terrorist attack to that of London. They advise against travel on railways and against use of any government owned accommodation. This expedition will be spending only very limited time in the capital and will not be using railways or government owned accommodation.
Abduction	L	We will only use verified contacts. Most travel will be done in the company of Ethiopian people.
Vehicle hijacking	L	We will not be travelling at night and will not stop for any unplanned reasons.
Crime: Attack, muggings	M	We will be vigilant at all times. Expensive items will be kept out of sight, and we shall not travel after dark. *Ethiopia was a very safe country to travel within, the risk of violent crime was very low. Whilst in the field, the expedition cooks were always in camp to guard our belongings. Despite, having an armed guard for our rodent trapping grids local shepherds attempted to steal the rodent traps. In two instances they were caught, however, thirty traps were stolen and never recovered.*
Religion and culture	L	Ethiopians are predominantly Islamic or Christian. Behaviour and clothing will be respectful of these religions. We will not affiliate with any religious groups. We will familiarise ourselves with, and be sensitive to, local customs. We are aware that women are not seen as equals to men. Organisation of any Ethiopian staff may need to be done by male group members. *Orthodox Christians frequent have fasting days where no animal derived food is consumed. Most Ethiopian team members gave up fasting for the duration of the expedition; those that did not were accommodated by the cook.*
Language difficulties	M	Most Ethiopians do not speak English. Gonder University students will all be bilingual speakers and a translator will be hired when Gonder students are not with us. With the exception of the scouts, all Ethiopian team members had good English so that there was not a language barrier problem. It was not necessary to hire a translator.

Altitude: Addis Ababa occurs at 2800m above sea level, most work will be conducted at 3,500-4,000m.	M	A four day acclimatisation period will be allowed when we first arrive in Ethiopia and then again at Gonder and Debark. We will drink large amounts of water and only plan non-demanding activities during these periods. Once we enter the field and therefore start to ascend to higher altitudes we will follow the advised ascent profiles of 300-600m daily increase in sleeping altitudes. We will have a rest day every 3rd day until members are acclimatised. At all times the team shall adjust activities to a pace to accommodate any affected members who are suffering the side effects of altitude. Two team members have completed advanced wilderness medical training and therefore will be able to recognise the symptoms of acute altitude sickness. Should anyone suffer from suspected altitude sickness we will move to lower altitudes immediately. Following the advice of medical staff at Wilderness Medical Training nifedipine (for pulmonary odemea) and dexamethosone (for cerebral odemea) and Diamox (taken to assist acclimatisation and assist treatment of acute mountain sickness) will be carried. *Our campsites were all at high altitude ranging between 3,600 m asl and 4,050 m asl. Pre-departure plans were to ascend to our first campsite at 3,600m from 2,200m over two days to allow acclimatisation. However, the costs of hiring vehicles were very high and therefore there was a necessity to ascend directly to 3,600m in one day. Due to concerns regarding altitude sickness, the expedition advisory centre was contacted from Ethiopia to gain more information on this change of plan. Although this revised ascent profile had a larger risk than the preliminary plans, it was deemed an acceptable risk by the team. With good information on the symptoms of AMS, and the treatment (descent), all team members were monitored closely but there were no problems.*
Climate: Temperatures could be below freezing at night, maximum day time temperatures 11-16. June-September is the wet season.	M	Appropriate camping equipment (3-4 season sleeping bags) will reduce any hazards associated with camping at low temperatures and in wet conditions. Waterproof and warm clothing will be worn during field work. A change of clothes will always be carried in waterproof bags. Hypothermia bags will be included in the medical kit as a precaution. *Waterproofs were provided for the Ethiopian students. In the absence of access to wood for camp fires, drying clothes was very difficult in study sites where the conditions were consistently wet.*
Earthquake	L	The risk of an earthquake is low. Emergency procedures will be followed if one was to occur.
Flooding	L	

Camping	L	Open flames will not be permitted inside or adjacent to tents. Campsites will be set up away from potentially dangerous sites e.g. scree slopes/flood planes/water bodies. Food will be sealed in containers to reduce attracting animals. *Campsites were chosen by the guides. Food was kept within barrels and bags in the kitchen tent/hut where people were always present as guards. Rubbish was burnt. All cooking was done using kerosene stoves, and within the canvas kitchen tent.*
Water	M	Water is not drinkable. All water (drinking, cooking and bathing) will be treated by boiling or with iodine and a ceramic filter. To prevent dehydration fluid intake will be closely monitored and dehydration salts included in the medical pack. Bilharzia is prevalent in water bodies, we will not be swimming/bathing. *Bilharzia was not a problem in the small fast flowing rivers in the Simien. No swimming was ever done as temperatures were too cold. Expedition water was collected from springs and considered drinkable without treatment by the Ethiopians. Only water to be drunk by British team members was treated.*
Food	M	Good hygiene standards will be followed during food preparation. Food will be stored in waterproof containers. Multi vitamins and minerals will be taken daily to compensate for deficiencies in our diet. Dehydrated food will be taken to increase nutrient intake after stomach related illnesses. *Use of a well respected cook negated food related problems, and was probably the best preventative measure an expedition could make in regards to maintaining good food hygiene.*
Impact on the local environment	M	Established campsites will be used. All rubbish will be disposed of appropriately. Toilets will be dug away from water bodies. Camp stoves will be used to avoid use of firewood. Precautions will be made to prevent wildfires.
Animal related risks	M	Detailed in field work related risks
In country travel:		
Air:	L	The Ethiopian internal airline company has a good safety record.
On arrival and before expedition vehicles have been picked up:	L	We will not be using public transport beyond taxis during the acclimatisation period when we will be picking up equipment and collecting our own transport. We shall only travel during daylight hours. The alertness of any driver will be checked and we will not travel with any driver that has been drinking, and will book taxis with a reputable company. (Exception a public bus may be used to get to and from the field work site.

During field work- Minibus: * Due to road conditions this may be changed to a 4WD vehicle	L	Once in the field it is highly unlikely that we will drive at any part. Richard has an RGS 4 wheel drive course and Julie has been driving for 8 years and has driven in Africa before. One of these would be our drivers. Otherwise transport will be via public bus or hired driver with vehicle. In the even of a road traffic accident, emergency procedures will be followed (detailed in below). First aid equipment will be carried so it is accessible. A spare tyre will be carried for the vehicle.
Mules/horses:	L	Where local road access is limited, use of mules/horses for transport of equipment may be necessary. *There was one instance where a team member started to feel unwell whilst we were trekking between camp sites. In this instance they were given a mule to travel on.*
<u>Medical risks</u>**:**		
Insect borne disease *Aedes* mosquitos are chloroquine resistant and transmit Dengue fever, *Lymphatic filariasis* - elephantiasis. Ticks may transmit louse borne relapsing fever. Tsetse flies occur in the area	L	Aedes mosquitos do not occur at the altitudes where we will be working, but insect repellent and appropriate clothing will be used to protect against other insect bites. Tsetse flies do not cause sleeping sickness in Ethiopia *Fleas were picked up by the anthropologists who frequented the villager's huts. Sleeping bags of most expedition members then became infested. Flea bites caused considerable discomfort to some team members.*
Other diseases:	L	HIV/AIDS – Normal precautions will be followed to prevent contraction via sexual contact. Comprehensive sterilised medical equipment (e.g. needles) will be taken to be used in hospital situations to prevent contraction of during medical treatment. Hepatitis A: Vaccinations will be obtained and good hygiene procedures followed. Hepatitius B: Precautionary vaccinations will be obtained and precautions followed to reduce transmittion in hospitals and via sexual contact. Diphtheria, Tetanus and Poliomyelitis and tuberculosis (BCG) vaccinations will be updated. Typhoid: Vaccination is required Dysentery and Diarrhoea: Contraction via contaminated water. Water will be treated using iodine or ceramic filters. Rehydration salts will be taken to help rehydration. Immodium will only used if absolutely necessary. Meningitis: ACWY vaccination required
Medical problems in the capital:	L	Addis ababa has a good hospital and reputable doctors. Medical situations will be dealt with at either the United Nations Clinic, Black Lion hospital or Havat Hospital.

Medical emergencies	L	This expedition has comprehensive insurance with Campbell Irvine who provide an emergency evacuation service which is initiated from phone contact with a 24 hour alarm centre. In the event of an emergency the insurers will organise the most appropriate evacuation procedure out of the area e.g. by road/air. They have a 24 hour call centre where medical specialists and advice can be sort. Non serious medical emergencies will be dealt with in the field by expedition members who have undergone medical training. (Two members will have completed advanced wilderness medical training, one a basic first aid training.) We shall be taking a comprehensive medical kit, the contents of which will being compiled under the instruction of a pharmacist at Nomads travel clinic and advice obtained at the wilderness medical training. All team members will be trained in use of the satellite phone we are carrying. Functioning of this piece of equipment will be tested on a regular basis. An emergency locator beacon (EPIRB) will also be carried. This sends a signal to an office in Falmouth who on receivership of the signal follow instructions we have provided. In our case to contact the insurance company and a British contact that an emergency situation has arisen requiring immediate evacuation. Evacuation procedure is detailed at the end of the risk assessment To reduce risk we plan to always have our base camp within a days walk from the road head.
Insurance	L	Comprehensive insurance has been purchased from Campbell Irvine.
<u>Specific Hazards</u> - Risks during field work:		
Permits for work	L	Permits will be pre-arranged, and picked up in Addis on arrival. These will be carried at all times.
Wild animals: Gelada baboons, spotted hyenas, leopards, jackals, wolves, domestic and feral dogs occur in the study area.	M	We will be accompanied by armed wardens whilst in the Simien which will be able to deal with any threat situation. No wild animal will ever be approached; a safe distance will be kept at all times. These species are generally shy and elusive (exceptions baboons and rabid animals).
Snakes	L	Ethiopia has some venomous snakes, most are shy and elusive. Ankle boots will always be worn on field work. *There were no snakes at the altitudes we were working.*
Wildlife near water	L	Crocodiles and hippos are not found at the altitudes where we will be working. We will not be entering water bodies to swim or bathe, camping sites will not be located close to water bodies.

Rabies	H	Rabies is contracted from canids and rodents. If any one was bitten by a canid, evacuation would be immediate, and vaccinations obtained. No animals will be approached. Armed wardens will protect against attack by a rabid animal. *Domestic dogs were extremely aggressive. Anthropologists carried walking poles/sticks, as well having an armed guard.*
Working with rodents: Use of mark capture release techniques will require handling of wild rodents. These may carry rabies and various forms of parasites or bacteria.	M	Advice from various researchers at a recent wildlife disease symposium suggests that the link of rabies with rodents is tenuous. We have communicated with other researchers and vets who have worked with rodents in Southern Ethiopia and they suggest that rabies is not a problem with rodents. Gloves will be worn at all times to prevent bites. Long sleeved clothing will be used to reduce risks of transmittion via urine or ecto-parasites. An insect repellent with a high DEET concentration will be used on clothing to kill and fleas/mites. *Rodents were able to bite through our leather gloves but no bite ever broke the skin.*
General field work	L	No member will be permitted to work without an armed warden. Work will be conducted in groups of 4 or more. Sun protection will be worn to reduce burning, dehydration and heat stroke. Armed guards will be with us at all times to reduce the risk associated with working when carnivores are active. All field work will be completed in time to return to camp before it is dark. *Once in the field, we often only had sufficient personnel to conduct work in groups of three.*
Walking	M	Ankle boots will be worn to reduce the risk of falling whilst walking through vegetation.
Getting lost	L	The expedition leader has excellent map reading skills, the other team members have basic map/orientation skills. All team members will be trained in use of the above skills/equipment, and groups orientated with the area before work begins. With GPS and a satellite phone, emergency procedures will be followed if necessary.

13. Medical Report

Clare Marsden

13.1. Introduction

Participation in any activity carries the risk that medical problems may arise. Expeditions, however, frequently take place in areas where medical help and facilities are not readily accessible. Consequently it is vital for expeditions travelling to remote locations to have contingency preparations including adequate medical training, comprehensive medical provisions and an appropriate evacuation plan (Health and Safety chapter).

13.2. Medical preparations

Medical questionnaire

Pre-departure expedition members completed a confidential medical questionnaire detailing allergies, past medical history and current medications. This was required by the medical officer for treatment, compilation of the medical kit and insurance disclosures.

Training

The research locations for the Lone Wolf Project were known pre-departure to be far from medical help; a maximum twelve hours (fast trek) from a road head and a further 5 hours travel to a basic hospital by road. Therefore two team members (the Medical Officer - Clare Marsden and Richard Hoolahan) attended the Far From Help Parts 1 and 2 medical training by Wilderness Medical Training[1]. Wilderness Medical Training (WMT) has been specifically designed to give non-medical persons the necessary skills to care for injured or ill persons in the interim of accessing appropriate medical help. Together the courses lasted four days and covered a range of training from basic first aid, to more advanced skills such as setting up a drip and suturing wounds. In addition to this, one other team member completed a basic one day first aid course (first aid in the work place) through the British Red Cross.

Medical kit

Team members were asked to bring a basic first aid kit containing non-prescription analgesia, re-hydration sachets, plasters, blister kits and dressings.

A comprehensive team medical kit was compiled with the assistance of a pharmacist and suggestions in the RGS expedition handbook and WMT training manual. Following completion of WMT training it was possible to purchase certain prescription medications. The entire medical kit was purchased through Nomad travel, costing a total of £330 (including a discount). Details of the contents are listed in Table 1. An official document listing the medications and their lawful ownership through prescription was provided by Nomad travel for the purposes of customs in Ethiopia. A list of all medications with instructions on how and when to use or not use specific

[1] www.wildernessmedicaltraining.co.uk

drugs was compiled by the medical officer and placed in the medical kit for quick reference. Team members were informed of the contents of the medical kit.

Memorandum of understanding

Expedition participants were asked to sign a memorandum of understanding before leaving the UK. Amongst other things, this stated the risks of the expedition including the distance from medical facilities and the extent of medical training of the medical officer and medical kit carried. By explicitly stating the risks of the expedition it was possible for team members to make an informed decision in regards to joining the expedition.

Table 13.1. Lone Wolf Project Medical kit

Condition	Medications carried
Pain	*Paracetamol* (T), Asprin (T), *Ibruprofen* (T), Voltarol (T), Co-dydramol (T), Tramadol (T, Inj)
Infections	Co-Amoxiclav (T), *Ciprofloaxin* (T), Metronidazole (T), Doxycycline (T), Cephalexin (T), Cefotaxime (Inj), Diflucan (C)
Altitude sickness	Nifedipine (T), Dexamethasone (T), Diamox (T)
Dehydration	*Dioralyte* (S), Saline iv fluids (L), Dextrose iv fluids (L)
Gastrointestinal problems	Buccastem (T), Immodium (T), Movicol (S), *Bisodol* (T), Stemtil (Inj)
Wounds	Sutures and Lidocaine (Inj), Gelofusin iv fluids (L), *Betadine* (L), *Iodine* (L), *Bactroban* (C), *Plasters*, Steri stips, Various dressings, *bandages*, *wound pads* and *tape*.
Blisters	*Zinc oxide tape, Spendco second skin, Compeed*.
Eye/Ear problems	Chloramphenicol Eye ointment (L), Tetracaine (D), Betnesol-N (D), Eye dressing
Allergies	Adrenalin (Inj), Chlorphenamine (Inj), *Hydrocortisone* (C, Inj), *Piriton* (T), Salbutamol inhaler
Miscellaneous equipment	*Dental repair kit*, Syringes, Catheters, Scapels, Stethascope, Blood pressure cuff, *Thermometer*, *Scissors*, Tweezers, *Latex gloves*, Sterile gloves, Neck collar.

(C = Cream, D = Drops L = Liquid, Inj=Injectable, T=Tablet, S=Sachet). Italics denotes items used during the expedition.

13.3. Medical treatment of Ethiopian team members

Quantities for the medical kit were purchased in order to be sufficient to treat the British members of the team (5), the Ethiopian University students (5), and hired workers (8). This was decided because once in the field, distance to medical facilities would be prohibitive to all persons working on the project not just the British members of the team therefore a duty of care should be encompass all those assisting on the project. It is worth noting however, that the Ethiopian team members did not bring any medical supplies of their own.

In accordance to advice from the Simien National Park, it was decided that medications would not be passed to local persons who make constant requests to ‘white foreigners’ for medicines.

13.4. Medical problems in the field

Team members experienced no serious medical problems whilst on the expedition. A variety of less serious medical problems arose and were all treated in the field.

Water related

Sources of water for the trip were obtained from surface springs used by local people. The medical officer was advised that Ethiopian team members were able to safely drink untreated spring water, and this was found to be the case. For British team members, drinking water was treated by a combination of both micro-filtration and iodine which was found to be extremely effective with only one possible incidence of water related illness occurring whilst in the field.

Food related

The project cook was fastidious in regards to health and safety and consequently food hygiene was extremely high throughout the trip. However, some food related problems arose on the trip. Raw meat (Kitfo) is a traditional food and delicacy in Ethiopia and resulted in an instance of intestinal worms in one Ethiopian team member. (Following the advice of the medical officer, no British team members consumed this food whilst in the field.) In the British team members, food related problems were minor and generally caused by changes in diet (especially from chillies) or unwise choices to sample local food (e.g. unpasturised milk). There was also one instance of a chipped tooth resulting from food consumption.

Environment related

All British team members suffered some of the symptoms of mild altitude sickness (headaches and tiredness) on arrival in the field to 3650 m from 2200 m. These were monitored closely but were found to be short lived and relieved by maintaining adequate fluid intake, mild analgesia and rest.

There was one incident of sun related illness. Prolongued exposure to the sun resulted in suspected mild sun stroke in one team member (fatigue, lethargy, headache, dehydration, temperature and nausea for a period of three days). This was treated effectively with rest, dehydration salts, fluids and paracetamol.

There was one instance of a re-occurance of a chest infection thought to have resulted from the cold, wet and damp conditions of the first base camp, in addition to a pre-existing susceptibility. This was successfully treated with a course of ciprofloxacin as had been prescribed by a physician in the previous incidence.

Work related

Blisters were effectively prevented or treated with compeed. Patients with more serious blisters were given a day of rest if necessary.

There were a number of minor cuts and grazes. Due to the altitude, these took a longer than normal to heal. All were treated with antiseptic and an appropriate dressing.

Three team members had minor falls whilst trekking resulting in one instance of temporary mild back pain, and two minor sprains of the ankle.

Insect related

Due to the altitude, mosquitos and other flying insects were seldom encountered and therefore not a problem. Fleas however were abundant, especially in the villages, and infestations caused considerable nuisance and discomfort to some team members (see Figure 13.1.). Successful treatment involved spraying of infested sleeping bags using spray purchased in Ethiopia.

Figure 13.1. Patient with extensive flea bites.

Other

There was one instance of an allergic reaction (see Figure 13.2.), the cause remains unknown. The uncomfortable rash was treated with piriton and hydrocortisone cream and these proved largely ineffective. It took a more than a week before the rash cleared.

Figure 13.2. Patient with unidentified hand rash.

13.5. Medical problems on return to the UK

After returning to the UK, one team member suffered a delayed onset of a *Giardia* infection. Symptoms progressively developed and worsened over a month long period after returning to the UK, resulting in substantial weight loss. The patient, on visiting a British GP and informing them about the expedition in Ethiopia, was successfully treated.

13.6. Medical kit review

The majority of the medical kit was fortunately not required on this expedition. Paracetamol, rehydration sachets, tubigrips, compeed and plasters were the most commonly used items. Of the medications used, all were available in sufficient quantity for the expedition. The only notable item required but not present in the medical kit was a treatment for intestinal worms.

14. The Lone Wolf Project – A Consensus

George Busby

The Simien is one of the few areas of Ethiopia well known, at least in terms of its dramatic scenery and charismatic fauna, outside of Ethiopia. Having spent time in the magic lands surrounding Ras Dejen, I take it as my duty to provide support for all enterprises that endeavour to maintain and improve this ecosystem.

This report has documented the high wildlife and human densities in the Simien. It has also provided emphasis on future research, especially as to how these high densities translate into large and small mammal ecology. It has also provided a human view and a brief study of the culture producing a holistic view of the Simien ecosystem.

There are huge socio-economic problems in the Simien. Our project only touched on the human aspects but it is becoming increasingly clear to me that these are often the most important. There would be little need for conservation if there was no burgeoning human population, growing exponentially, filling those areas of the world where we historically have not been. Our job, as scientists and as humans, is not to destroy as we venture forward, or criticise the past that has let us arrive where we are now, but to adapt and react to the pressures today while thinking about tomorrow.

I think that the Lone Wolf Project succeeded because it opened our eyes, and the eyes of all others who read about our project, to the needs of the humans in the Simien, while we tried to study those of its wildlife. My abiding thought of the expedition is that if we, as conservationists, intend to save the wildlife that we care so much about, we must spend time now on serving the people who are so often in need as well. How can one tell a man, who has nothing but ten sheep to his name, that he cannot produce any more to feed his family or to sell at market, for fear of invading the habitat of a wolf? I admit now, that I find this question impossible to answer. And that is precisely the point: if we are to make any difference in the short term – which we are increasingly told is the most imperative of actions – then we must act for and with people if we are going to have any immediate effect.

There is a saying in Amharic: '*Kes be kes inculal bekuro yihedal*'[1] ('Step by step the egg is walking'). We would all do well to listen to this wisdom. In conservation, as well as in life.

Thank you for reading.

[1] taken from Marsden, 2005

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