

epic PRIVATE JOURNEYS

KILIMANJARO REFERENCE MANUAL



“So, if you cannot understand that there is something in a man which responds to the challenge of this mountain and out to meet it, that the struggle is the struggle of life itself upward and forever upward, then you won’t see why we go. What we get from this adventure is sheer joy. And joy is, after all, the end of life. We do not live to eat and make money. We eat and make money to enjoy life. That is what life means and what life is for.”

George Mallory

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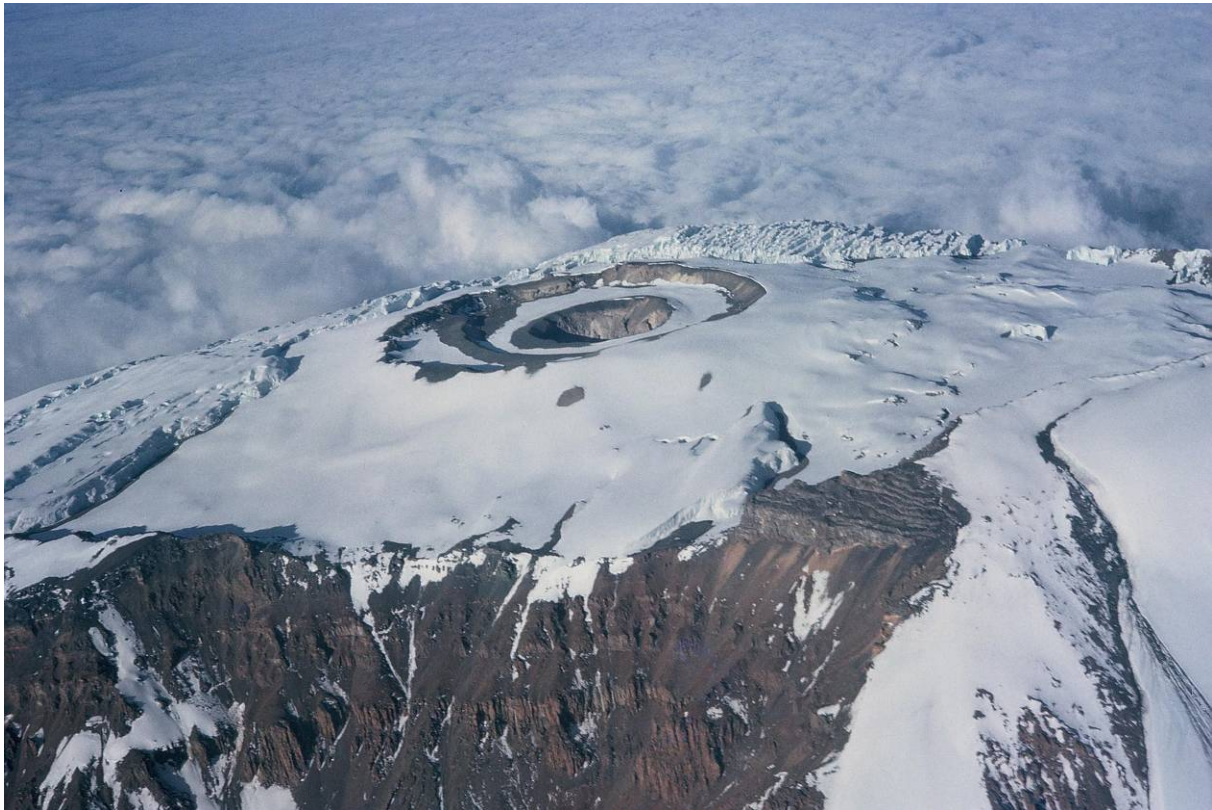
EPIC & KILIMANJARO

Epic boasts a summit success rate of over 90%. This can be attributed to a combination of factors; physical and mental preparation of clients, equipment specification, route selection, safety, comfort & the very best guides.

In the past few years there has been a proliferation of companies operating climbs on Kilimanjaro. Being the largest freestanding volcano in the world at 5,895 metres (19,354 feet), Kilimanjaro's upper slopes are classed in the extreme altitude range. Hiking at these altitudes is extremely dangerous. Being well prepared, having the best guides, a full team of well trained and equipped camp crew and porters at your disposal (all you carry is a light daypack), nutritious food (in plentiful quantities), comfortable accommodations (high specification camping equipment) and most importantly having all safety issues accounted for (including testing your blood oxygen saturation levels and heart rate twice daily, climbing with oxygen and a portable hyperbaric chamber and having an emergency evacuation team on stand-by) are essential elements to a safe and successful climb. Further, Epic adopts a strict ethical approach; we climb with a team of porters who are well paid and not overly burdened with their load. We also ensure that our presence on the mountain leaves no trace with waste materials being carried out.

Of course to climb in this fashion is not a cheap enterprise. Climbing with Epic means we have fully assessed the risks and provisioned accordingly. We do not cut corners. We are committed to ensuring you have the best chance of summiting in the safest and most comfortable fashion possible.

Doing it right is important if you wish to succeed.



THE WEATHER & YOUR CLIMB

While it is possible to climb almost year round, the weather conditions can make a big difference to your experience – notably the level of comfort and success rates. Another important point is that whilst on the mountain the weather conditions can change incredibly quickly from bright sunshine to drizzle or snow with penetrating high winds. The table below will hopefully give you an insight into the seasonality:

Months	Expected conditions			
	Forest	Heath / Moorland	Alpine summit	Overall
Mid Jan – Mid Mar	Medium chance of rain	Medium chance of mist / drizzle	Not too cold	Great
Mid Mar – Late May	High chance of rain	High chance of mist / drizzle	High chance of snow	Really hard work
June – July	Medium chance of rain	Medium chance of mist / drizzle	Very cold	Good but cold
Aug – Mid Oct	Low rainfall	Often clear – mist / cloud cover in the afternoon	Temperature going up	Great
Mid Oct – Mid Nov	Medium chance of rain	Medium chance of mist / drizzle	Medium chance of snow	Can be very variable
Mid Nov – Mid Jan	Medium / high chance of rain	Medium / high chance of mist / drizzle	Medium chance of snow	Can be very variable / wet

AGE LIMITS / REGULATIONS

KINAPA, the governing body responsible for managing Kilimanjaro National Park, have set an age limit for ascending to the summit of 12 years old. Children and young people appear to be more susceptible to acute mountain sickness. We prefer to err on the conservative side and will not consider climbers under 18 years.

We do not have an upper age limit on people attempting Kilimanjaro. That said all climbers need to be in good health (mentally and physically), be fit and have a desire to succeed. We insist that all people wishing to climb with Epic supply a medical certificate from their General Practitioner stating they are of sound body and mind to undertake the climb.

Many people suggest that older people do much better than their younger counterparts and we can certainly bear this out! Reasons for this have not been scientifically evaluated (at least not by us – yet) but perhaps the advice they receive to take it easy and enjoy the trip pays dividends later on.



OUR SPECIFICATIONS

YOUR CLIMB LEADER

Each climb is led by a Climb Leader. He is responsible for overseeing all aspects of the climb. A Tanzanian climb leader is included as part of the cost of your climb. The services of an expatriate climb leader or climb doctor can be arranged although this is at additional cost. All our climb leaders are trained on the medical front, very experienced in Africa and have climbed Kilimanjaro numerous times. Their main focus is on you as the client, your well-being and safety.

YOUR GUIDES

To supplement the Climb Leader's efforts we have a superb team of guides on hand. Chief among the guides is



the Guide Team Leader. He is responsible for managing the staff, the operation of the camp and the logistics of resupply and relocation. The guide team leader is generally the most experienced of all the guides. In many cases Team Leader's have been up the mountain more times than they can count. Needless to say they are very experienced and have encountered many, if not all, the scenarios you face.

We climb with a very high client to guide ratio. Inevitably groups fracture on the final summit attempt. We ensure we have an appropriate number of guides should the group fracture for clients to continue to climb under a guide's supervision.

What makes a superb guide?

- Experience: all our guides have been working on the mountain from porters all the way up to guides
- Training: our guides all have up to date mountain specific first aid training covering all aspects of altitude sickness and due to their experience on the mountain have been in almost all scenarios. Their training is on going and they have refresher courses at least 2 a year as well as access to training resources (latest articles on mountain sickness, flora and fauna guides, Red Cross first aid refresher courses).
- Personality: guides not only show you the route on Kilimanjaro but they are companions as well. Our guides have good English and are very amenable willing to share their knowledge on all aspects of Kilimanjaro as well as Tanzanian culture and life.

YOUR CREW

Our guides are part of a team. This team includes:

- A cook or cooks: it's amazing what they can prepare in a small tent on the side of a very big mountain! Fresh fruit / vegetables and meat allow them to prepare excellent meals that are designed to give you good nutrition value and lots of energy. They are the first up and last to go to bed.
- Camp crew: they set the tents and act as waiters as well. Working hand in hand with the cooks and guides you will see these guys scurrying around diligently keeping everything in order.
- Porters: the workhorses of the mountain. Our porters are all mountain porters and either work full time as porters or are working their way up the ranks towards becoming guides. They work hard to ensure that the entire camp is packed and set up before you arrive. All porters are selected from a core of trusted individuals.

OUR TEAM ON THE GROUND

The Operations base for the climb is Arusha. A small cadre is on stand-by 24 hours a day in the case of an emergency. We are normally in contact with base twice daily. The base team is responsible for all the logistics of operating on the mountain. Further they ensure the equipment deployed on the mountain is clean and in good working order.

CREW POLICY

Overview

Each expedition is run like a military operation with set protocols and procedures in place.

Responsibilities

The Operations team is responsible for managing all aspects of the climb including preparation, deployment, conduct and wash-up.

The operations team works in tandem with the climb leader, guides and camp crew to ensure that all aspects of a trip are prepared and meet established guidelines for safety, quality and expectations.

We have a core list of porters that we use on a regular basis. This list changes over time according to porter performance and whether they are suited to work as a porter. It is also an opportunity for porters to become recognized for selection to become assistants, camp crew or cooks. Sometimes due to group size extra porters are needed. The head guide in this instance sources extra porters and they are strictly checked for age, health, suitability for porter work and that they have suitable foot wear, jacket and sleeping bag or blankets. Ultimately the company is responsible for the well being of all crew.

Trip pre-requisites

Preparation for any given trip is done in conjunction with the head guide, assistant guide(s), cook and camp crew. Prior to any trip the following lists are prepared:

- Food lists clients
- Food lists crew
- Equipment check - lists
- Crew check - lists, including:
- Suitable footwear
- Suitable clothing
- Suitable sleeping gear
- Client check lists equipment
- Communications checklist
- First Aid check list

Climb preparation

Baggage carried by porters is strictly limited by KINAPA regulations. All kit and food is weighed at the operations base prior to departure to ensure that the numbers of porters are known. The crew is introduced to the climbers prior to setting off.

Climb progress

All trips are monitored by twice daily communication to the operations base. The following checks must be performed:

- Client health & well-being – twice daily blood/oxygen saturation levels and heart rate are monitored to ensure you body is adjusting to your new rarified habitat.
- Forecasted progress and ability
- Crew health & well – being
- Forecasted progress and ability

The operations team, the climb leader and guide(s) take appropriate steps to ensure that all of the above checks are performed accurately and all the information is relayed to the operations team. There are some camps where communications are very difficult (such as Shira 1). However all checks are performed and relayed at the next available communication point. All of the above are also recorded at each camp. The completed check - list is returned to the operations team post trip.

Crew illness and rescue

If members of the crew fall ill due to the effects of altitude sickness or any other malaise, then the head guide will make an assessment. If the crew member is unfit to continue the climb and has to return down then that person will be assisted by at least one other person. If the crew member can continue with the climb, but is unable to perform his all of his duties then that person will continue to receive shelter and food. All the same backup procedures and equipment available to guests is also available to be used for crew.

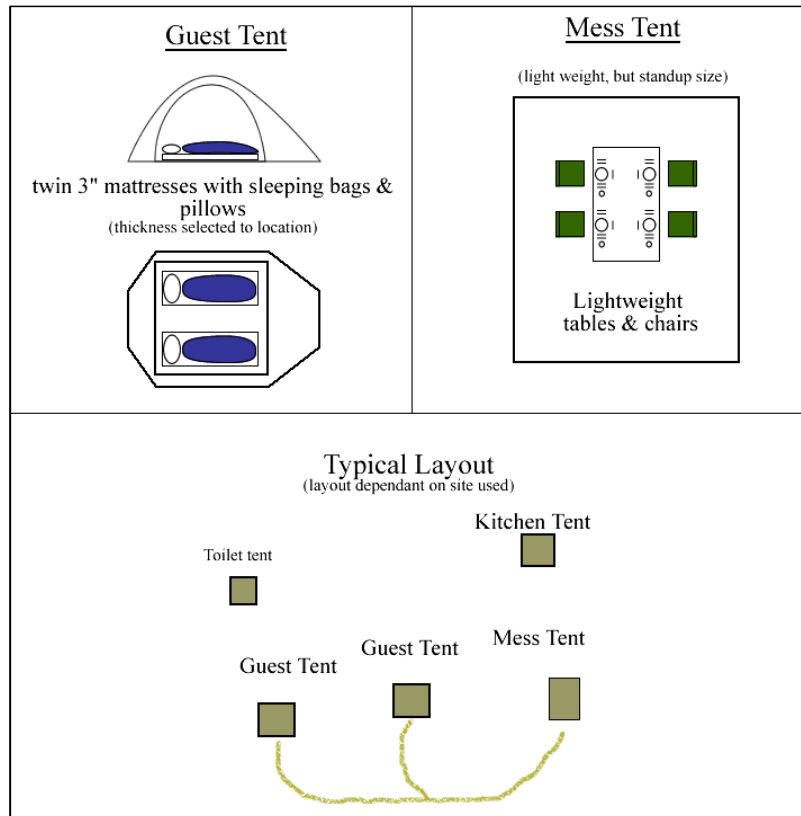
Payment & Tipping

All crew are paid a fair wage for every trip. All clients will be encouraged to pay tips to the head guide in front of the crew, or these can be left with the management for fair distribution.

EQUIPMENT

Each camp is set up with the following:

- Guest Tents
 - 3 man expedition dome tents, used for 2 people, and includes a fly sheet with vestibule for rucksacks and wet gear
 - Mattresses, typically 3 inches thick
 - Sleeping bags: Anjungilak from Norway rated -20 Celcius
 - Pillows
- Mess tent
 - Standup size mess tent
 - Lightweight table
 - Lightweight stools
 - Table cloth
 - Full cutlery and lightweight plates and bowls
 - Thermoses of water for tea and coffee
- Toilet tent (s) – the toilet is similar to the type found on yachts – hand pumped flushable



FOOD

On the mountain it is essential to try and eat as much as possible and to keep very well hydrated. Your body uses up to 3 times as much water at altitude compared to normal. Keeping hydrated is essential. During meals take in as much liquid as you can - hot drinks, cold drinks and soups are all there to keep you well hydrated. During the day you will also be encouraged to drink at every opportunity. The climb team monitors your intake very closely. At no point should you be in need of a drink.

Studies have shown that your basal metabolic rate (BMR) increases with altitude – at 4300 meters this can be as much as 28% and so despite the fact that you may not feel like eating that much, your body needs the fuel.

Please note that people with special dietary requirements can normally be accommodated, but please let us know if you have ANY allergies or dislikes.

A Sample Menu

Breakfast

- A selection of fresh fruits
- Cereal
- Porridge
- Cooked meal - eggs, sausage, tomato
- Tea / coffee / hot chocolate

Lunch

Lunch is often taken on route in the form of a picnic lunch. Your cook sets this up in advance. A typical picnic lunch would include:

- Fresh vegetables
- Fruit juice
- Sandwiches with cheese and ham or some similar
- Chocolate bar
- Hot soup
- Tea / coffee / hot chocolate

Dinner

- Entrée of soup with bread
- Main course of a carbohydrate, such as rice or pasta with a meat dish, bolognese or some other
- Pudding, banana fritters or some other
- Tea / coffee / hot chocolate

WATER

On Kilimanjaro the water is actually very clean – for the most part. We provide bottled water for the first 2 days. Thereafter we resupply of the mountain from the multitude of streams flowing off the summit. Water taken from streams is filtered, boiled and puritabs used (iodine purification tablets).

You may like to bring water flavouring to mask the taste of the puritabs.

Each day you should have 3 liters of water on you when you start. For the entire day you should be drinking between 4 and 6 liters of water. Each person is different, but a simple rule is that your urine should be clear and copious: if it isn't, keep drinking. Most clients use a "camelback" bladder (and fed by an INSULATED HOSE – this is important as a non-insulated hose will freeze on your summit attempt rendering your Camelbak unserviceable) as well as carrying 2 x 1 litre wide mouthed Nalgene bottles.

We cannot stress enough that keeping hydrated is essential. Your guides will be carrying extra water on route every day in their packs – if you run out just ask them for some water.

CREW NUMBERS

Due to our high specification of equipment on climbs the total crew numbers are very high. We are very strict on controlling the weight that our porters carry hence the numbers.

Indicative crew numbers are:

Route	Guests	Guides	Camp crew	Cooks	Porters	Total
Machame 6 day	2	2	1	1	16	20
Machame 6 day	4	3	1	1	25	30
Machame 6 day	14	6	2	2	50	60
Lemosho 8 day	2	2	1	1	24	28
Lemosho 8 day	4	3	1	1	36	41
Lemosho 8 day	14	6	2	2	64	74

ENVIRONMENTAL POLICY

We adhere to strict environmental guidelines ensuring we leave no “imprint” on the mountain. Our crews remove all rubbish from each and every camp, including all food scraps. Crews avoid damaging any flora in setting up of camps. We ask our guests to be very sensitive to the environment as to make sure that all waste, from paper wrappers to bottle tops, are given to the crew to pack away so that we can take it all back off the mountain.

BEFORE YOU TRAVEL

KIT LIST / WHAT YOU SHOULD BRING

The following information is seen as an essential list of what you should take with you on the mountain. A supplementary list follows for extra items as well.

Please also note that this list should be used to check off items that you have and this list, where ever possible, **must be returned to Epic prior to embarkation**. We will also check over your kit in the pre climb briefing to make sure everything arrived safely – there are times when luggage does not arrive with the aircraft and in those circumstances we will do out utmost to make sure you are well prepared for you climb.

Please try and keep your total weight of equipment on the mountain to around 15kg in a soft sided kit style bag. Please advise us if you will be bringing more.

Essential Items Checklist

NAME:	CHECKED
Equipment	
Thermal Hat – Beanie, balaclava	
Wide brimmed hat	
Sunglasses (must cover eyes completely)	
Scarf	
Camelbak – 2 litre with insulated supply hose	
Water bottle 2 x 2 litres – for instance Nalgen bottles as they can resist boiling water to freezing water. For males it is a good idea to have a third bottle to serve as a “pottie” at night. This will save you having to brave the elements.	
Waterproof Jacket – GoreTex or similar with hood	
Fleece x 2 – 1 x heavy weight and 1 x light weight	
Shirts x 2	
Thermal Gloves	
Waterproof outer glove / mitten	
Thermal underwear	
Lightweight trousers x 2 (NOT JEANS)	
Waterproof outer shell trousers x 1	
Socks x 6 – proper hiking sock are best.	

Waterproof hi-top hiking boots (worn in)	
Headlamp + spare batteries	
Sun cream	
Walking Poles – very useful on descents and helps reduce stress on knees. If you prefer a hand carved walking stick can be purchased for a minimal amount on entry into the park	
Small towel	
Gaiters – knee length to keep out small stones and water	
Medication – list the medication you take or intend to take	
Kit bag – preferably soft (so that we can put it in our custom designed porter bags easily). Porters carry this.	
Day rucksack – around 30 liters for waterproofs / water and any other essentials when walking day to day	
Toiletries	
Other – list as addendum to this	

NOTE: it is a very good idea to wear your boots on the plane and hand carry your outer shell / waterproof jacket – in case your luggage gets misplaced enroute. Also, if you are taking medication then this should also be carried on your person.

Supplementary list (non essential items)

These listed items are simply things that could make your hike more comfortable or items that are not seen as essential.

- Gel activated hand warmers (for summit bid, but please note this is a pet hate as most people simply drop them once used!)
- High energy and chocolate bars: you should keep eating all day long so suggest you bring a ready supply.
- Water flavoring: we boil, filter and then add puritabs to the water - you are provided with 9 liters of bottled water from the start, carried by crew and then we source water from mountain streams which are usually very clean indeed, but none the less we take make sure that the water goes through 3 steps to make sure you don't get stomach upsets due to contaminated water.
- Wet wipes - antibacterial
- Poncho: great for the rain forest section. An umbrella is also great!
- Oral rehydration sachets - such as gastrolyte. With so much fluid lost at altitude these are a wonderful supplement. We suggest 10-15 sachets.
- Plastic bags – to separate dirty laundry and as a failsafe if you do not have a rucksack cover.
- Playing cards
- Pencil & paper for the trip log!
- Ear – plugs
- Ipod & spare batteries
- Pocket - knife.
- Spare contact lenses* and/or glasses and/or dentures
- Personal Medical Kit

Your climbing team will have a comprehensive first aid kit. That said you may like to bring your own, especially if you are allergic to certain drugs. A suggested med kit inclusions are:

- Painkillers (aspirin/paracetamol - strong painkillers should not be taken as they may mask the symptoms of altitude sickness).
- Imodium or other anti-diarrhoeal tablets.
- Oral rehydration salts/sachets.
- Antihistamines.
- Blister treatment.
- Plasters/Band Aids.
- Antiseptic.
- Talcum Powder.
- Dressings, especially pressure relief for blisters.
- Sunscreen (Factor 15+).
- Insect repellent containing DEET.
- Antacids.

*Please Note: Altitude can effect menstrual cycles.

PERSONAL PARTICULARS/MEDICAL / INSURANCE

Client Information Form

You will be asked to complete prior to embarkation a detailed Client Information form. Amongst other things this requires passport details, next of kin, travel insurance details, dietary requirements and most importantly pre-existing medical conditions.

The following conditions need careful pre-departure assessment to ensure climbers are considered fit:

- Asthma and other respiratory problems
- Hypertension
- Cardiovascular disease. Untreated angina is a contraindication
- Diabetes
- Epilepsy
- Hip, knee or ankle problems
- Psychological problems - Trekking can be challenging emotionally and people going must be mentally stable. A person with effectively treated depression who is emotionally and mentally stable may go trekking. A person with a psychotic illness should not go.

People with hypertension (high blood pressure) and asthma, may climb to altitude provided these conditions are mild to moderate, stable and well controlled, thoroughly assessed by a medical professional and have suitable preparations put in place. While climbing, an asthmatic should carry (in addition to their usual medication) a spacer, a course of antibiotic and oral prednisolone, and know how and when to use them in an attack. People with a history of unstable asthma, especially with severe attacks, are advised against climbing. This is because air travel, allergens and infection can all precipitate asthma attacks which are difficult to treat in a wilderness setting and potentially deadly.

Diabetics and epileptics may be at increased risk above 3000m.

Travel Insurance

All clients must have comprehensive travel insurance for Africa before embarkation. Cover should include climbing at altitude, hospitalization and evacuation from Tanzania should the need arise. Epic requires that you furnish a Certificate of Cover.

Medical Check-Up

Similarly it is mandatory that all clients have a medical check up with their General Practitioner prior to travel. Epic requires a copy of this with the Travel Insurance proof of cover. This is especially relevant if you are above 40 years of age, or if you have had any conditions in the past that limited your ability to trek. The key thing to remember is that Kilimanjaro is not just a walk in the park. Prior preparation and planning for contingencies ensures your safety.

Innoculations & Malaria

It is recommended that you consult your travel doctor in excess of 2 months prior to departure. Certain inoculations are recommended for travel to Tanzania as is taking a prophylaxis for malaria. Please consult your nearest Traveller's Medical Centre for advice. Your travel doctor will also be able to advise you on taking Diamox, a diuretic often used to counter the effects of altitude.

ALTITUDE AND ALTITUDE SICKNESS

Please note: this information has been collected from a number sources, which include medical journals and outdoor training guides. It is not meant to be a definitive source of information, but is designed to give our guests a basic understanding of the environment and reactions that the body may face at altitude as well as the inherent risks. Our mountain guides are trained to ensure that you are monitored at all stages and are able to recognize various forms of mountain sickness and their severity and to take appropriate steps. Their ability to make these decisions is also based on years of experience on the mountain and so their decisions must be adhered to at all times.

DEFINITIONS OF ALTITUDE

Different altitudes can be classified as:

- High: 8,000 – 12,000 feet (2438 – 3658 meters)
- Very High: 12,000 – 18,000 feet (3658 – 5487 meters)

- Extremely High: 18,000 + feet (5487 meters +)

Therefore, on a typical Kilimanjaro hike you will pass from High altitude on your first day all the way to extremely high at the summit. Kilimanjaro is an extremely high mountain.

ENVIRONMENTAL CHANGES AT ALTITUDE

As you ascend Kilimanjaro (more specifically as you ascend through the atmosphere) the barometric pressure decreases. The temperature also drops – for every 1000 feet around 5 degrees F (10 C per 1000 meters). The effects of these changes are a decrease in the density of air. Essentially there is less air to breath in, hence the term ‘thin air’. The percentage of oxygen remains constant at around 21%, but there is simply less oxygen molecules for a given volume of air that you breath in.

ACCLIMATISATION

As you ascend your body needs to deal with the reduced amount of oxygen available in every breath. These changes that your body makes are the process of acclimatization. The main changes that occur in the body are:

- The depth of breathing increases
- Pressure in the pulmonary arteries increases – making blood flow into parts of the lungs not necessarily used at lower latitudes
- The body produces more red blood cells (the protein Hemoglobin being the oxygen carrier which resides in the red blood cell).
- Production of more of a certain enzyme that facilitates the release of oxygen from Hemoglobin to the body’s tissues.
- You urinate more (altitude diuresis where the kidneys release more water from the body).

Failure to acclimatize properly therefore leads to certain symptoms – signs that your body is not adapting, or has not yet adapted, to the change in altitude.

RATE OF ACCLIMATIZATION

How quickly you acclimatize – the rate of acclimatization, is affected by a few main factors:

- How quickly you ascend: an ideal target rate is 1000 feet a day (305 meters per day) and even 3000 feet spend an extra day at the same altitude.
- The amount of time spent at a particular altitude: extra days spent at the same altitude help. The maxim ‘walk high, sleep low’ also applies.
- The condition of your body: being prepared and taking it easy ensure that your body is given the best chance of dealing with the changes in environment.
- How well hydrated you are and diet: high carbohydrate diet combined with lots of fluids are essential.

TYPES OF ALTITUDE SICKNESS

If you body is not able to deal with the change in altitude then there are 3 main types of illness that may be apparent:

- **Acute Mountain Sickness:** a number of symptoms that indicate you are not acclimatized to your current altitude. These include a headache combined with loss of appetite, fatigue (even at rest), dizziness, mild swelling in extremities, and disturbed sleep. The important thing to note is that a large proportion of people climbing Kilimanjaro do get mild mountain sickness and with rest and time your tolerance for altitude increases and so most people will be able to continue. Fluid leakage on the brain is the predominant cause of a headache and severe forms of this can lead to HACE.
- **HACE:** High Altitude Cerebral Edema. Excess fluid leakage causes mental impairment and this can be fatal. The hallmarks of HACE are a severe headache and impairment of the ability to think. Ataxia, or the loss of coordination is an easy sign to recognize. Decent is the only cure.
- **HAPE:** High altitude pulmonary edema – fluid on the lungs. Signs can include breathlessness even at rest, cough (possibly frothy or pink sputum), rattling breaths, lack of blood to the extremities and drowsiness. HAPE can be confused with pneumonia, but rapid decent soon differentiates the two.

Portable Oxygen Chamber & Oxygen Cylinders

We carry up the mountain a portable oxygen chamber and oxygen cylinders in the unlikely event that someone should contract severe mountain sickness. Perhaps this is perceived by some as an over precaution. That said **we plan for the worst case scenario.**

Periodic breathing or 'Cheyne – Stokes' respirations are not an illness. Periodic breathing often happens at night whereby the climber may experience wildly fluctuating breathing cycles in their sleep. It can be quite disturbing to listen to or to suddenly wake up to, but it is not considered abnormal at high altitudes. Acetazolamide (Diamox) can be helpful in relieving periodic breathing.

DIAMOX / ACETAZOLAMIDE

Diamox (the brand name) is a sulfa based drug that is a carbonic anhydrase inhibitor. Essentially the effect it has is to act as a respiratory stimulant, which impacts your breathing particularly at night and can eliminate periodic breathing. Clinical trials have not been performed conclusively, but it is widely known to increase the rate of acclimatization. It is certainly not a wonder drug that will work for everyone in the same ways – in fact the research and data for how well it works for different people is very limited indeed.

Key points:

- It is a sulfa-based drug and so some people are allergic to it – your doctor must prescribe it for you to take it.
- It is a diuretic
- Some side effects include tingling in the fingers and toes, altered taste (especially of soda drinks which taste flat) and possibly ringing in the ears.
- It is used in the following ways:
 - At the start of the climb and during climb to prevent mountain sickness
 - On the onset of any signs of mountain sickness
 - As a treatment for mountain sickness

The only real cure for altitude sickness is removal from altitude.

If you intend taking Diamox it is strongly recommended that you take two days worth of tablets prior to embarkation to ensure no allergic reaction. Being in your own environment will easily enable you to finger Diamox should you have an adverse reaction. Once on the mountain the process of elimination becomes considerably more complicated.

Please note that our guides are asked not to give out their own supplies of Diamox to people that have not been prescribed Diamox to avoid allergic reactions.

Doses

Consult your doctor for advice. From experience we have found that a good dose is 125mg twice a day, at breakfast and then after dinner. This minimizes side effects and helps keep a steady breathing pattern when you are asleep. Some information from medical journals indicates that the effectiveness of Diamox may be very limited unless the maximum daily does of 750mg is taken. We wait for proven clinical results!

MOBILE PHONES

Mobile phones (on global roaming) do work in Tanzania and even on Kilimanjaro. For Americans your phone will need to be tri or quad band. It is suggested that you bring a spare battery as there are no recharging facilities on the mountain.

PHOTOGRAPHY

Most people bring a camera with them for shots of Kilimanjaro. We have found that over the years the specification and performance of small compact cameras has improved phenomenally, and they are lightweight. Digital cameras are also slowly becoming the norm and many of these are also very lightweight and compact. These sorts of camera are ideal for day-to-day shots as they can be kept on your person tucked away in a pocket. Here are a few points to consider:

- The camera will be used in severe cold and should be protected against freezing whilst not in use. A decent pouch for the camera, to ensure that it does not freeze on the final ascent is a good idea, although keeping your equipment in interior pockets of your clothing should be sufficient. (Do not keep your camera in your backpack at higher elevations).

- Wide-angle, telephoto and zoom lenses will add greatly to the quality of photos for SLR cameras, but weight is definitely a consideration. You will generally find that a good 28-80mm zoom lens covers most shots and keep your weight down.
- A polarizer or neutral density filter will greatly enhance results – there is a lot of glaze and UV at altitude.
- Transparency (slide) film will almost certainly produce better results. Video photography is an excellent method of recording the sights and sounds of your climb and is highly recommended, and the more lightweight it is the less you will be carrying!

Note: supplies of film, batteries and memory cards are limited in Tanzania. Our suggestion is to take well in excess of what you might think is necessary.

GETTING YOUR BODY PREPARED

Essentially Kilimanjaro is a multiple day hike. In light of this hiking and walking are ideal forms of preparation for your body. Hiking at altitude is hard work and so the more preparation you do the better – but not to the point of over exerting yourself or stressing your body especially a few days before the climb. Therefore, the best bet is to work exercise into your daily routine and where possible try to have extended walks where you can wear in your boots, carry your rucksack and get used to some light weight on your shoulders and increase your aerobic ability. If you can combine more exertive exercise, such as swimming and even other forms of aerobic exercise then great – **remember that you will be walking for a number of days and so the fitter you are the more adapt your body is to this level of exercise.**

Epic can assist you with the provision of a 12 week remotely supervised training programme. In general your fitness efforts in the 3 months prior should incorporate:

Climb date minus 3 months

- Gym / fitness class / any selection of fitness session x 2 times a week: choose workouts that make you work hard and increase fitness rather than build muscle
- Walking: walk whenever possible – At least 1 hour continuous walk per week preferably over varying terrain to incorporate hills and steps.
- Diet: cut out soft drinks with sugar or sweeteners and junk food. Remember this is a once in a lifetime event – use it as a great excuse to get healthy!!

Climb date minus 2 months

- Gym session x 3 times a week: again choose workouts that make you work hard and increase fitness rather than build muscle. No need to go crazy, but doing 3 workouts a week breeds discipline and mental stamina as well as improving physical conditioning. You can even substitute 1 gym session for an alternative activity such as Yoga (even better yoga session every morning!) or swimming
- Walking: keep walking! – Increase your frequency to 2 x 1 hour walks per week. Hills and steps are a must as is weight bearing during walks. Your daypack should be carried with upward of 10 kgs of weight inside. Some stationary step-ups on the likes of park benches etc. should also be incorporated.
- Diet: keep healthy but remember to feed the fire! When you exercise you will burn lots of calories and so replace lost fuel and keep very well hydrated – water is life, drink, drink. Lots of water helps flush out toxins and maintains a healthy perfusion of the body's cells.

Climb date minus 1 month

- Gym session x 3 times a week: no need to go crazy on the gym sessions, simply keep up a good routine. Do not over exercise! Going over 3 times a week increases the risk of injury and muscle damage which will prevent you from even starting, which is not what we want.
- Walking: be realistic and set 8 hikes for this month of around 2 – 3 hours each. Keep walking when ever possible. Again, overexertion and strains should be avoided at all costs. Hills, steps terrain of varied footing should be the norm.
- Diet: a good well balanced diet is the way to be. Any loss of body weight or toning should really have been done in the last couple of months and now keeping healthy and maintaining the status quo is our goal. Lots of water and enough calorie intake to complement your exercise routine.

Climb date minus 1 week

- RELAX. No need for last minute blasts or burn outs. Take a good walk at the beginning of the week and then simply partake in some light cardio-sessions where possible. If you haven't prepared up to this point then training one week from your arrival is not going to help (people that take that approach should expect to find the hike hard work and possibly be ready to fail). Being MENTALLY RELAXED is as important as physical conditioning. Even if you haven't managed to put in lots of training time the same applies.

Note: wearing in your boots will avoid discomfort on the mountain – serious blisters can seriously affect your ability to walk and for this reason we also recommend carrying / wearing them on the plane.

Getting your body prepared tends to go further than this. Many people work really hard right up to the night before they leave, and then arrive tired and start climbing tired. A stressed body will not acclimatize as well as a relaxed body and so give your body a chance and try to prepare early. You can also spend extra days in Tanzania relaxing or even doing light acclimatization walking – there are a number of activity options in the Kilimanjaro area from walking with Maasai in wilderness to seeing Chagga culture on foot. 2 or 3 nights before you climb can make a world of difference.

BEFORE YOU TREK

MEET AND GREETINGS AND ACCOMMODATION

On arrival in either Tanzania or Kenya you are met by an Epic representative. They will meet you at the airport with a signboard with your name on it. After collecting your baggage you will be transferred to your accommodation, as per your itinerary. Your itinerary will also stipulate a number of key contacts on the ground in Tanzania in the event of an emergency.

PRE CLIMB BRIEFING

WHO / WHAT / WHY / WHEN?

The pre climb briefing is an opportunity for us to introduce you to our guides, check that you have everything you need for the climb, answer any outstanding questions and help out with anything we can. The climb briefing is normally done the climb leader. We normally do the pre climb briefing at least a day before you set off. That's is not always possible if you arrive on a night flight and climb the next day (we recommend you give yourself at least a day to relax and get over your flight, and most likely the stress of leaving work!) in which case we brief you on the morning in which case we come armed with spare clothing just in case.

INTRODUCTION TO GUIDES AND CREW

Your guide will be with you for the next few days. They are there to fulfill many functions from ensuring your safety, showing you the way and giving you an insight into the mountain, its surroundings, and this wonderful part of the world. They are great companions and you should feel comfortable asking them all sorts of questions, as this is a learning experience for everybody and a chance to make some great friends.

In the briefing you will be told your exact crew numbers and make up. Your head guide is your number one point of contact, but you will also come to recognize and interact mostly with your assistant guides and camp crew. For crew numbers see 'crew numbers' in the Specifications section.

Your crew is in touch with base on a daily basis sending very specific sets of information, such as your health and performance, anticipated problems, as well as the health and performance of ALL crew members as well.

GOING OVER THE ROUTE

Golden rules ~ improving acclimatisation

There are a couple of key rules that can make a huge difference to your climb:

1. 'Pole Pole'. You will hear this from your guides. It means slowly, slowly and this applies to your pace on the mountain. This is especially important for the first 2 days where the altitude does not feel like a limiting factor and you are tempted to set a fast pace – for most people that is the normal reaction but it is the wrong one! Your body will be dealing with trying to acclimatize over the next few days and stressing it out and over exerting your body will have a negative impact on acclimatization. Your guides will set the pace and you may find it almost intolerably slow – bear with them it's for a good reason.
2. Drink. Drink lots of fluids. Hiking up steep hills at normal altitudes generates quite a lot of sweat and at altitude your body can be using up to 3 times the amount of water and so keeping hydrated is essential. Every so often your guides will simply stop you and at these points have a drink. In pack water carriers (camel bak, platypus and so on) are also great as you can easily keep drinking all day long). A good

test to see if you are drinking enough is that you urine should be clear and copious. If it is yellow then there is a good chance that you are dehydrated and you should take immediate steps to counter this (i.e. drink water). Your guides also carry extra water – so don't worry about running out.

For a more in depth look at altitude and Diamox please refer to our Kilimanjaro reference section at the end. If you wish to take Diamox (acetazolamide) then you must consult your doctor first. Diamox is a sulfa-based drug and some people are allergic to this compound (Your doctor or physician will be able to advise you on this).

Note that for serious forms of mountain sickness – specifically HACE (High Altitude Cerebral Edema) and HAPE (High Altitude Pulmonary Edema) the only cure is removal from altitude. Our guides' decision on removal from altitude is final (note that it can be the case that in non serious cases you may meet the group at a lower camp).

Starting off from accommodation

We normally like to get to the trailhead relatively early. We will advise the start time in the actual briefing. The key thing is to be prepared to depart the night before hence:

1. Pack your day sack and include
 - a. Waterproofs
 - b. Camera / video
 - c. Water bottles (bottled water can be provided at the trail head, but if you want to you can always fill up at the lodge).
 - d. Poncho / umbrella (dependant on season)
 - e. Hat
 - f. Sunglasses
 - g. Extra snacks if you have them
 - h. First aid kit if you have

NOTE: on all days try to keep your day sack as light as possible. Your porters have been hired to carry most of your gear and carry extra gear will only make you more tired and stress your body out more, making it harder for your body to deal with the altitude.

2. Pack your soft bag for the porters. This should have everything else you require on the mountain.
3. If you have extra baggage for an onward trip, or things that you find you do not need post kit check, then these need to be put separately and can be left with the hotel or with the driver that transfers you to the mountain who will return it to the base for safe keeping. Please, if you do want to give all the porters a t-shirt or some other gift that you have brought with you, there is no need to carry it for the whole trip, simply ask us to bring it to the end of the climb!

The gate

After transferring to the gate your guide will head off to fill in the necessary paper work whilst the mountain authorities and your crew arrange all bags into correct weights. All baggage is normally weighed. When all the formalities are complete you set off with your guides. Your porters will catch you up later on, pass you and set up camp by the time you arrive.

To the first camp

The first day is a good chance to get to know your guides and they will also be on hand to explain and describe some of the flora and fauna. This first day is an ideal opportunity to start a few good habits:

- Drink lots of fluids
- Eat snacks as often as you can
- Walk slowly

Day to day routine

Each evening and morning your head guide will brief you in your mess tent. This briefing will include:

1. How the day went, how your pace was and how to improve your performance
2. What lies ahead for the next day
 - a. What time tea and hot water will be brought to your tent
 - b. What time you need to get up
 - c. Breakfast times
 - d. What to include in tomorrow's day sack
 - e. Departure time from camp
 - f. Where lunch will be (in next camp or en route)
 - g. Approximate arrival time / walking times

It is also a good opportunity for the guide to see how everyone is eating and feeling. Be very open and straightforward so that the guide can assess you. **Good feedback is essential for the guides to be able to monitor your progress.**

As a general guideline:

- Tea & hot water: 6.30am
- Breakfast: 7.00am
- Briefing: 7.30am
- Depart: 8.00am
- Lunch: depends on whether lunch is en route or in camp, but around 12pm to 1pm
- Afternoon tea: 3 – 4 pm
- Evening tea 6pm
- Dinner 7pm
- Evening briefing: 7.30pm

Most people tend to go to bed fairly short after dinner, but you can stay up writing trip reports, or even playing cards

The summit bid

For most routes the final summit bid is a little different. Here are the key stages and what to expect:

Evening briefing

At this point your head guide will go over the day's events and also how the summit section will be tackled. Your guides will have assessed your performance over the previous days and if necessary, may want to start some members of your group slightly earlier – this is especially relevant in large groups. The starting time for all routes that ascend via Stella point (Machame, Lemosho, Umbwe) or Gilman's (Marangu or Rongai) will always be at night. Hence, you may start as early as 11pm or possibly as late as 1am but your guide will decide this. The target is to try to reach the summit by sunrise as you have a long downhill afterwards as well.

Before you go to sleep

Ensure that all preparations are complete. If you need to put additional items of clothing on when woken later in the evening for your summit attempt, it is a good idea to set out your clothes in the order you will put them on – inner layers first, up to the outer layers.

When you wake up

You will be given a wake up call at a pre-arranged time. From here you dress, put your boots on and make sure everything you take in your daypack is packed and then go to the mess tent with your daypack where you will meet your guides and have a hot drink and check over last minute items.

Departure

We always have guides at the front and back of the group keeping pace and checking your performance. Your guides set the pace.

Getting to the rim of Kibo

Getting to the rim, Stella Point, usually takes around 6 hours. It can sometimes be shorter or even significantly longer. This is one place where different abilities can often show, but not to worry. If the group needs to split up then the time to do so will be determined by the head guide and guides will be assigned to each group. This is the hardest part of your entire trek – for some people the hardest thing they will ever do. It is often mental stamina that counts for a huge amount here, and motivating your colleagues is essential. Your guides will also be motivating you and checking you every so often. Follow the methodical steps of your guide to maximize grip and maintain a slow steady momentum.

Rim to the summit

Stella point it is still a further hour or so to the summit (Uhuru peak). Some people are happy to turn back here, after all you are at the top of Kilimanjaro, but most likely you will persevere to the summit.

POINTS OF NOTE

Hygiene

Hygiene is very important on the mountain, and so fresh underwear, fresh socks and washing are all important. Hot water is provided in the morning by your tents and when you arrive in camp in the afternoon. Water is also available after you have been to the toilet with soap. All crew members are also under strict instructions to maintain a very high level of hygiene.

WHAT HAPPENS IN AN EMERGENCY?

Role of the guide(s)

One of the main roles of your guides is to make sure that you are safe, and in the eventuality that you do have to go down, the whole team is on hand to make sure that this is done quickly and efficiently. Importantly they will be able to discern whether it is necessary for you to go down or if resting at the same altitude is safe.

Communications

Our guides have both radios and mobile telephones and have communication lines with both KINAPA (Kilimanjaro National Park authorities) and the operations base.

Evacuation routes

Depending on where you are on the mountain, a different exit point may be used. KINAPA vehicles are allowed onto the Shira plateau and can also access some way up the Mweka route and the Marangu route. To get an evacuee there our crew work together to either make a stretcher, use a KINAPA stretcher (if available) or even carry the person if necessary. At least one person assigned is an assistant guide.

A key aspect of our climbs is to try, wherever possible, to make sure that a guest can walk out safely by themselves. Our guides will decide if you need to turn around and their decision is final. Please respect this.

After the mountain ~ options

If someone does decide to go down, then depending on the exit point, KINAPA vehicles may drive up as far as the track allows to meet you and then we will have a vehicle at the gate to take over. From here there are the following main scenarios:

1. The guest does not or did not have signs of altitude sickness and is physically ok. They are then transferred back to a hotel to rest. We monitor their performance and keep in regular contact and a manager visits them to make sure everything is ok.
2. They have had mountain sickness but appear fine. The guest is taken to a good hospital nearest to their accommodation in either Arusha or Moshi for a checkup before being transferred to a hotel to rest. We monitor their performance and keep in regular contact and a manager visits them to make sure everything is ok.
3. The guest had a severe case of mountain sickness or other forms of sickness / condition and may still be feeling discomfort. In this case they go straight to KCMC in Moshi and are treated. If it is a very serious case we would arrange for flying doctors to effect an evacuation to Nairobi. Hence, having your emergency contact details and insurance details is of paramount importance. We monitor their performance and keep in regular contact and a manager visits them to make sure everything is ok.

For the extra transfers, accommodations and any medical costs we charge the client at cost price and if payment is a problem at that immediate time then we can make sure everything is covered and can be paid back at some later point.

OTHER AILMENTS

Dehydration

Dehydration is caused by a lack of fluid in your body. As already indicated, your body uses a lot of water at altitude and so drinking as much fluids as possible should be a major goal. Consider these times and potential sources of fluid:

- Breakfast: porridge, hot drinks, water (approx 1 liter)
- Hiking: water bottle (approx 3 liters)
- Lunch: fruit juices, hot drinks, water (approx 1/2 liter)
- Afternoon tea: hot drinks, water (approx 1/2 liter)
- Dinner: soups, hot drinks, water (approx 1 liter)
- In bed night: water (approx 1 liter)

This guide simply shows places where you may be able to get fluids – drinking 7 liters a day is probably a tad excessive!

Blisters

Badly worn in hiking boots, or new boots are the main culprits for a blister. Blisters can vary in their seriousness and this will affect your ability to walk. To avoid this please train in your boots and get them worn in. Wearing in a pair of leather boots can take time – sometimes at least a month and so be wary of this in your preparation.

Golden rule: if you feel a hot spot developing, stop and sort it out.

A hot spot may be where you are experiencing friction and rubbing and is likely to develop into a blister. Having blister patches and good socks and well worn in boots are ideal to avoid this.

Cramp

Cramp is normally the result of muscle fatigue, overexertion and or dehydration. Hence, keeping hydrated and not overexerting yourself if essential. Light stretching normally helps the cramps go away in a matter of minutes.

Sun burn / wind burn

The amount of harmful UV rises as you ascend. Having high factor sun block is essential (see packing list). This should be applied at the start of each day. A small tub of Vaseline is also very handy for chapped lips and moisturising hands as well.

Sprains

Sprains are not that common as long as people take our advice and do not rush. Areas where you are particularly at risk are in the forest section, some rocky sections such as the Barranco wall or mid way up to the summit as well as on your descent. Hence, a slow pace and care are ideal. For those with weak joints due to previous sprains, breaks or ligament tears, be prepared! Having and wearing if necessary a support for the injured muscle / joint is far better than overstressing the injury and not being able to go all the way to the summit!

TIPPING

A little note on tipping: there are sometimes different expectations when it comes to tipping from different nationalities and found expectations are quite often in line with cultural norms back in respective home countries. In Tanzania tips are customary in most service industries and the mountain is no different. Nonetheless it is not obligatory.

How and when to tip

You will often find that the subject of tipping comes up at the final camp, and that is often a good place to arrange the final tips and if in doubt your head guide can always help out. We try to keep tipping as transparent for the crew as possible. Ideally tipping should be done at the gate after the climb and so having change (dollars or Tanzanian shillings are the best) is a good idea. Otherwise we have to organize tipping later on back at base. It can feel a little odd dealing with tips – but you can always use our guides to distribute the tips. Therefore, if possible, please do try and have tip money on you at the start of the climb and complete tips at the gate.

Guideline amounts

These figures are designed to be a guideline based on what have become normal tipping amounts over time. Remember that you should not feel obligated to pay exact amounts and if you feel like giving more or less then please do – it's a tip after all!

Gratuities are discretionary. From USD350 or approx 10% of cost of climb per person. This will vary depending on number of clients and the requisite number of staff. Please discuss this with the chief guide who will give you sensible recommendations on how much and how to divide between the various staff.

If you have an extraordinary experience feel free to tip a little more. Excess snack, equipment and gear will also be gratefully received if you no longer have use for them.

AFTER YOUR TREK

FEEDBACK

Once you are back at your hotel, and after a well deserved hot shower, there will be time to relax and have a celebratory dinner. The following morning your climb leader will be there to receive any feedback that you have. We will have an assessment form for you and straightforward, critical feedback is ideal – we are always aiming to improve our service and standard on the mountain.

KILIMANJARO REFERENCE

KILIMANJARO NATIONAL PARK

- National Park. 756 sq. km.
- The tallest mountain in Africa (19,340 feet or 5895 meters)
- Actually a triple volcano
 - Oldest is Shira, collapsed caldera
 - Middle aged is Mawenzi
 - Youngest and still dormant is Kibo
 - Uhuru peak is on Kibo (5895 meters)
 - Perfect ash pit in the center of Kibo crater
- The National Park itself only includes the mountain area above 8,860 feet that make up the moor and highland areas, the Shira Plateau and the two peaks of Kibo (the "summit") and Mawenzi (16,894 feet).
- The area below the Park is, however, gazetted as forest and game reserve; five main vegetation zones rise from the lower slopes in succession, each getting colder and dryer with correspondingly fewer fauna populations.

GEOLOGY



To understand Kilimanjaro's geology one must first have a basic understanding of the events that lead to its creation. Kilimanjaro lies in a tectonic line intersection, linked to the massive rift valley that stretches from the borders of Turkey to the Mozambique Channel. The rift valley system is part of a constructive plate margin, which, on a larger scale, involves two parts of the African plate (the Nubian to the West and Somalian to the East) and the Arabian plate. The effect of these plates moving apart resulted in a vast array of geological features, not least a number of volcanoes along its length; the tallest is most certainly Kilimanjaro (for more information on climbing and trekking in the rift valley see our trekking guide).

Kilimanjaro is a strato volcano (made up of both; lava flows and pyroclastic material) and is in fact made of three volcanoes: Kibo, Mawenzi and Shira. There are also numerous ash cones, mostly running from a northwest to southeast line. These main three vents emerged around 750,000 years ago and over thousands of years Shira was the first to die out. Shira presently is heavily eroded, an ancient caldera filled with lava and ash with a heavily eroded rim. Mawenzi contrasts starkly, with mile deep gulleys and heavily eroded steep sides. At 5150 meters Mawenzi is linked by an 11km saddle to Kibo, the youngest dormant vent. Kibo has not erupted in recent times although may have emitted ash around 300 years ago. Sulphur and steam are still emitted.

GLACIOLOGY

Despite being 3 degrees south of the equator, Kilimanjaro has numerous glaciers. Glaciers have also been an awesome force in shaping Kilimanjaro, especially the youngest peak, Kibo. Previously Kibo would have been covered by a vast ice cap, over 100 meters deep in places, and glaciers moving down the slopes breached the crater rim, and as they crept their way down the mountain left their distinctive u – shaped valleys, flanked and fronted by moraine ridges. From pictures taken in 1912 compared to the present day it has been observed that Kilimanjaro has lost in excess of 75% of its ice cover, although the impressive ice cliffs on the northern and eastern side remain as do glaciers on the south and south western flanks. At projected rates the ice could be lost forever by 2015 – 2020.

HISTORY

Given the fossil and bone evidence in the region, such as Olduvai Gorge, Kilimanjaro has no doubt been host to man and his predecessors long before written records first detailed the snow clad peak. Stone bowls and other

artifacts dating back some 2000 years have been found, and a large amount of artifacts have been found relating to the incumbent Wachagga tribe that continues to dominate large swathes of Kilimanjaro's slopes.

The Wachagga are certainly known to have lived in the area for at least 400 years and they currently dominate the southern and eastern slopes. Maasai are also prominent on the West and Northern slopes and they are believed to have arrived after the Wachagga peoples and came to dominate much of Northern Tanzania.

The first written reference of Kilimanjaro comes from Ptolemy's *Geographia*, written in the 2nd century AD. Here Ptolemy refers to an area then called Azania, which is south of Somalia. The relevant data Ptolemy included was that of a Roman called Diogenes who knew of a mountain with three peaks. He also refers to the Ruenzoris or 'mountains of the moon', Lake Victoria (then referred to as Lake Nyanza) and Ugandan Nile.

Thereafter, and indeed throughout written history, Kilimanjaro received very little attention. This is somewhat surprising as it lay on well-established trade routes to the coast where the Arabs dominated from the 6th to the 16th centuries. Possible references include Abul Fida and Arab geographer in the 13th century as well as a reference by a Chinese chronicler who recorded trade with the Arabs in the 12 / 13th centuries.

In 1500 the Portuguese Navigator, Vasco da Gama, visited East Africa. His subsequent reports spurred the Portuguese on and within ten years they dominated the coastline. It was almost 200 years later when the Arabs took back control in 1699. During that period a Spanish Geographer, Fernandes Encisco in 1519, referring to trade chronicles also mentions a very high mountain, which he credits (wrongly) as being the Ethiopian Mount Olympus.

The first westerners to see Kilimanjaro were actually missionaries and despite slow progress in converting the locals to Christianity their travels brought them deep into the African continent. Johann Rebmann first set eyes on the mountain at around 10am on the 11th of May 1848. His finding was reported in the Church Missionary Intelligencer in April 1849 and sparked strong debate at the Royal Geographic Society in London as to its existence and whether there was snow on its summit. It was 13 years later that Rebmann's findings were validated. In 1861 Baron Karl Klaus von der Decken approached Kilimanjaro from Mombassa with geologist Richard Thornton (who had also worked for Dr Livingstone on the Zambezi and returned to work with him shortly after). Thornton estimated the height to be between 19,812 and 20,655 feet and the group did attempt to ascend although they did not pass into the heath zone (lower forest zone). The following year in 1862 Baron K. K. von der Decken returned this time joined by Otto Kersten. They reached 14,200 feet before being turned back by bad weather and uncooperative porters. Thereafter Charles New, an English missionary, attempted again in 1871 and reached the snowline. In 1884 Harry Johnston claims to have reached almost 5000 meters (4994 m) but his claim has been questioned. In June 1887 Count Samuel Teleki reached 5575 meters, and in July of that same year Hans Meyer and Herr von Eberstein reached 5575 meters on the Ratzel glacier.

Finally, in 1889 Hans Meyer returned with alpine guide Ludwig Purtscheller and after reaching the rim on one attempt finally reached the summit on 5th October and named it Kaiser Wilhelm Spitze.

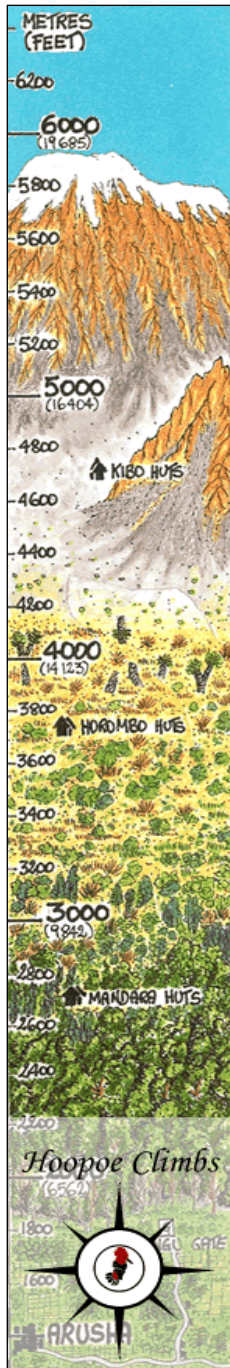
Subsequent attempts by a number of people provided many of the names for features on the mountain, from Glaciers to land marks key points. Interestingly Hans Meyer, returning in 1889 with Herr E Platz, noticed a significant retreat of the glaciers (by around 100 meters). The first woman to reach the summit was Frau von Ruckteschell in 1914. Mawenzi was first summated in 1912.

One of the key points in the modern History of Kilimanjaro was the climb in 1961 in Tanzania's year of Independence when the freedom torch was placed at the summit as a symbol of hope for all Africa. The summit was renamed Uhuru Peak, Uhuru meaning 'Freedom'.

Today many thousands of people visit and attempt to reach Uhuru peak, with vast variation in age, physical ability and with vastly different reasons and expectations. Despite being the highest free standing mountain in the world and the highest mountain in Africa, Kilimanjaro remains entirely accessible to a great variety of people.

FLORA, FAUNA & CLIMATE OF KILIMANJARO

A journey up the slopes of Africa's highest mountain takes you on a climatic world tour, from the tropics to the arctic. The grassy cultivated lower slopes turn into lush rainforest inhabited by elusive elephant, leopard, buffalo and antelope. Higher still, heath and moorland covered with giant heathers become a surreal alpine desert and finally, ice, snow and the magnificent beauty of the top of the continent.



Climate

SUMMIT

ALTITUDE: Above 5000m
 RAINFALL: Less than 100 mm/year.

Arctic Conditions – Freezing cold at night, burning sun during the day. Oxygen levels are nearly half those at sea level and there is little protection from the sun's radiation. With virtually no surface water, only lichens survive here. Creatures are rare, but in the 60's a leopard was found frozen in the snow and three climbers were accompanied to the summit by five African Hunting Dogs who disappeared as the climbers began their descent. Breathtaking views from the roof of Africa and into the Crater, cone and ash pit.

ALPINE DESERT

ALTITUDE: 4000-5000m
 RAINFALL: Approx. 250 mm/year

The huge daily temperature fluctuations make it summer every day and winter every night. The nights are below freezing and daytimes over 35°C in direct sun. The scarcity of water and thinning soil make inhospitable conditions for flora and fauna. 55 species of plant exist. Eland, Leopard, Serval and African Hunting dog have been spotted, but sightings are rare. Few birds can cope with the thin air and strong shifting winds. There are spectacular views of Kibo's glaciers and Mawenzi's dykes and the eerie moonscape of the saddle that connects the 2 peaks.

MOORLAND

ALTITUDE: 3000m-4000m

Frost is regular and sunshine can be quite intense. Clusters of giant lobelias and senecios are found at the bottom of valleys and beside streams. Wiry shrubs, herby grasses, hairy thistles and delicate flowers thrive. Sightings of eland, duikers, African hunting dogs, buffalo and elephants, civets, serval cats and leopards. Lions sometimes visit the Shira Plateau. Bird life is prolific and you may see buzzards, eagles and the alpine swift. The most beautiful bird here is the scarlet-tufted malachite sunbird. There is no cloud belt allowing wonderful views including those of the lava flows

HEATH

ALTITUDE: 2800-3000m
 RAINFALL: 1000mm/year

The climate is cool and clear climate with possible mist and fog at the forest boundary. The heath is characterized by heather and heath-like shrubs. Giant heathers grow up to 10 m in the upper forest. There are many striking flowers and attractive grasses.

FOREST

ALTITUDE: 1800-2800m
 RAINFALL: 1000mm/yr on the west/north 2000mm/yr on the south

Daytime temperatures are around 15-20°C. This is the richest zone on the mountain. The high humidity and wide band of clouds means that 96% of the water on Kilimanjaro is in this zone. The heavy rainfall and beautiful river gorges support extremely beautiful montane rainforest. Striking flowers including orchids are swamped in clouds of beautiful butterflies. Monkeys, hornbills and turacos live amongst the lush vegetation.

CULTIVATION

ALTITUDE: 800-1800m
 RAINFALL: 500mm/yr on plains 1800mm/yr at forest boundary

Formerly covered with shrubbery and dense forest, this zone is now pasture, plantations, grassland and cropland. Fertile volcanic soil supports human settlements. The lovely wildflowers are often named after the mountain. There are no large wild animals, but many small ones, including Galagos, Genet, and Tree Hyrax. Plentiful bird-life exists due to the large and varied food supply and many nesting sites.

Flora and Fauna

Not surprisingly given the altitude variation experienced on this very unique triple volcano, the flora and fauna changes dramatically with altitude. At the lower slopes there is a forest belt and as the rainfall decreases with altitude so the vegetation cover diminishes and then changes. Factors such as extreme radiation, high winds and extreme variations in temperatures mean that only certain plants can survive at high to extreme altitude.

The mountain is also affected by prevailing wind directions - moisture-laden winds come from the Indian Ocean to the east and are first deposited on the eastern and southern flanks of Kilimanjaro. The Western and Northern sides receive less rain and as a result the types of vegetation and tree types found are different. This also affects the fauna found in the respective areas, as does the impact of habitation.

On the south and eastern flanks of Kilimanjaro agriculture is rife and the dominant tribe is the Chaggas. Coffee farms and banana are everywhere and this restricts movement of wildlife from the plains into the forest (although forest specialists remain), whilst in the West Maasai pastoralists are the dominant tribe and there remain some wildlife corridors between the forest and the plains below.

The following record text and images have been compiled by Peter and Ake Lindstrom with the expert guidance of botanist Daniel Sitoni. It continues to grow and adapt over time and guests are welcome to send in images and excerpts of their findings.

Forest Zone

The Kilimanjaro forest reserve was created in colonial times in 1940 as a water catchment reserve and is administered by the Forestry Dept. The Kilimanjaro National Park encompasses the whole mountain above the forest reserve excepting a corridor of forest comprising part of the area from Marangu to Mandara hut. Most of the forest zone starts at about 1800 meters and extends to 2,700 meters.

The nature of the forest depends on elevation and aspect and the more southern & eastern slopes are wetter than the Northern and western. Generally as one ascends the rainfall pattern increases to an optimum then decreases again with further elevation and this is one factor in the differences or zoning of the forests with marked changes in speciation as one ascends/descends. Another factor is temperature and from 2,800-meter zone in the wetter Eastern forest & the 3000-meter zone in the west the forest gives way to sub-alpine heathland. Fingers of montane forest are found in the sheltered and steeper riverine areas below 1,800 meters and typical forest vegetation of Wild Mango (*Tabernaemontana pachysiphoni*) and Quinine tree (*Ravolvia caffra*), & *Albizia gummifera* are found on river banks, often as forest remnants outside the reserve. Similarly fingers of forest, mostly *Hygaena abyssinica* extend into the heathland following sheltered river valleys.

The highest rainfall in the wettest areas may exceed 4000mm p.a. and as low as 900mm on the Northern slopes. Mean temperatures are from a mean of 16degrees C at 1,500 m to 7 degrees C at 3000m. The upper limits of the forest are subject to frost and such species as *Hygaena abyssinica* and *Juniperus procera* and *Podocarpus falcatus* in the West & *Podocarpus latifolius* in the East are able to survive milder frost. The upper forest margin is determined by a mixture of soil type, exposure to regular and more severe frost. Therefore exposed ridges with thin soils and an exposed aspect are more quickly devoid of trees. Fire is another factor which drives back the forest boundaries particularly when fire rages through the heather zone taking with it mature trees on the drier forest edges as can be seen on leaving the forest above tree camp on the lemosho route.

The forest zone shows the most biodiversity and the understory of herbs and shrubs is best developed in the wetter forest whereas the Western forest generally has more glades and is more open. The presence of elephant and buffalo in the drier forest undoubtedly helps to keep the understory less thick.

However the formation of the glades so typical of the Lemosho route are not understood nor the reason for the die off in places of large numbers of *Hygaena* trees of various ages. This could be an indicator of rapid climatic change and changes in the water table.

The soils are derived from Volcanic rocks both ashes and basalt lavas and are mostly andasites. The Lemosho ascent through the more dry western forest is in marked contrast to the descent after (hopefully) having summited ; through the more Southern wet rain forest. Therefore for any person with botanical leanings or simply wanting to enjoy some of the least spoiled forest on the planet in the most beautiful surroundings will find this route takes a lot of beating!!! The forests are home to great biodiversity, mammals great and small beautiful and brightly coloured sunbirds like the noisy Eastern double collared sunbird and many birds adapted to the forest environment from the friendly & pretty Abyssinian ground thrush which can be found in and around Tree camp scrounging. Then there are skulkers and LBJ's (Little brown jobs) that disappear in to the undergrowth before they can be readily identified.

The Lemosho route is entered by checking in at Lemosho gate then driving through introduced pine & Eucalyptus plantation forest. A great chunk of pristine endemic forest was cleared in colonial times to make way for growing fast growing introduced soft woods. While this agro forestry has served the country well it has been at the expense of biodiversity and if at least 50 % had been given over to indigenous hard woods these hardwoods would now be worth millions of dollars as hard woods are so much scarcer now. However in 1940 it might have seemed that there was enough hard wood around the world to last forever.

Another downside of plantation forest is the lack of understory which is cleared and or close planting precludes any sunlight below the pines. The resulting decrease in humous content means less water retention by the soil therefore reducing the amount of water reaching streams through springs. The area below the present plantation forest was also cleared to make way for wheat farms and West Kilimanjaro had about 17 large-scale European owned farms in colonial times mostly wheat farms & these were farmed by mostly people of British descent. During the 1970's in the socialist era these productive farms were taken by the government of the day. These farms are passed as the approach is made to Lemosho gate before entering the forest.

The climb and Vegetation zones Lemosho route

Lower Altitude Dry Montane Forest

The drive to the start point takes one through Pine and Eucalyptus plantation forest with forest remnants such as Pillar trees, *Cassipourea malosana* and the very interesting looking *Euphorbia nyikae* which unlike the *E.candelabra* has a straight bole only branching at its canopy as it seeks to compete with other tall forest trees. (Look out for *E. candelabra* on the way to lake Manyara and *E. bosei* on the Ngorongoro crater descent road. On the crater ascent road you will see splendid *E. nyikae* again). Other forest remnants before the forest proper are *Macaranga kilimandscharica*, *Podocarpus* and *Olea capensis*, *Cussonia holstii*, often riverine.

Height at start of climb 2,383 meters. The canopy of the trees can be 20 meters high but with emergents that are even taller. The most obvious trees at the start are the *Hygaena abyssinica* trees. On the edge of the parking place is a shrubby tree *Pyschotria kirkii* that is related to coffee in the family Rubiaceae. The climb from the start is quite steep and soon *Hygaena* becomes mixed with fine specimens of *Podocarpus* one of two indigenous conifers and *Nuxia congesta*, found on other mountains including Ngorongoro has a fluted trunk which looks like a jumble of trees gathered together and crudely joined to form one large giant of a tree. And in the first most significant sized glade is a forest *Commiphora eminii* that is a small tree at 2367 meters (03 degrees 00 40 South 037 degrees 09. 24 East. If you have a GPS!!!!). The roots of this plant are used by the Meru tribe as an aphrodisiac.

The beautiful bright orange single flower of a creeper covers low underbrush where it is exposed and sunny & the flower is borne singly but often in number wherever the creeper is strong. Commonly known as Black- eyed Susan. *Rhamnus prunoides* is an interesting tree that is quite common and has bright shiny shiny leaves. The nettle is found along the side of the path and any foray off track must be cautious. The beautiful indigenous and endemic flower *Impatiens kilimandscharica* is found although not in the profusion of the wetter south and eastern slopes of the mountain.

Mosses (*Usnea*) festoon the trees and help to trap moisture from swirling mist and can account for 10-20% of the moisture that reaches the ground in the forest.



Ferns (*Pteris catopetra*) are common particularly in moister parts of the forest and can indicate boggy conditions. The blackberry, *Rubis*, very similar to its Northern hemisphere relative climbs in thorny tangles and provides fruit for birds and animals and are much liked by the porters.



Rhamnus prunoides at 03 degrees 26 South 037 degrees 09.19 East is used by the Maasai who make a concoction from the roots to cure rheumatism and arthritis. The Meru use the plant in medicine too to cure gonorrhoea. *Teclae nobilis* (a member of the same family as the orange tree) is common & it is a straight trunked tree found on all the northern mountains. A small shrub *Embelia shimperii* found along the path in places can be used to cure worm infestation and the leaves have a tart not unpleasant taste. A species of *Dracaenaceae* is found before Tree camp and this is commonly used to mark boundaries by the Warusha and it as taboo to claim or use land so demarcated.



In Chagga culture we are informed, the plant is used to make peace. In a dispute a sprig is covertly secreted into a persons pocket or clothing as a charm. It is said that an obdurate person that has a charm so placed will on finding it make peace! A person failing to give in on an issue will similarly give in. *Piper capense* is very common herb that has a white catkin and is found around Tree camp and along the path.

The upper forest zone is more open and the *Podocarpus* and *Juniperus* dominate. The

indigenous conifers are huge and quite stately. It is rare in this day and age to see mature trees of such grandeur and one is reminded of the Redwoods of the Western USA. *Hypericum revolutum* appears above tree camp amongst stands of the forest. It has bright yellow flowers. Giant heather also makes its first appearance and can be found around the second and third campsites near Tree camp.

The Forest zone ends very abruptly at 3000 meters (higher than the wetter side of the mountain) and tongues of forest are found in the deeper sheltered valleys but on slopes and hilltops it is frost that prevents tree growth. Fire may also be a factor and one can see cedar remnants with straight bare poles still standing after the last great fire of three years ago swept through the heather zone and burning the forest margins.



The forest is home to Buffalo and elephant, bushbuck and duiker and leopard. The elephant have adapted to the mountain and have smaller more compact bodies than the lowland elephant of Amboseli. They are darker in colour and can have thin up turned tusks. The larger game is rarely seen by the climber but their tracks are obvious and the impact they have on the vegetation is significant.

Black and white (*Colobus abyssinicus*) Colobus monkeys are found in small noisy bands and they communicate by a rough coughing sound that carries for miles. At night the Cacophony of noise they produce close to camp can be quite unnerving. The calling is used to announce territory. The Colobus puts any high wire act to shame. They can jump incredible distances leaping from tree to tree, seemingly hurtling to a certain death and then at the last millisecond landing on a tiny branch. Their long white mains and long white tails help to keep troop members in touch as they move through dense foliage of the forest canopy. The monkey is vegetarian so has to spend most of its day moving through the trees eating leaves of its preference. Less common are blue monkeys which travel in small bands and these have a more catholic diet & eat fruit, especially figs of the *Ficus sycamoros* and *Ficus thoningei* or strangler fig. They also eat insect grubs. They can be found in association with baboons on the periphery of the forest. Smaller mammals include various mongoose, genet cats,

the porcupine which is a rodent, covered in quills and the giant rat.

The silvery-cheeked hornbill is frequently seen and has a raucous mocking call. The most beautiful bird to be seen is the Turaco (Hartlaubs trace). This bird has a green mantle and bright crimson underwings that show as it flits from tree to tree. Thy travel in pairs but also in small noisy parties. The call for such a pretty bird is surprisingly raucous.

**Heathland
3000 meters- 4000 meters**

The extremes of climate in this zone with frosty nights and sometimes very hot days make the environment harsh and the number of species found drops dramatically from the forest. Hardy heather, *Ericacea arborea*, *Philipa excelsa* and *hypericum revolutum* (same family as St. John's Wort) dominate.

The area has suffered greatly from extensive fire in recent years and the ericacea have often been burned too form stumps but regeneration is occurring so that the vegetation is now once more shoulder high and more in sheltered areas. *Protea* species (national emblem of South Africa) are also found but are not as common as on the moister south and east of the mountain (on Kilimanjaro *Protea Kilimandscharica* is the most commonly found species). It is also more common on the north facing dry heathland where fire is more common as the plant thrives and reproduces better in a fire regime.



Arimacea a small blue coloured shrub with soft leaves forms under shrub and the leaves are chewed as a malaria cure, for fever, pneumonia and flu. The taste of this leaf is incredibly bitter. As the heathland diminishes it gives way to the Alpine zone & flora.

The Alpine Zone

As the edge of the former Shira caldera rim is reached at 3500 meters the view across the Shira plateau is of moorland. This zone extends to 4-5000 meters depending on exposure. This zone is even more intimidating to plants than the previous zone.

Not surprisingly there are less species of plant in this zone. Many of these are of the same family. Rainfall and or sleet or snowfall but the annual precipitation is low. It freezes at night and frost stay on the ground into morning but when the sun shines it heats up quickly. The huge variances in temperature cause solifluction or soil creep that can tear apart roots. The lack of atmosphere to screen harmful UV rays means that light is intense and destructive to life. Grasses tend to grow in clumps and are so called tussock grasses. The outer margins are the oldest and die off to form a protective shield around the younger growing points. Examples are *Festuca pilgeri* but other grasses are *Pentastichis* which has a reddish inflorescence and *Agrostis*. The most obvious and numerous plants are the everlasting flowers of the *Helichrysum* family and they have silvery petals and whitish leaves to reflect the suns rays.

Yellow is a common colour of flowering plants and these include *Sclerophylous*, a shrub, *Senecio kilimanscharica* & *Senecio amplificatus*. *Carduus keniensis* is a cactus looking plant that has fine prickly hairs that serve to reflect light.

The *Lobelia* that is found in sheltered valley bottoms is very different and striking is *Lobelia deckenii* and reaches 3 meters in height. It closes the leaves around its central core at night and exudes a mucilaginous or slimy substance over the core rosette of leaves. The slime freezes but in so doing the growing point of the plant underneath is protected.

The giant *Senecio*, *Senecio kilimanjari* and *Senecio cottoni* are tree like and grow to over 5 meters high. *Lobelia* and *Senecio* are best seen after lava tower and approaching Barranco camp.



The backdrop of snow capped Kibo and the Barranco wall with *Lobelia* and *Senecio* in the foreground are scenes to remember for a lifetime. The Shira plateau has resident buffalo and the writer has tracked these from watering places near Fishers camp. They are shy and live in small herds. They have more hair than their lowland cousins. They are also reddish in colour. Eland also live on the plateau. Whether this is seasonal or sporadic is

yet to be determined, but tracks are quite easy to find on the Shira plateau near Shira 1 camp. Both species live on the grasses found in the more sheltered moister valleys and have become accustomed to the cold.



There are many rodents mostly species of mice and they are food for the civet and serval cat. Most of the scats found along the pathway are civet droppings and they are full of rodent hair. The civet marks its territory by leaving its calling card at frequent intervals.

Klipspringer is very common on the plateau and hide amongst the jumbles of volcanic rock. They are preyed upon by the leopard that is often melanistic and can appear almost black.

The *Lobelias* and *Senecios* are visited by sunbirds and cross-pollinated by them. The scarlet tufted malachite sunbird is beautiful and has no fear of man and can be seen at close quarters if one is lucky. It has a melodic call.

Falcons are found in this area and occasionally the rare lammergeyer glides overhead in search of carrion. The lammergeyer picks up bones and carries then drops them from a height so that they fracture on the rocks below. They can then eat the marrow from the shattered bones. Augur buzzards are also regularly seen.

The alpine chat is a friendly little bird that will feed from scraps of picnic lunches as weary climbers rest on their steep ascent. The ubiquitous streaky seedeater is a small plain bird that is also common. In the thicker stands of heather many warblers are found including visiting palearctic migrants. The large white naped raven hangs around campsites scrounging for scraps. It has an ugly guttural call like many corvids. This bird appears to have an amazing tolerance for altitude, and numerous ravens has been seen soaring on the edge of Kibo's crater rim near the Western Breach, playing in the wind currents in a hectic game of chase. Watching them acting so seemingly energetically defies belief when you are half way up the Western Breach!

Other common birds include the common stonechat. The large Alpine swift is master of the air and flies past at high speed on the occasional flurry of wing beats and at close range one can hear the thin air being cut by the strong wing beats.

Desert

4000 meters to 5000 meters

Only the hardiest of plants survive. It freezes at night but it can be 40 degrees c in the sun and moisture is scarce. Not surprisingly only the hardiest of life forms survive. But amazingly 55 species of plant survive. However wherever there is more shelter from the elements such as the lee of larger rocks and in small depressions or against the wall of a scarp that is out of the wind flowering plants grow. Beautiful orange coloured lichens grow on the rocks.



Tussock grasses such as *Pentaschistis minor* survive and rosette plants are found near them as the tussock grasses afford them protection. The rosette is close to the ground and therefore not exposed while it has a strong taproot that can cope with soil movement. The white petalled *Arabis alpina* is a welcome surprise and grows wherever there is sufficient shelter and can be found between Barranco and Barafu camps.

The descent from the Kibo summit to Mweka camp is very rapid... The climber is exhausted and probably has little time contemplate the beauty of the surroundings and the zones on the descent are little different from the Lemosho ascent however there is more moisture on this side of the mountain so that at Millennium camp the Heather zone has taller heather and *Hypericum revolutum*. At 3035 meters at Mweka camp the giant heather is at its tallest and shortly after camp on the Hygaena and *Podocarpus* appear and the *Podocarpus* here is another species with lanceolate leaves. The cedar *Junipers procure* is also common in the higher reaches of the forest but the giants seen on the western slopes are absent. The Olive *Olea europa africana* is more common on the dry side of the mountain but a few are found here on the forest margins. Lower down in the forest the appearance of *Ocotea usambarensis* is a welcome sight as the trees are of huge girth and fine remnants of a part of the forest that was once logged for its lovely red hard wood. (Camphor wood). Some trees are 150

feet tall and as the gate is approached much of the forest is regenerated *Oclea*. The flowers in this moister part of the mountain are stunning and *impatiens* species are most obvious and violets like *Viola eminii*. The Tree Fern *Cyanthea* species are common wherever there is plenty of ground water and shelter.

