

# Lesson 1: Mount Everest factsheet for teachers

## Location

Mount Everest is the highest mountain on Earth. It rises to 8849 metres above sea level (29028 feet). It is just one of 30 peaks of the Himalaya range. The name Himalaya is an old Sanskrit word meaning 'abode of snow'. The Himalayan complex covers an area of about 594,400 sq km (about 229,500 sq miles) of Pakistan, India, Tibet (China), Nepal and Bhutan. Everest itself is located on the border of Nepal and Tibet.

In comparison the highest peak in the UK is Ben Nevis at 1344 metres in the Grampians, Scotland; Snowdon 1085 metres, Snowdonia, Wales; Scafell Pike 978 metres, Lake District, England, Slieve Donard, 850 metres, Northern Ireland.

## Starter: the photograph

People often assume that the climber on the summit of Mount Everest in the 1953 photograph is Edmund Hillary. In fact the photograph is of Tenzing Norgay. Hillary took the photograph because Norgay had not been taught to use the camera. Edmund Hillary was not 'Sir' when he climbed the mountain, but was knighted on his return.

For more details visit the RGS-IBG Imaging Everest website:

[http://imagingeverest.rgs.org/Concepts/Imaging\\_Everest/-172.html](http://imagingeverest.rgs.org/Concepts/Imaging_Everest/-172.html)

## Naming Peak XV

The height of Everest was first measured in March 1854. While some people wanted the mountain – Peak XV- to be given a local name such as Chamolungma (Tibetan) or Devadhanga (Nepali) the mountain was in fact named, in 1865, after Sir George Everest a former Surveyor General of India. Sir George Everest was part of the Great Trigonometrical Survey of India, which started in 1800 and lasted more than 70 years. Its aim was to create an accurate map of the Indian subcontinent. For a photograph of Sir George Everest and other archive photographs go to The RGS-IBG resources website: <http://www.rgs.org/OurWork/Schools/Teaching+resources/Key+Stage+1-2+resources/Mount+Everest+and+its+ascent.htm>

## People, landscape and animals

Everest is situated in the Sagarmatha National Park. The people of the Everest region are mainly the Sherpa who live in the north of the Park. Mount Everest itself is barren, with rocks, snow, ice and very little vegetation. However in the foothills of the mountain there is farming of potatoes, barley, buckwheat, lentils and rice. Sherpa people also use local forests for timber for building, firewood and for animals. Wood is also used for heating homes. While tourism has created many jobs such as tour operators, trekking field managers, high altitude climbers, porter and cooks, it has also led to pollution and deforestation.

Yaks are also used extensively in the region to transport goods. They are tough, hairy animals well suited to living at altitude. They are also used to pull the wooden ploughs to till the fields. Yak milk is important; from it yak butter is used to burn as fuel in lamps, and is even put in cups of tea! Yak dung is also used to plaster walls of houses and is dried and used as fuel for fires. Paul Deegan, an experienced Everest mountaineer, once advised that if you pass a yak on a mountain path, make sure they walk on the side of the drop; they are heavy animals and can easily push you off. While climbing equipment and other essentials are transported up the mountain to Base Camp by yaks, it is

often rubbish, including human waste that is transported down. (The human waste is later spread on the barley fields).

A minute black jumping spider has reputedly been found at 6700 metres (22,000feet), making it the highest non-microscopic animal on earth. It feeds on frozen insects blown in by the wind. Some birds, such as chough (pronounced chuff) have been spotted as high as 7900 metres.

There is a myth that the Abominable Snowman lives in the Himalayas. A photograph of a large footprint was taken by Eric Shipton in 1951. No one is sure whether these are genuine footprints or part of a practical joke. However, bears in the Himalayas can occasionally stand on two legs. They also walk in their own footprints- so four footprints might appear as two.

## Temperature and Weather

Temperatures near the top of Everest drop as low as minus 60°C. In July, the warmest month, the average temperature is minus 18°C. It never gets above freezing on the mountain. The weather can be very unpredictable and very harsh. Raging storms and howling winds can move in without warning. When the weather turns bad, climbers on Everest can die in falls, die of altitude sickness and the cold, can lose fingers and toes to frostbite and can be buried in avalanches. More than 3000 people have climbed Everest since Edmund Hillary and Tenzing Norgay, however over 200 people are known to have died on the mountain. A recent tragedy was in April 2014 when 16 people lost their lives in an avalanche. Many bodies remain on the mountain because conditions are often too extreme for fellow climbers to safely remove them.

## Frostbite

Frostbite happens at extremely cold temperatures when blood stops reaching the body's extremities, usually the fingers and toes, but other body parts, such as the nose, can also be affected. There are three stages of frostbite. Frostnip is the mildest stage when the skin gets very cold, turns red and feels numb. This does not leave permanent damage. The second stage is when the skin goes white and loses all feeling and small blisters may begin to develop. Finally the skin can turn purple and black and swell. In extreme cases body parts can be frozen solidly to the bone. The damage is then permanent and results in the loss of the effected body part.

## Air

The air is very thin on the mountain. Many climbers suffer from altitude sickness, a lack of oxygen that robs the brain of its ability to think and can make people weak and nauseous. Altitude sickness can also cause hallucinations, pulmonary oedema (water on the lungs) and cerebral oedema (water on the brain). To cure altitude sickness mountaineers need to walk, or be taken down, the mountain to a lower altitude.

The death zone is a term applied to altitudes of over 8000 metres (26000 feet). Even at Base Camp (5200-5400 metres) the low level of oxygen available has a direct effect on the amount of oxygen in the blood. At sea level oxygen levels are usually 99%, but at Base Camp this falls to 85%. Blood samples taken of climbers at the summit indicated very low levels of oxygen present in their blood. A side effect of this is an increased breathing rate, from 20-30 breaths per minute to 80-90 breaths, leading to exhaustion just trying to breathe and do the simplest tasks.

People have climbed Everest without additional oxygen, the first in 1978 people were mountaineers Reinhold Messner and Peter Habeler.

## Snow Blindness

The light is extremely bright at high altitude, especially when reflected off snow. Snow blindness is a reaction to this bright light and specifically to ultraviolet rays. Eyes can become red, swollen and feel gritty

before people experience a temporary loss of vision. With treatment (eye drops and eye-patches) the symptoms last a day or two and then full sight is restored.

## Base camp

There are two base camps on opposite sides of Everest – to the south in Nepal and to the north in Tibet. The camps are at 5200-5400 metres (17600 feet). The base camp in Nepal is 320km from Kathmandu. In the past climbers had to walk this distance, but today a small aircraft can land closer to the camps. From base camp teams set up other camps higher and higher up the mountain. Climbers have to climb repeatedly, to and from each camp dropping off tents, food and oxygen.

The flags that often fly at Base Camp are Buddhist prayer flags.

## Edmund Hillary

Edmund Hillary was born on July 20, 1919, in Auckland, New Zealand. As a teenager he loved to climb and had a spirit of adventure. Aged 22 he joined the Royal New Zealand Air Force in World War II. He also kept bees. He was the least experienced climber of the pair.

## Tenzing Norgay

It is believed that Tenzing Norgay was born in Tibet in 1914, in village called Thamey, one day's walk from the base of Mount Everest. He was born in May, but the actual date is not known. So, having reached the summit of Mount Everest on 29<sup>th</sup> May he subsequently celebrated his birthday on 29<sup>th</sup> May thereafter. He had 12 brothers and sisters. Some accounts say that as a baby a holy man said that Norgay was destined for great things – that is when he was given the name Norgay- meaning 'fortunate one'. Tenzing was a Buddhist.

As a boy, Tenzing Norgay did not go to school, but worked as a yak farmer with his family. Like Hillary, Tenzing Norgay had a spirit of adventure. He built a reputation as a dependable, hardworking and knowledgeable porter and joined seven Everest expeditions prior to 1953. He said, 'the pull of Everest was stronger for me than any force on Earth.' In 1952, on a Swiss expedition, Tenzing came within 250 metres of the summit.

## Climbing Mount Everest

In 1953 a British team, lead by army officer Colonel John Hunt attempted to climb Mount Everest. The 1953 expedition team totalled over 400 people, although the climbing team was substantially smaller. The core team included Edmund Hillary and Tenzing Norgay. You could show pupils the drawing of the measurements taken for Hillary's shoes and clothes- which were tailor made for him. This is available from the RGS-IBG Imaging Everest website:

[http://imagingeverest.rgs.org/Concepts/Imaging\\_Everest/-172.html](http://imagingeverest.rgs.org/Concepts/Imaging_Everest/-172.html)

By March 1953 the team was in Kathmandu. In 1953 the only way to get to the mountain was by a three week trek on foot (today they fly to within a few miles of the base of Mount Everest at a tiny airstrip). This walking time allowed them to get fit and acclimatise to the oxygen levels.

By April the team had arrived and set up Base Camp. From then teams set up other camps higher and higher up the mountain, dropping off tents, food and oxygen. Several of the team began determining routes and fixing rope handrails to metal stakes. One day Hillary jumped over a crevasse but it crumbled under his crampons and he fell into the chasm. At the last minute there was a jerk on his waist and Tenzing Norgay held onto the other end of the rope. They then became a great team. However, at this stage it was not certain that they would be picked to do the final ascent.

Four climbers attempted to reach the summit but ran out of oxygen. They were just 91 metres away. Then Hunt directed Edmund Hillary and Tenzing Norgay to go from Camp 9. The winds were too strong for them initially and they had to wait a whole day in the camp. On the night before the ascent the temperature was minus 34°C with hurricane force winds. Tenzing said that the wind sounded like, 'the roar of a thousand tigers'. On the morning of 29<sup>th</sup> May 1953 at 11.30 am the men reached the summit (see the *Lesson Plan* for more details).