

Avers-Bergalga

Marmot educational trail



You can discover a great many interesting facts about the life of marmots at the 11 stopping points along this route.

General information about marmots, stopping point 1

Marmots belong to a family of rodent known as the Sciuridae. There are a total of 14 different marmot species around the world: 6 species live in North America, 7 in Asia and 1 in Europe (the “Alpine Marmot”).

Alpine Marmots are active during the day and live in groups of up to 20 animals. During the winter, the entire group hibernates together in a burrow.

In the wild, marmots live to an average of 5 to 6 years old; the oldest known marmot reached the age of 13. They become sexually mature after their second year of hibernation. Unlike other members of the Sciuridae family, they have a sturdy build which is ideal for digging. Like all rodents, they have strong teeth that grow throughout their lives, but that are constantly worn down as they eat.

Species distribution, stopping point 2

The ancestors of Alpine Marmots emigrated from North America to Asia approximately 2.5 million years ago, before spreading to Europe during the ice ages.

Today, Alpine Marmots can be found all over the Alps. The presence of marmots in France and Italy (read area) is shown merely as an outline because there is currently no precise information available. There is also a sub-species of the marmot in the Carpathian Mountains. The population in the Pyrenees is the result of the introduction of the species.

The main distribution area in the mountains is between 400 and 500 m above the local timber line. Marmots also live in alpine pastures below the tree limit. They continue to be found as far as 3,000 m above sea level in the high-alpine region if sufficient vegetation is available.

A life of burrowing and excavating, stopping point 3

Types of excavation

Marmots spend most of their lives underground. They use their strong feet and sometimes their teeth to dig a variety of tunnel systems. The mounds of earth produced by their excavations in the summer are often particularly impressive – these “hills” represent the work of several generations. The hibernation chamber can be located as far as 7 m below the surface, ensuring that the earth will not freeze, even during the long hibernation period.

Excavations and holes in the ground

Marmots generally use the same tunnels to move from one main burrow to another. The animals regularly come across escape holes along this path. They also dig similar holes near their eating grounds. The marmots know exactly where the escape holes are situated. When faced with imminent danger, they rush straight to the nearest hole.

Group life, stopping point 4

Group size increases between years one and four

Almost all marmots live in large groups. There is a dominant adult couple within each group of Alpine Marmots. If a whole group dies during the winter for example, young marmots from neighbouring areas will quickly arrive when summer comes, and attempt to take the place of the dominant couple. The two animals who successfully assert themselves as the new dominant pair will mate the following spring. Their first offspring will be born in the summer. Further litters will follow in the second and third years after the successful colonisation of the burrow. This is how large groups form with offspring born in different years.

Dispersal of young, non-dominant marmots

In general, young animals do not leave their original family until the age of three years or older. Only the strongest marmots succeed in acquiring dominant status within another marmot population. Weaker migrants and those who have lost their dominant position tend to fall victim to predators or die alone in the winter.

Annual cycle / daily activity, stopping point 5

Hibernation

In this valley, marmots hibernate from approx. 1 October until the middle of April. The mating season starts on 20 April, and can last until 6 May depending on when the animals emerge from hibernation. The females are only receptive to mating for 24 hours.

Daily activity

Marmots only eat at lunchtimes on cool summer days. On hot days, they retreat into their burrows when the sun is at its highest. This sensitivity to heat is probably why Alpine Marmots cannot be found in the lowlands, where they would not have time to store enough fat ready for their next hibernation.

Territory, stopping point 6

Every day, marmots mark the borders of their territory with secretions from their cheek glands by rubbing their heads against tufts of grass or other distinctive structures. On average, the burrow of an individual family covers an area of 2.5 hectares.

The group life of marmots takes place in a clearly defined area which becomes their territory. The strongest animals in the group defend this territory against other marmots from outside the group. However, the males only drive away male intruders, and the females only chase away other females. If a marmot from outside the group cannot be dislodged, a fight ensues. The victor is allowed to remain with the group, the loser must leave. These fights often lead to injuries caused by biting. Sometimes the injuries are so serious that the animal dies.

Hibernation, stopping point 7

All the members of the group hibernate together in the same winter burrow for up to seven months without eating. Their body temperature can drop to 3° C during this period. They only breathe once or twice a minute during these cold phases (hypothermia). Their hearts continue to beat five times a minute. This enables them to dramatically reduce their energy consumption. It is suspected that these phases of hypothermia are interrupted approximately once every 12 days by recovery phases (euthermia) to stimulate and regenerate the body. The marmots are only able to survive such low body temperatures by drawing on the essential fatty acids absorbed with their food during the summer months. The animals only actually sleep in the real sense of the word during the recovery phases, when their body temperature rises to 34° C.

Sleeping position of marmot families

To help save even more fat reserves, all the members of the group increase their body temperature at the same time. The dominant male warms up first, followed by his sons, then the dominant female and the pups. The young marmots are kept warm throughout the winter thanks to their position at the centre of the hibernating group. They would not survive without this heat. The closer the relationship between a group member and a pup, the more warmth is provided.

Enemies/food, stopping point 8

The main predators of Alpine Marmots are golden eagles and foxes. Weasels, ravens and hawks can also be dangerous for young animals. The lynx and wolf will probably have to be added to the list in the future. Hunters and stray dogs also count as enemies. If it is necessary to fend off intruders, marmots warn each other by emitting a shrill cry that sounds like a whistle.

Food

Marmots generally prefer eating young, green shoots. In the Bregalga valley, the snow melts so late in the spring that there is only a good food supply available to the marmots from the middle of May onwards. They then mainly eat freshly sprouted grass and alpine snowbell leaves. They rarely consume nodules or roots. Later in the year, during the short alpine summer, they principally eat herbs such as alpine clover and alpine lovage, as well as flowers and grains. These foods are particularly rich in substances that are important for hibernation (such as essential fatty acids). Every so often, marmots manage to catch earwigs, grasshoppers or lizards. They bite into food with their strong incisor teeth and only chew it a little with their molars. The quantity of plants consumed per day by an adult represents around 10 % of their body weight, i.e. up to 500 g. During the hibernation period, they do not eat anything, but use up the reserves of fat accumulated in advance.

Humans and marmots, stopping point 9

Very early on, marmots were familiar to people far beyond their area of distribution in the Alps. Johann Wolfgang von Goethe wrote the “Marmottenlied”, which was set to music by Ludwig van Beethoven. It tells of a tame marmot taken to perform tricks at annual markets in the north and east by a travelling Savoyard boy. Nowadays, marmots are popular features of adverts.

More than 10,000 marmots are killed by hunters each year in Switzerland and Austria. Their meat is prepared as stew after removing the fat, which is made into marmot ointment – a remedy for both humans and animals in popular medicine. This oil can be rubbed into the skin to soothe joint pains for instance, or drunk in small quantities as a cure for colds. The beneficial ingredients are presumed to be substances similar to cortisone containing essential fatty acids, which can easily be applied to inflamed areas. In the past, marmot fur was used as undersaddles or to ease pain from rheumatism. Marmot’s biting teeth are made into splendid jewellery.

False beliefs, stopping point 10

With their dwarf-like figures, marmots have been woven into countless tales and legends. The animals are often used to represent the deceased or to portray magical characters.

A popular myth that dates back to Roman times about marmots making hay is still told to children today. The way in which they are supposed to have transported the hay into their burrows is obviously fictitious. The naked stripe that can be seen on a marmot’s back in the spring is not caused by carrying hay. It is simply due to the fact that they remain lying in the same position for weeks on end during hibernation. Although they may carry the driest grass they can find in their mouths, they do not leave it to dry out in the sun beforehand. Besides, this “hay” is only used for padding their burrows, they definitely do not eat it.

Marmots no doubt get rid of parasites in their fur by extensive sunbathing. However, this activity also cools the animals down because the warmth absorbed by the skin on their stomach is given off to the ground or rocks.

Nor is it true that the entrance to their winter burrow is closed from the outside by a very old animal that will soon die anyway. The marmots in fact “seal off” their burrow from the inside. Most of the hibernation period is actually a winter torpor (hypothermia) and the animals are therefore not technically asleep. The marmots only actually sleep during the repeated short recovery phases.

Reproduction, stopping point 11

Reproduction takes place during a two-week period following arousal from hibernation. Mating takes place this early in the year so that the newborn marmots have enough time to grow before the autumn. There is only a 24-hour window during which the females are receptive to mating. In addition to the dominant male, his sons can also mate with the female, even if they are closely related. However, any males who are not the sons of the dominant male are usually not permitted to mate.

At the beginning of July, a maximum of 6 young marmots (3 to 4 on average) leave the nursery burrow. All the marmot pups are born to the dominant female. The dominant female makes sure that any other young females who have mated are put under so much stress that they do not have any pups or, if they do, kills the offspring. If the dominant male is evicted by a rival, the new “boss” kills the suckling pups. This is to ensure that the dominant female does not tire herself out too much and is ready to bear young again the following year – this time to the new dominant male.