

SENTIER DES BOUQUETINS

THE IBEX TRAIL



THE IBEX TRAIL



THE IBEX TRAIL

The Ibex Trail is open from the start of July until October, because of its altitude. There is a wide variety of colourful flora. It is a very fragile environment, which must be respected and admired from the paths; do not pick any of the plants. The plants have adapted to their particular environment and will not grow in your garden.

If you are planning to go on this excursion, please remember that it will take you high into the mountains. The natural environment is magnificent but unforgiving. Weather conditions can change quickly. Therefore dress accordingly and bring suitable equipment.

The Ibex Trail climbs the Col des Roux, at an altitude of 2800 metres. The time taken depends on how long you spend admiring the surroundings. However, you should assume a minimum of 4 hours between the start and arrival at the upper cable car station (length : 7 km). The trail can be taken in two directions : either along the Lac des Dix (recommended route, length of trail up to the Prafleuri Hut: 2 hours 30 minutes), or passing the Prafleuri valley (length of trail up to the Prafleuri Hut: 1 hour 30 minutes).

The Col des Roux is at the middle of the journey. The exceptional panorama is the perfect place to stop and there is also a convenient picnic ground. Please take your rubbish with you!

Please be aware that mountain walking can be extremely dangerous. We accept no responsibility for any accidents. If you should become ill or suffer an accident during your walk, dial the emergency number 144.

You will also find mountain refuges situated along the path where you can take a break (see page 83).



SUMMARY

1 ON THE BANKS OF THE LAKE

9-18

UP TO ZERMATT	11
ROCK BARS AS A FOUNDATION	15
THE DAM IN FIGURES	17

2 THE ALPINE ENVIRONMENT

19-32

BETWEEN A ROCK'S FISSURES	22
PLANTS	24
A NATURE RESERVE	26
THE ANIMALS OF THE ALPS	28

3 THE GLACIERS

33-44

HOW DO GLACIERS FORM?	36
A SCULPTED LANDSCAPE	38
THE MYSTERY OF ERRATIC BOULDERS	40
THE FIRST PLANTS	42

4 THE COL DES ROUX

46-52

IBEX GRASS	40
THE CREATIVITY OF NATURE	50

5 THE ROCKS

53-70

FROM THE ICE UNDER THE ROCK	60
A LANDSCAPE OF ROCKS AND LICHENS	62
FROM THE ICE UNDER THE ROCK	64
PRAFLEURI HUT	66
FLOWERS BETWEEN THE ROCKS	68

6 THE PRAFLEURI VALLEY

71-79

GLACIAL DEEPENING	74
CAPTURED WATER COURSES	76

SERVICES

80

PLACES TO DISCOVER	82
THE GRANDE DIXENCE DAM	83



1 ON THE BANKS OF THE LAKE

The Lac des Dix is an unusual lake: it is artificial. It has existed since 1935, the date the first dam, now submerged, was constructed across the Dixence river. Before this time, the river flowed peacefully through the bottom of the Val des Dix, among pastures.

The first dam on the Dixence was built by Energie Ouest Suisse (EOS), a group of the main electric companies in Western Switzerland, for the production of electricity. The water kept behind the dam was processed by turbines on the plain, by the Chandoline power station, at Sion.

After World War II, electricity requirements in Switzerland greatly increased (an 80% increase between 1950 and 1960). To meet this demand, an extraordinary plan would become reality: the construction of a 2nd dam on the Dixence, 400m downstream from the first. A dam that was wider, longer...and taller! In 1961, after 10 years of work, Grande Dixence became the tallest gravity dam in the world, at 285m, just 40m less than the Eiffel Tower!

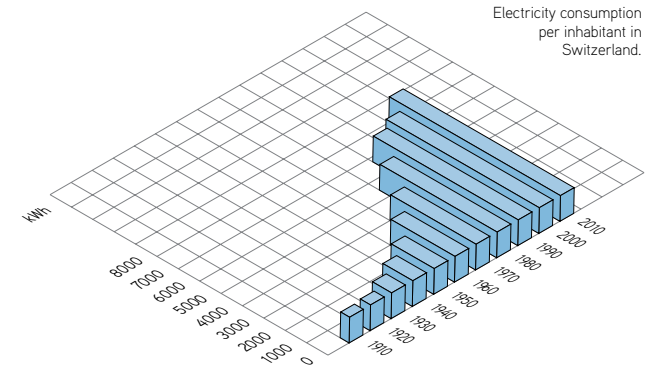
When the lake is full, the 6 million m³ concrete wall holds back 400 million m³ of water. This makes the Lac des Dix the largest artificial lake in Switzerland.







This water is used by four hydroelectric power plants, at Fionnay, Nendaz, Bieudron and Chandoline. Electricity production is at a maximum in winter, when consumption is higher. This is also when the lake is full, because the warmth of spring fills it by melting snow and glaciers.

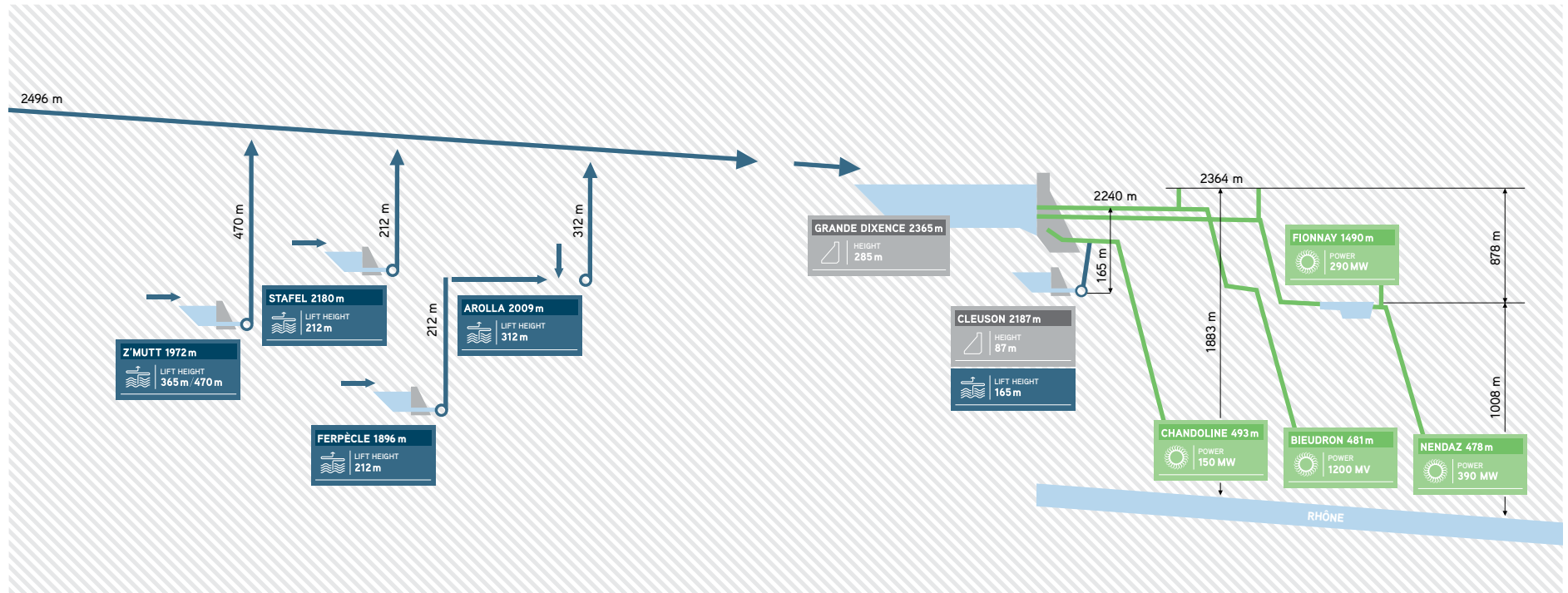
UP TO ZERMATT

The Lac des Dix can hold up to 400,000,000,000 litres of water. If it was supplied only by the Dixence river, it would take decades to fill! However the engineers have thought of everything: over 100 km of underground tunnels cut into the rock collect water until they reach the Zermatt valley.

When the water intakes are at a lower altitude than that of the lake, the pumping stations at Arolla, Ferpècle, Z'Mutt and Stafel pump the water upward, so it can easily flow into the lake.



-  Dam
-  Production plant
-  Pumping station
-  Collecting works
-  Storage
-  Production





ROCK BARS AS A FOUNDATION

The landscape of the upper areas of the Val des Dix was formed and sculpted by the Cheilon glacier. During the time the glacier was receding, the water acted as a sculptor, remodelling the moraines and glacial depressions. The two glacial rock bars blocking the valley were formed from rocks that were harder than the other structures nearby and therefore were better able to withstand erosion. The first Dixence, and later the Grande Dixence were built on these rock bars.

The greyish or whitish colour of the lake is due to the high concentration of rock dust suspended in the water. Called "filler", this sediment, transported by the torrents to the lake, is the result of the stone being crushed by the glaciers. The small alpine streams themselves are clear and transparent, coming from meltwater or residual snow.



Grande Dixence - the highest gravity dam in the world.



FIGURES





THE DAM IN FIGURES

CONSTRUCTION

1951-1961

THICKNESS AT CROWN

15 m

THICKNESS AT THE BASE

200 m

WEIGHT

15 mio t

VOLUME OF CONCRETE

6 mio m³

DAM HEIGHT

285 m

THE LAKE IN FIGURES

MAXIMUM DEPTH

227 m

HEIGHT VARIATION

194 m

RESERVOIR

400 mio m³

SURFACE

3.65 km²

LENGTH

5,3 km

TOPOGRAPHICAL CATCHMENT AREA

46,3 km²

TOTAL CATCHMENT AREA

420 km²

2

2 THE ALPINE ENVIRONMENT

Around the Lac des Dix, at an altitude of 2500m, living conditions are tough. The growing season is very short: less than 100 days a year! The annual average temperature does not exceed 1.9°C and the overall snowfall easily reaches 4m per year. Despite this, there is an impressive diversity of flora, thanks to the variety of climatic conditions, the slope and the soil types.

There is no longer any forest at this altitude. Summer is too short, and winter too long and harsh for trees. Those that do manage to survive remain very small throughout their life, like a dwarf willow, which never gets bigger than a few dozen centimetres! This dwarfism is an advantage: in winter, the small plants are totally covered by snow, isolating them from the even more severe cold above its surface.

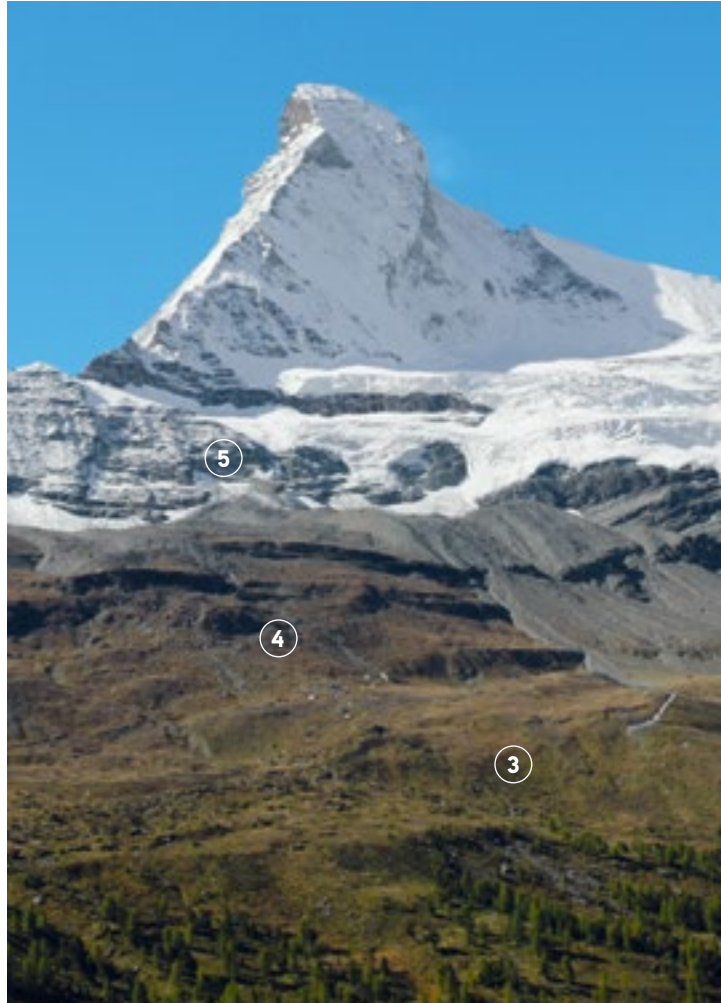


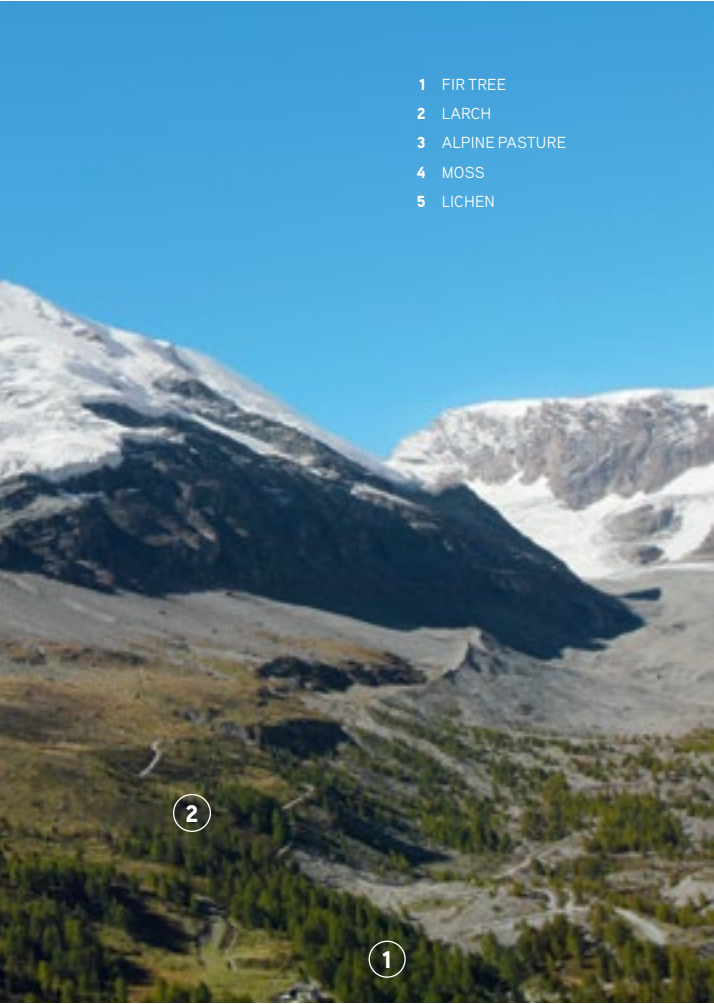
VEGETATION BELTS

The alpine stage is dominated by low plants. These form thick and continuous coverings made up of a diverse range of plant species. From the first days of spring, plants immediately start to flourish, leading to explosions of colour, each as appealing as the next, which attract the pollinating insects.

The high-altitude coverings are interrupted here and there by scree, rocks and wetlands. While hostile at first glance, these environments support a specific type of plant, which are well suited to them. Saxifrage, for example, is happy in the fissures in rocks. The dwarf hawksbeard prefer the scree.

The higher you climb, the smaller the ground-covering plants, until they disappear completely at about 3000 metres. Above this point, flora are still present, but only in the form of mosses, algae and lichens – species designed to handle severe cold.





- 1 FIR TREE
- 2 LARCH
- 3 ALPINE PASTURE
- 4 MOSS
- 5 LICHEN



PLANTS



Hairy Primrose

(Primula hirsuta)

This primrose measures between 3 and 10 cm and grows in tight clumps in rock crevices. Deep pink, lilac or purplish-red in colour, it flowers between April and July.



Dwarf Alpine Hawksbeard

(Crepis pygmaea)

This small plant is found in relatively fine limestone talus. It is mainly characterised by its oval, often red-tinged leaves.



Bavarian Gentian

(Gentiana bavarica)

The Bavarian Gentian is a plant which likes damp pastures and the banks of rivulets. It is found exclusively in the Alps, at altitudes of between 1600 and 2600 m.



Edelweiss

(Leontopodium alpinum)

The Edelweiss, also called the "lion's paw", "silver star" or "glacier star" is one of the most famous mountain-dwelling plants. It flowers from July to September with starry white-felted flowering heads. Its common name comes from the German words *edel*, meaning "noble", and *weiß*, meaning "white". Although it is the national flower of Switzerland and of the Alps in general, it is also found in the Pyrenees, the Carpathian Mountains and on the Balkan peninsula.



Meadow Saxifrage

(Saxifraga granulata)

Known for its ability to grow in rock crevices, the Saxifrage is also called the "Rock-breaker" or "Rock-piercer". Saxifrages generally produce star-shaped flowers.



Moss Campion

(Silene acaulis)

A procumbent perennial, the moss campion is a mountain-dwelling wildflower that grows at altitudes of up to 3700 m. It is a mat-forming moss, out of which grow pale pink or purple short-stalked flowers.

A NATURE RESERVE

Grande Dixence SA has contributed to the creation of a nature reserve around the Lac des Dix. This also protects and safeguards the mammals, the birds and their habitats.

Created shortly after World War I, this nature reserve covers an area of approximately 46 km², defined by the peaks surrounding the Lac des Dix.

Today, Switzerland has 41 federal nature reserves, covering a total area of approximately 160,000 hectares. The federal nature reserves are defined by the Confederation, in agreement with the Cantons.





At these altitudes, only the animals that are specially suited to withstand the cold and snow can survive in the Lac des Dix region.



THE ANIMALS OF THE ALPS



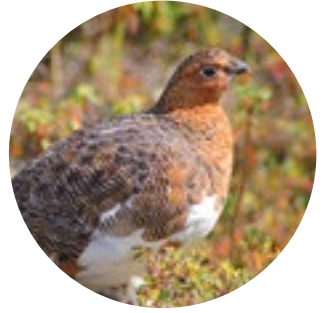
Bearded vulture

The bearded vulture belongs to the vulture family. With its wingspan of 2.70 m, it is even larger than the golden eagle! Its wide wings and pointed tail make it easy to identify. The bearded vulture gets its name from its small beard of black hairs at the base of its beak. In the past, this bird had a bad reputation. It was accused of stealing sheep, and even children (though it is not strong enough for that)! Mercilessly hunted, it disappeared from the Alps at the end of the 19th and was not reintroduced until 1986 in Austria. Vultures feed mostly on bones. To break the largest ones, it flies high and then drops them onto the rocks whilst in full flight.



Choughs

The yellow-billed chough, incorrectly named "jackdaw", is the most familiar bird to those living in the mountains. Unlike its cousin the jackdaw who only lives on the plain, the chough can only be found in the mountainous massifs of Europe, Asia and North Africa. They belong to the corvidae (songbird) family, along with the carrion crow, raven and magpie. It is sedentary, frequenting high-altitude environments throughout the year. It is a social species, moving in large flocks, sometimes made up of over 1000 individuals. In tourist areas, it is not shy around humans and even seems to seek them out to obtain food, particularly in the areas surrounding alpine huts.



Ptarmigans

The alpine ptarmigans (or snow ptarmigan) live at the edge of the year-long snow, on rocky or scrub land. They build their nests on the ground. Their plumage is their main protection against predators: white in the winter to blend in with the snow-covered landscape, greyish-brown and speckled with white in the summer so they can disappear in the grasslands.



Stoats

Stoats are part of the mustelid family, as are otters, badgers and ferrets. Very agile, they have a sleek and slim body, with a tail about ten centimetres long. Stoats feed mainly on small rodents, and less commonly on birds and insects. As with the hares, stoats change their colour with the seasons. The winter furs of stoats have long decorated the black robes of magistrates. Today, they have generally been replaced by white rabbits.



Marmots

The scree-covered slopes are the ideal environment for marmots. Standing up on their rear paws, marmots watch and observe. The sun leads them to take interminable naps, ideally laying out on flat, warm stones. In reality, they never close their eyes, and the least alarm makes them hurry to the nearest entrance to their burrow. The golden eagle is their primary predator. When seeing one, marmots let out a shrill warning cry and hurry to a safe area. From mid-October to April, after having stored up fat reserves, marmots hibernate at the deepest point in their burrow, often in groups.



Golden eagles

Protected in Switzerland since 1952, the golden eagle is the emblematic bird of the Alps. This bird of prey can be recognised by its wingspan (which can exceed 2m) and its square tail. The eagle feeds primarily on mammals, such as hares, marmots or even foxes. Its excellent eyesight — it can spot a hare from a kilometre away! — makes it an unrivalled hunter. An eagle's hunting territory ranges from 50 to 100 km². A couple usually raises only one eaglet at a time.



Ibex

Ibex are strong wild goats that live on the steep slopes. Masters of the Alps, they can be recognised at first glance by their curved horns, which can grow up to 1m long on males. Ibex live in groups that can sometimes include up to 100 of them.



Mountain hares

Mountain hares live at a higher altitude than trees, near to the glaciers. They are also referred to as variable hares, due to the colour of their coat. It changes from a brownish-grey in summer to a pure white in winter. Only the tips of their long ears retains a darker area. This seasonal colour change helps them blend into the landscape, keeping them from being noticed, for the most part, by predators.



Chamois

Chamois are thinner and lighter than their ibex cousins. Their horns are curved backwards and are continually growing. The colour of their coats changes with the seasons, from light brown or fawn grey in the summer to dark brown in the winter. The females and young live in herds, while the males are more solitary.



3

3 GLACIERS

The Ecoulaies glacier clings to the sides of the Rochers du bouc, several hundred metres from the Ecoulaies hut. It is one of the 35 glaciers that make up the Grande Dixence basin. It is not very large: it measures 1km² and receded irreparably during the 1970s. In 2000, average temperatures in Switzerland rose 1°C higher than those during the period from 1960-1990. The Ecoulaies glacier, like all glaciers, suffered the effects of this temperature change.

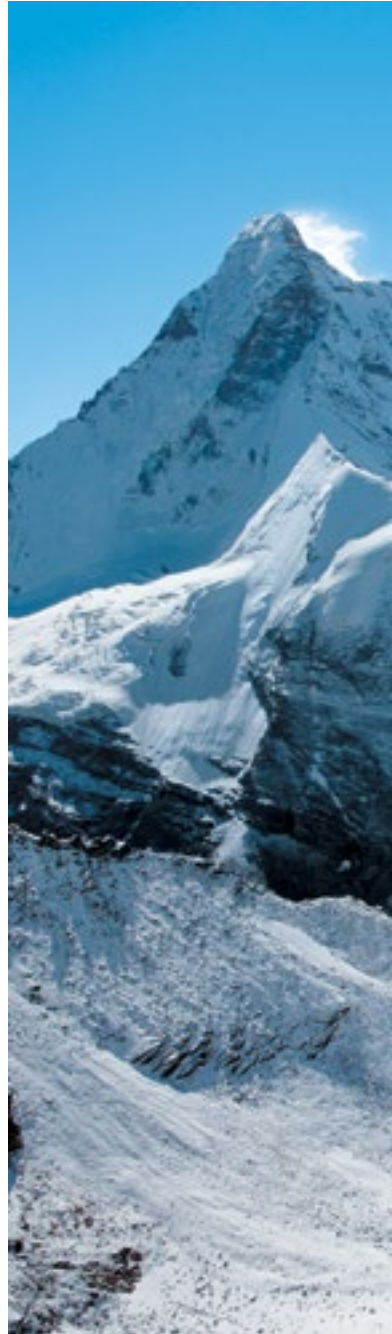


HOW DO GLACIERS FORM?

At an altitude of about 3000m, snow becomes permanent... or rather perennial, as in glaciology and climatology, nothing is permanent! At these altitudes, precipitation is always in the form of snow. The snow layer thickens year after year, even if it melts partially during the few days of summer. With time and pressure, this snow is compressed and becomes ice. At the same time, due to the slope, the ice advances. This movement forms the glacial tongue.

The glacier's equilibrium is determined by two main parameters. The first is the winter snowfall, which ensures that the accumulation area is being supplied. The second is the summer temperature, which causes more or less significant melting in the ablation area. When the additional snowfall is greater than the melt, the glacier advances. When the additional snowfall is not sufficient to compensate for the melt, the glacier recedes. The equilibrium line varies according to the weather conditions. At our latitudes, at the end of summer, it is at approximately 3000m.

Even if a glacier doesn't change size, that does not mean that it stays still! The ice is effectively in perpetual motion on the slope: the ice which melts at the bottom of the glacial tongue is eventually replaced by new ice formed above.



- 1 ACCUMULATION AREA
- 2 GLACIAL CIRQUE
- 3 CREVICES AND SERACS
- 4 GLACIAL TONGUE
- 5 MORAINES



A SCULPTED LANDSCAPE

By its slow and powerful movement, the ice tears away and crushes chunks of the rock. These eroded materials are pushed in front and to the sides of the glacier, where they pile up, forming what are known as glacial moraines. When the glacier recedes, the moraines remain. They bear witness to the fact that a glacier has been there, even thousands of years later.

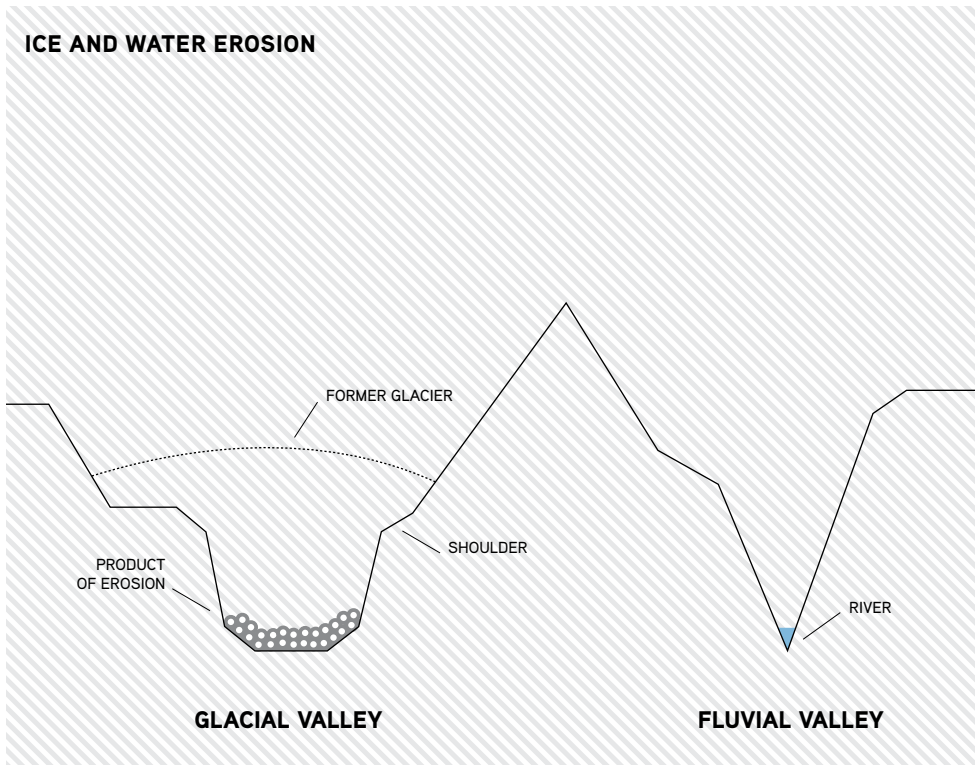
Morainic deposits on Ferpècle and Stafel.





View over the Zermatt valley.

When a glacier recedes, it does not only leave moraines, but it also transforms the soil. Even the solid rock indicates that the ice has passed through the area. Here it has been smoothed and rounded. There it shows striations caused by the friction of rocks carried under the glacier. On a larger scale, glaciers shape entire valleys: their friction flattens the bottom, giving them their characteristic U shape, as with the Rhône valley. We can see when valleys have been shaped by water, as these take on a V shape.



THE MYSTERY OF ERRATIC BOULDERS

Alpine boulders, some larger than cars, have been identified on the Swiss plain. They quickly aroused scientists' curiosity: why are all these boulders in the middle of a non-alpine countryside, and what brought them there? At the end of the 19th century, Swiss geologists answered these questions: these boulders were detached from the alpine peaks and

were then transported to their present location by glaciers, sometimes over hundreds of kilometres. This theory, which implies the existence of glacial cycles, periods during which vast areas of the globe were covered by ice, was revolutionary. This was later confirmed, and the existence of these erratic boulders was one of the main proofs.

Glacial erratic at the edge of the Prealps at Bossonens (Fribourg).



The Pierre des Marmettes at Monthey (Valais).



The last great glacial period, the Würm glaciation, reached its peak 24,000 years ago. Average temperatures were 4 to 5°C lower than those today. Switzerland was almost entirely covered by glaciers and where the city of Bern is located was then under 700 meters of ice!

THE FIRST PLANTS

Once the ice melted, life quickly grew in the area. The moraine deposits, sometimes as compacted and hard as concrete, offered a new habitat for the first plants, including coltsfoot. Its yellow flower — not to be confused dandelions — sprout before the leaves, which are shaped like a colt's foot. Its scientific name, *tussilago*, literally means cough suppressant (its leaves and flowers can be used to make an infusion).

The alpine toadflax displays its narrow purple flowers with orange specks. It likes gravelly soil.

Saxifrage is another well-known inhabitant of these difficult environments. They find the conditions ideal in fissures in rocks, which is where they get their name: in Latin, it literally means "rock breakers"!

The dwarf willow is another plant suited to these altitudes. Do not be fooled by its small size: even though it is only several dozen centimetres tall, it is as much a tree as its cousins on the plains!

LARGER AND GREENER

The vegetation around the alpine huts appears very different to that in the surrounding areas. Plants are taller, and dark green in colour. They include nettle, wild spinach, monk's rhubarb (or *Rumex alpinus*)... All are nitrophilous species: they grow in soil rich in nitrogen. Why is there nitrogen around the huts? Simply because it is found in the manure from the livestock located there, a 100% natural fertiliser.



Coltsfoot

(Tussilago farfara)

It is also called the "Ass's foot" or "Horse foot" due to the shape of its leaves which vaguely resemble the footprint these animals leave in the sand. Its slightly dentate, heart-shaped leaves are easily recognisable. This plant has medicinal properties to relieve and heal infections of the respiratory tract.



Swiss Willow

(Salix helvetica)

This is a small shrub which is one of the most widespread species of willow in the Central Swiss Alps. Its downy leaves give the plant a grey-green colour.



Alpine Toadflax

(Linaria alpina)

The Alpine Toadflax, also called "Butter and Eggs" or the "Alpine Snapdragon", is found in talus and rocky areas in the Alps and Pyrenees. It is characterised by a purplish-blue corolla with an orange throat and flowers from June to September.

4

4 THE COL DES ROUX

Located between Mont Blava and the Rosablanche, the Col des Roux is the ibex kingdom. Ibex are cousins of the domestic goat. However they are bigger and heavier: males can reach up to 100 kilos.

Ibex, with their long, curved horns are the emblematic mammal of the Alps. It is lucky that we are still able to admire them, because they nearly disappeared. They were hunted for their meat and for the medicinal benefits attributed to nearly every part of their bodies. Their horns, for example, were ground into powder and used as a remedy for impotence.

Ibex were reintroduced at the end of the 19th century. This was done little by little, and unofficially: the animals were stolen in Italy and illegally released in Switzerland! Ibex were still present in Italy because they were protected by kings, who kept them for their own personal hunts.

The ibex recolonised the Alps. They particularly enjoy the area around the Lac des Dix, benefiting from the ideal conditions provided by the nature reserve. About one hundred individuals are counted there each year.



IBEX GRASS

Val des Dix, paradise for ibex.



Generally ibex live above forests, favouring steep south-facing slopes. During the day, they enjoy the tranquillity and coolness of the peaks. In the evenings, they descend to the pastures to feed.

Ibex only require very small amounts of food. They particularly enjoy , giving it the nickname ibex grass. It is referred to vulgarly as " pique-cul " (bottom pricker) for reasons that quickly become apparent should you get the idea to sit down in the wrong place. Fescue is commonly found on the south-facing side of the Col des Roux. Its large tufts of threadlike leaves remain almost green in winter and snow does not stick to them. Therefore they remain easily accessible to the ibex.

SAME FAMILY

The chamois often share their habitat with the ibex. They also belong to the same family. Chamois are thinner and more agile than their ibex cousins. They are excellent jumpers. Bounding 8 to 10 metres on steep slopes is an everyday occurrence.

Chamois are timid, and therefore more difficult to observe than ibex. They prefer the east shore of the Lac des Dix, as it is more peaceful and does not have a footpath. As with the ibex, the chamois were nearly hunted to extinction. Hunting regulations, established at the end of the 19th century, saved the species.



Chamois also live happily here.

THE CREATIVITY OF NATURE

At an altitude of 2800 metres, summer only lasts a few weeks. Plants must be resourceful to be able to survive and grow. They have developed very effective methods to combat the cold.

Some grow in the shape of cushions, such as moss campion, which can be recognised by its many small pinkish-purple flowers. The plant divides into small leaves from the base, creating a sort of half-sphere. This structure effectively traps heat from the sun's rays, water and humus (the upper layer of soil, which is rich in organic matter). It also helps to withstand wind and thereby protects the plant from drying out.

Other species, such as edelweiss, have relied on some form of rather unique hairs: the leaves and the stems are covered with downy hairs, forming a silvery-white coat. These hairs act as thermal insulation. They also minimise plant water loss.



Edelweiss, the stars of the Alpine meadows.

There are even more astonishing methods of protection. To prevent themselves from freezing, certain plants increase the glucose content of their tissue. Glucose is a sugar created by photosynthesis. The higher its concentration in the plant's tissue,

the better they can resist freezing. Larch, which grow just below the Grande Dixence dam, use this strategy. It enables them to withstand temperatures as low as -50°C .



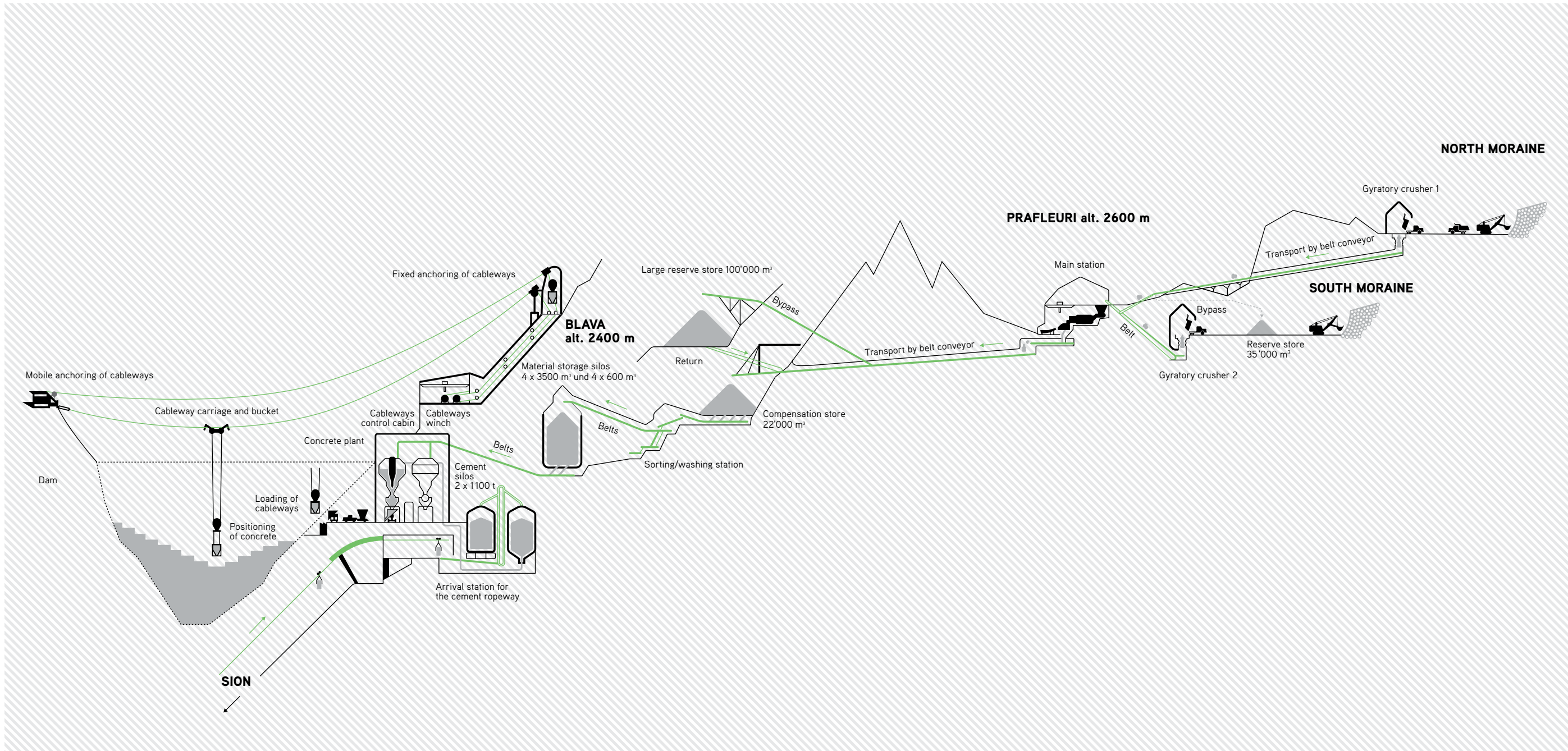
5

5 THE ROCKS

During construction of the Grande Dixence, the gravel needed to build the dam was taken from the moraines in the Prafleuri valley. The boulders were crushed there. For 8 years, day and night, a conveyor belt 1600m long transported the gravel to the dam's work site, on the other side of Mont Blava, going through a tunnel cut into the rock for this purpose. In total, 10 million m³ of moraines were taken from the mountain.

The gravel was then mixed with cement brought by cable car from Sion. The concrete this produced could then be used to build the dam. The facilities for this enormous undertaking, part borrow pit and part quarry, covered an area of about 28 hectares, which is about 38 football pitches.

LONGITUDINAL PROFILE DIAGRAM OF THE FACILITIES





CLEANING UP THE VESTIGES OF THE PAST

When the dam was completed in 1961, the Prafleuri facilities were dismantled. However, ecological awareness was not as well developed as it was today, and some of the materials that could not be reused were simply buried under the boulders at the site. As time went by, some of the vestiges of the work site began to resurface. Grande Dixence SA, aware of its environmental and touristic responsi-

bilities, decided to take action. An initial part of this cleanup work in the Prafleuri valley was performed between 2004 and 2005 to restore as natural as possible an appearance to this area, which is often frequented by walkers. Other cleanup work has been planned for this site in the coming years.

Former location of the site, near the Prafleuri hut.





A LANDSCAPE OF ROCKS... AND LICHENS

Around the Grande Dixence, rocks largely dominate the landscape. The environment is hostile, however several species enjoy good living conditions there, including lichen. This develops on rocks, where it forms yellowish or greenish marks. Lichen develops very slowly, only a few hundredths of millimetres per year. The species most often found in the Prafleuri valley is map lichen, also called rhizocarpon. It grows on rocks that are low in calcium.

Surprising as it may seem, lichen is not a plant. It is an association between a fungus and an algae! The two species live in perfect harmony, each benefiting from the other. This close and sustainable relationship is known as symbiosis.

Lichens obtain the substances they need primarily from the air and from precipitation. They are therefore very sensitive to their environment and their symbiotic balance can be disturbed by toxins present in the air. This fragility makes them good biological indicators: specialists can draw conclusions on air quality by observing which species of lichens are present and their appearance.



FROM THE ICE UNDER THE ROCK

The Prafleuri glacier currently covers less than 1 km². Several centuries ago, it stretched to the Val des Dix. The moraines that it deposited are evidence of its former glory. Surprisingly, in the upper part of the Prafleuri valley (to the south-west of the hut), the moraines and scree can hide the rocky glaciers. They are made from various sized boulders, cemented together by ice. Therefore they visually resemble scree, but they move like glaciers! Due to the slope, the large mass of rock and ice effectively "flows" several centimetres per year.

The face of the rocky glacier.





The front of the rocky Prafleuri glacier reaches the height of the former hut, at an altitude of 2650 metres. It was born 250 metres higher, under the Col de Mourti. Geoelectrical surveys were used to determine the thickness of the frozen layer : between 20 and 60 metres.

During excavation works at the Grande Dixence site, the workers soon discovered that it was nearly impossible to extract these boulders trapped in their ice gangue. They had to move the extraction site several dozen meters away.

PRAFLEURI HUT

The 500 or so workers who mined the Prafleuri moraine lived and slept at the site. By 1952, an actual small village, made up of about twenty wooden huts, grew up out of the rocks. Today only one of these huts remains, a single remaining witness to one of the largest work sites that ever existed in Switzerland.

In 2000, a new hut was built a few meters from the old one. It offered additional comfort and convenience to lovers of the mountain area. The Prafleuri hut is open from mid-March to mid-May and from July to the end of September. In springtime it welcomes hikers who are following the upper Zermatt-Chamonix route and in summer, those who are following the Ibex Trail.

The high-altitude Prafleuri hut with the old workers' hut on the right.





FLOWERS BETWEEN THE ROCKS



Earth slides into the fissures in rocks. Not very much, but enough so that plants with few requirements are able to grow.

The first to flower here is the alpine primrose, which colours the rocks purple near the end of June. At the same time, the moss campion blooms, forming a small green cushion dotted with small reddish-purple flowers. The purple mountain saxifrage is there, adding another lilac hue. During the month of July, the saxifrage on the rocks has its turn to show off its whitish flowers.

Moss Campion.



In some places, the rock is even covered by hugging shrubs. These include the dwarf juniper (a conifer), the net-leaved willow and the snowbed willow.



Dwarf juniper.

6

6 THE PRAFLEURI VALLEY

Several years ago, in September 2004, a rockfall of 5000m³ occurred on the right slope of the Prafleuri valley. Boulders became loose in the steep slopes of Mount Blava and covered part of the former footpath route connecting the Prafleuri hut with the Grande Dixence dam. Fortunately there were no injuries. Significant measures were taken to ensure the area was safe. A trench was cut 3m deep, perpendicular to the slope. The goal of this ditch was to slow and stop any new rockfalls.

The vegetation offers protection against erosion. However it is rare in the mountains. Rocks are therefore directly exposed to the elements. The alternation between freezing and thawing on the surface layers of the rock slowly increases the size of fissures. Heavy downpours and avalanches make the rock even more fragile. Inevitably, boulders detach and roll down to the foot of the slopes. These are not always small: those in the Prafleuri valley can be as large as a car!

Erosion, like rockfalls, is a natural process. Year after year, the terrain becomes flatter and, over several million years, the Alps will be nothing more than a vast bumpy plain.



GLACIAL DEEPENING

During the Little Ice Age, between the 14th and 19th centuries, the Prafleuri valley was covered with ice. At an altitude of 2300 m, before the valley joins the Val des Dix, the more resistant rocks slowed the advance of the glacier. Above this blockage, the more delicate areas were deepened, which probably caused the formation of a small lake. This was then filled in by sediment from the torrent which formed the current "plain".

The erosive effect of ice.



The Prafleuri valley (on the right, above), alongside the Val des Dix.



CAPTURED WATER COURSES

The torrent which flows to the bottom of the valley is called Chennaz. As with many alpine water courses, its hydrology is strongly marked by the influence of meltwater from glaciers; here from the Prafleuri glacier.

The glacial flows are characterised by well-marked daily and seasonal cycles. In the winter, barely a few litres per second flow to the bottom of the valley. At the height of summer, the maximum flow approaches 1000 litres per second. This value, while already high can be greatly exceeded during periods of heavy rain.

Water in the upper basin of Chennaz does not flow all the way to the plain. To guide as much water as possible to the Lac des Dix, the Grande Dixence engineers diverted the torrent at an altitude of 2390 metres. It flows toward the lake via a tunnel cut through the mountain.

This is not the only water course to have been diverted from its bed. Across the entire catchment area, over 70 water intakes collect the precious liquid to bring it to the Lac des Dix, the largest reservoir in Switzerland. After having driven the power plants turbines on the plain, all the water is finally returned to the Rhône, following its normal course to the Mediterranean Sea.



Water intake at the bottom of the Prafleuri valley.



Intake in detail.



SERVICES

Grande Dixence SA, Sion

+41 27 328 43 11

www.grande-dixence.ch

Theytaz Excursions SA, Sion

+41 27 322 71 72

www.theytaz-excursions.ch

Val d'Hérens, Euseigne

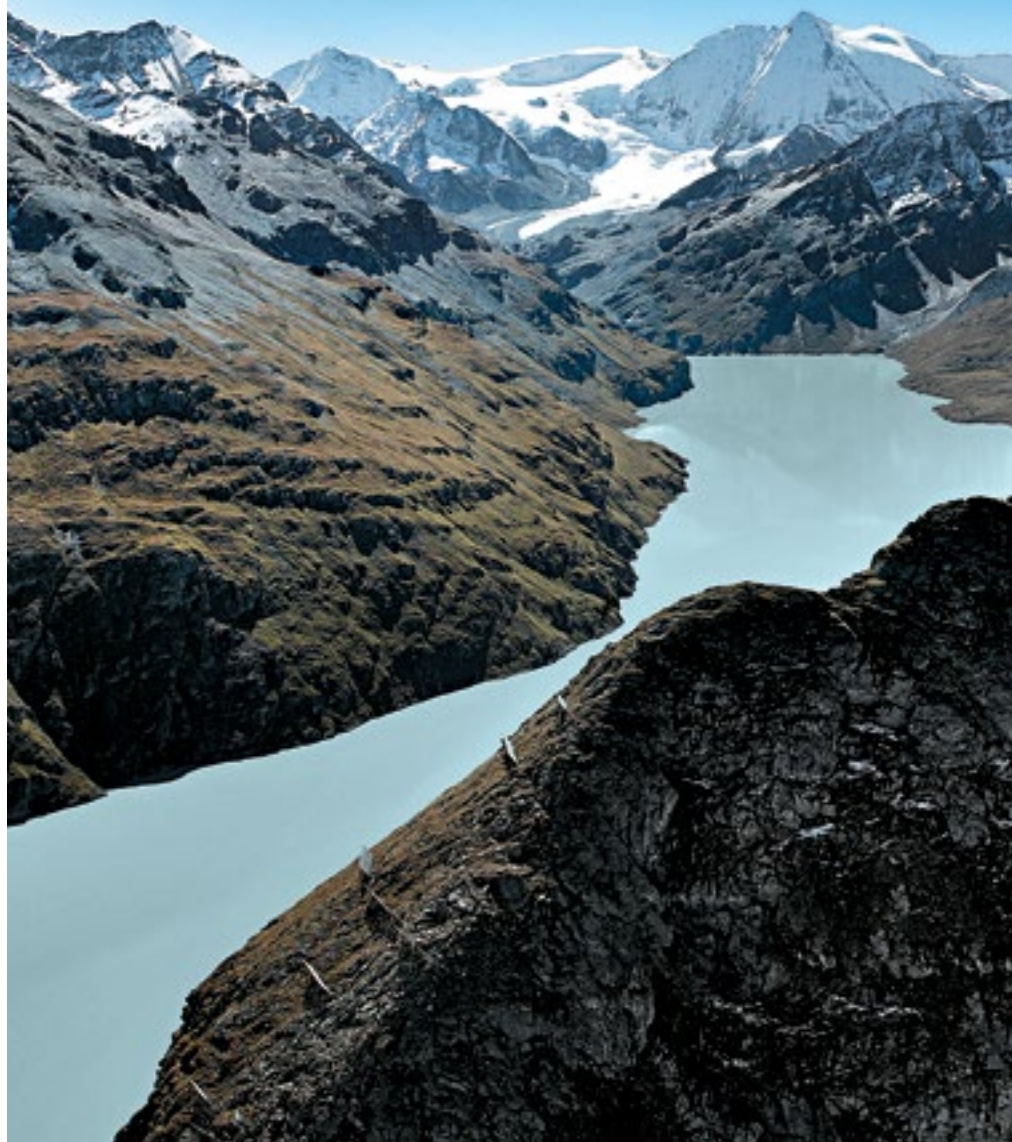
+41 27 281 28 15

www.valdherens.ch

Office du tourisme d'Héremence

+41 27 281 15 33

www.heremence.ch



PLACES TO DISCOVER

Prafleuri Hut (alt. 2660 m)

(with accommodation and meals)

Managers : Paul and Babeth Dayer

Information and reservations : Paul and Babeth Dayer

1981 Vex

+41 27 281 17 80

+41 79 628 46 32

www.prafleuri.ch

www.theytaz-excursions.ch

Ecoulaies Hut (alt. 2575 m)

Manager : "Les Pyramides" Ski club, Euseigne

www.lespyramides.ch

Barmaz Hut (alt. 2458 m)

Manager : Société de gym la Gentiane, Mâche, Hérémente

www.gym-mache.ch

You also have the option to dine and stay
at the foot of the Grande Dixence dam :

Le Ritz (alt. 2141 m)

Information and reservations : Café-Restaurant-Hôtel du Barrage

+41 27 281 13 22 or, if no answer, +41 79 658 28 59.

www.hotel-barrage.ch

THE GRANDE DIXENCE DAM

77

The Grande Dixence dam is open to the public from mid-June to the end of September. Four guided tours within the walls of the dam take place every day at 11:30, 13:30, 15:00 and 16:30. It is also possible to visit our exhibition hall and to climb to the top of the dam, either on foot or by cable car.

The pumping stations and production plants on the Grande Dixence complex can be visited on every working day of the year. Tours last approximately 1 hour 30 minutes, are free and available only by appointment, for groups of 10 people and over.



Photo credits:

- Theytaz Excursions SA: pp. couv. (1), 25 (1), 26, 31, 47, 51 (1), 60, 63
- Val d'Hérens: pp. 5, 63, 67
- Fotolia: pp. 24 (2), 25 (2), 27 (1), 28 (1-3), 29 (1-3), 30 (1-3), 43 (1-3), 48, 49
- Fabrice Ducrest: pp. 40-41
- B. Navez: p. 69 (3)

