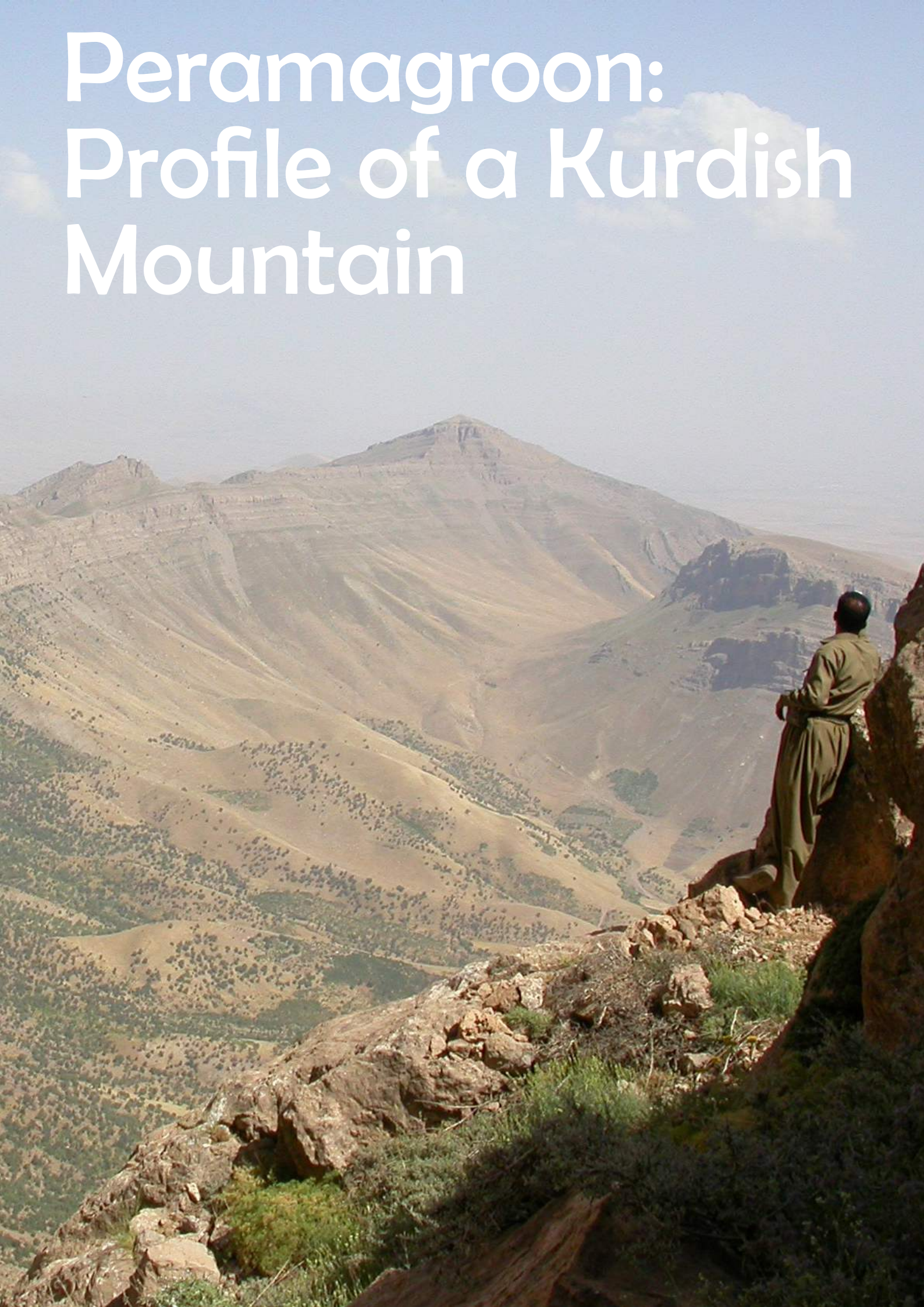
Peramagroon: Profile of a Kurdish Mountain



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Acknowledgements

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Images

Partnership for nature and people

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Introduction

Introduction

This booklet provides a snapshot of the natural and human environment of Peramagroon mountain near Sulaimani in Iraqi Kurdistan. It is intended provide a stimulus to encourage research aimed at providing data to underpin informed decision-making on matters concerned with sustained rural livelihoods and conserving the rich biodiversity of Kurdistan. It is hoped that the booklet will also be of interest to a wider audience by giving a picture of the present environmental and cultural status of one of the most beautiful areas in Iraq.

Village men at Zewe

Background

The "cultural landscapes" of Kurdistan are the result of traditional land management systems developed over the last 10,000 years. These systems are well-adapted to the local conditions, resilient and support a rich biodiversity. Unfortunately, they are gradually falling into disuse. This, decline of traditional land management, together with uncontrolled and insensitive rural development, urban expansion and a lack of public awareness is endangering the survival of many plants and animals.

Cultural landscape near Zewe

Children drawing images of wild goats

A major problem is that until relatively recently Iraq was a predominantly rural society: children growing up in the country had an understanding and innate respect for their natural environment. However, as people move to the towns and children increasingly grow up in an urban environment this essential link between an understanding and a respect for the environment is being broken. Unfortunately, the traditional way of doing things is all too often thought of as being old fashioned or backward and in need of replacement by "modern" systems. However, for a sustainably managed environment these systems need to be understood so that they can be adapted, encouraged, strengthened and if necessary restored.

The Project

Modern approaches to land management for environmental sustainability are poorly developed in Iraq. A lack of local stakeholder engagement and public awareness concerning the importance of biodiversity and environment services was identified as a major challenge to conservation both in Iraq's country report to the Convention on Biological Diversity and the National Development Plan 2010 -2014. The UK government funded Darwin Initiative Project (www.iraqdarwin.org) "Building capacity for in-situ conservation in Iraq" is intended as a first step towards addressing this challenge. It addresses the lack of plant data available to inform conservation planning in Iraq and builds capacity for surveying and managing biodiverse-rich areas. The project included the collection of botanical data to build capacity for conservation, building capacity in Protected Area Management and training in foundation skills in botany, ornithology and conservation.

Darwin Project schools outreach programme with staff and students from Surdash High School .

The Darwin project is centred on Peramagroon, a mountain range lying NW of Sulaimani, the second city of Kurdistan. Peramagroon was selected because it is recognized as a globally important site for biodiversity by Nature Iraq and has been proposed as one of Kurdistan's first national parks. Kurdistan is part of the Fertile Crescent, and as such is representative of one of the oldest managed habitats on earth. Its location, close to a rapidly expanding city, makes it an ideal site to explore many of the current issues threatening the natural environment of Kurdistan.

Summer view of Peramagroon south from Zewe

Winter view of Peramagroon south from Zewe

Biodiversity and landscape

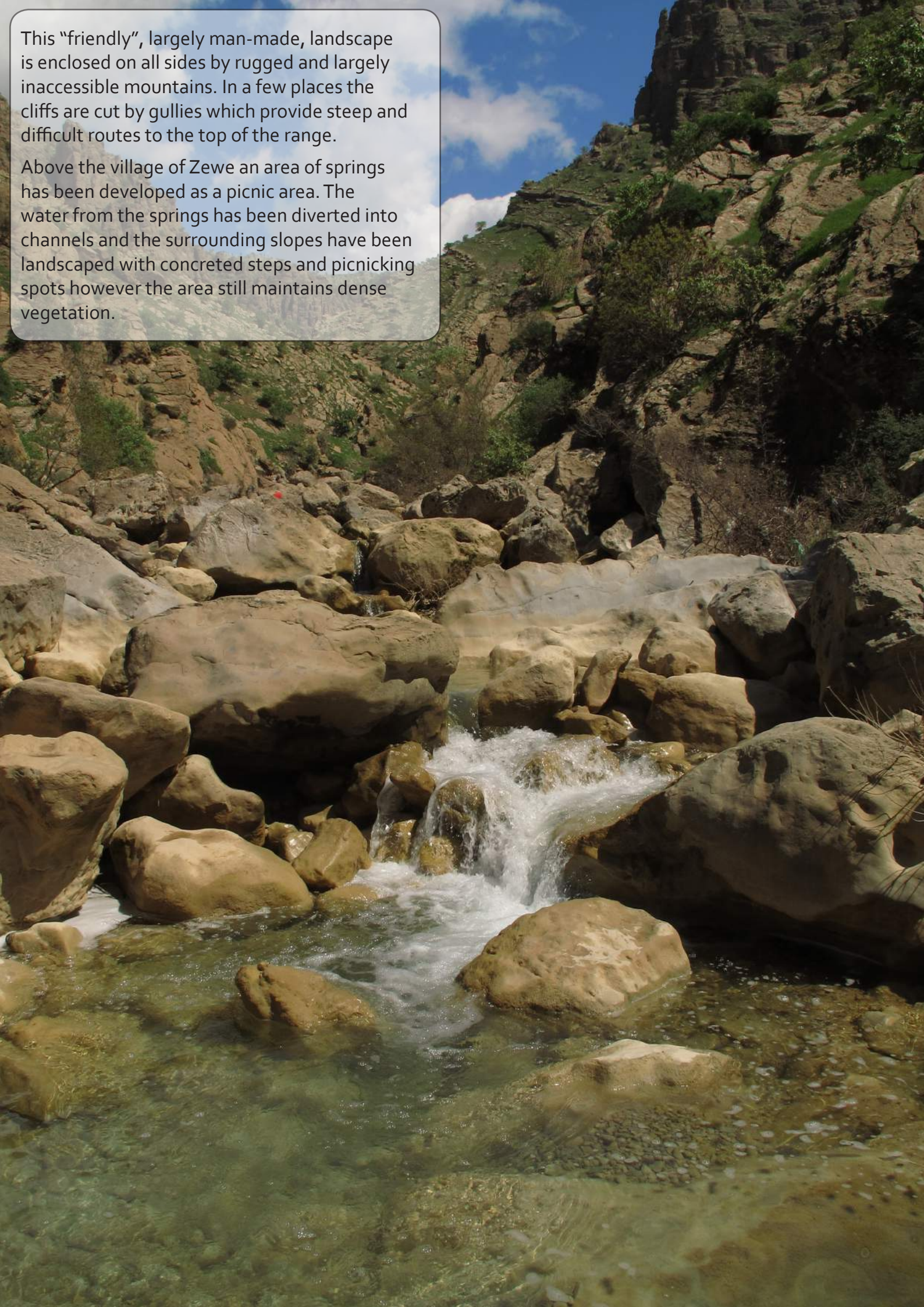
Landscape

Peramagroon is a narrow mountain range located, at its closest, 20 km northwest of the city of Sulaimani, in the Sulaimani Governorate of Kurdistan, Northern Iraq. The range forms a long ridge which runs in a SE to NW direction and covers some 167 sq km (based on KBA area) centred on N 35° 45′ 37″, E 45° 14′ 22″ and reaches 2613m at its highest point.

Its landscape is varied from steep inaccessible cliffs, unstable scree slopes and dramatic jagged ridges to gentler slopes and valleys. Around the villages there are fields and orchards. In places it is remarkably well vegetated particularly towards the north and east end of the range. The summit ridge is protected to the east and west by steep inaccessible escarpments which at their base gradually level out to the foothills and the flat surrounding plains. At its northern end the range is cut by a deep gorge through which runs a perennial stream with many picturesque pools and cascades.

At the heart of Peramagroon lies the village of Zewe in an amphitheatre-like valley which dominates the western part of the range. The bottom and lower slopes of this valley and the area around the village itself comprise an attractive mosaic of fields and orchards interspersed with grassland on the gentler slopes and woodland on the steeper slopes and in the valleys.

Images: Top - Escarpment above Mergapan valley. Middle - Zewe valley. Bottom - Mosaic of fields and natural vegetation forming a "cultural landscape" around Zewe. Opposite - Kani Shok Gorge.



This “friendly”, largely man-made, landscape is enclosed on all sides by rugged and largely inaccessible mountains. In a few places the cliffs are cut by gullies which provide steep and difficult routes to the top of the range.

Above the village of Zewe an area of springs has been developed as a picnic area. The water from the springs has been diverted into channels and the surrounding slopes have been landscaped with concreted steps and picnicking spots however the area still maintains dense vegetation.

Ridge above Zewe from summit area

Summit ridge of Peramagroon

Geology

Peramagroon is part of the Zagros mountain range, a vast region of folded mountains which form a series of parallel ranges running in a north-west to south east axis from Turkey to SW Iran.

The Zagros mountains formed during the Miocene (23MYA) when the Iranian and Arabian tectonic plates collided causing mountains to be uplifted and folded along their boundaries.

Between 250 and 23 Million years ago the rocks which form the present day Zagros mountains were formed on the bottom of an ancient ocean. During the same period, the continental plate which contained present day Africa and Arabia was drifting (at about 3cm a year) in a north easterly direction towards the Eurasian tectonic plate.

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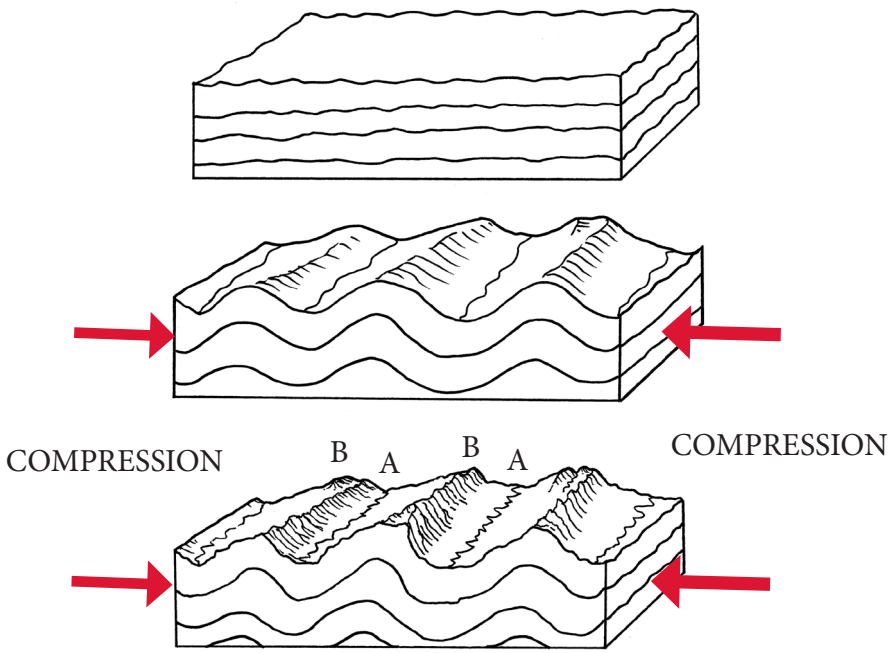
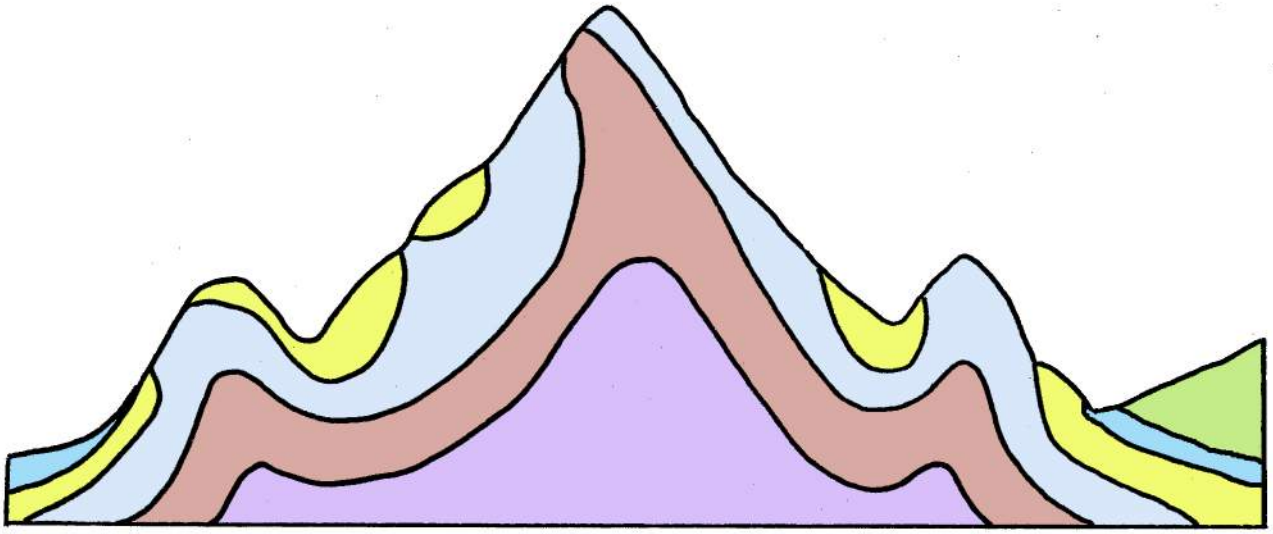
During the Miocene period, some 23 million years ago, the two plates collided causing the ocean floor between them to fold, like a carpet being pushed from two directions. See diagram below.

The Zagros mountains represent a belt of fold mountains which lie along the old collision zone between the Afro-Arabian and Eurasian tectonic plates.

Right - During the Miocene Plates collided causing the ocean floor to fold. The upward folds (A), the anticlines, became mountains and the downward folds (B) , the synclines, formed valleys. Above - An anticline on Peramagroon.



The rocks of the Peramagroon are mainly of Cretaceous and Eocene age and consist of marls, shale and limestone with the core of the mountains formed from Jurassic limestone, marls and chert. There is a small lava flow which spreads across the plain towards the village of Qarachatan from the escarpment west of Zewe.



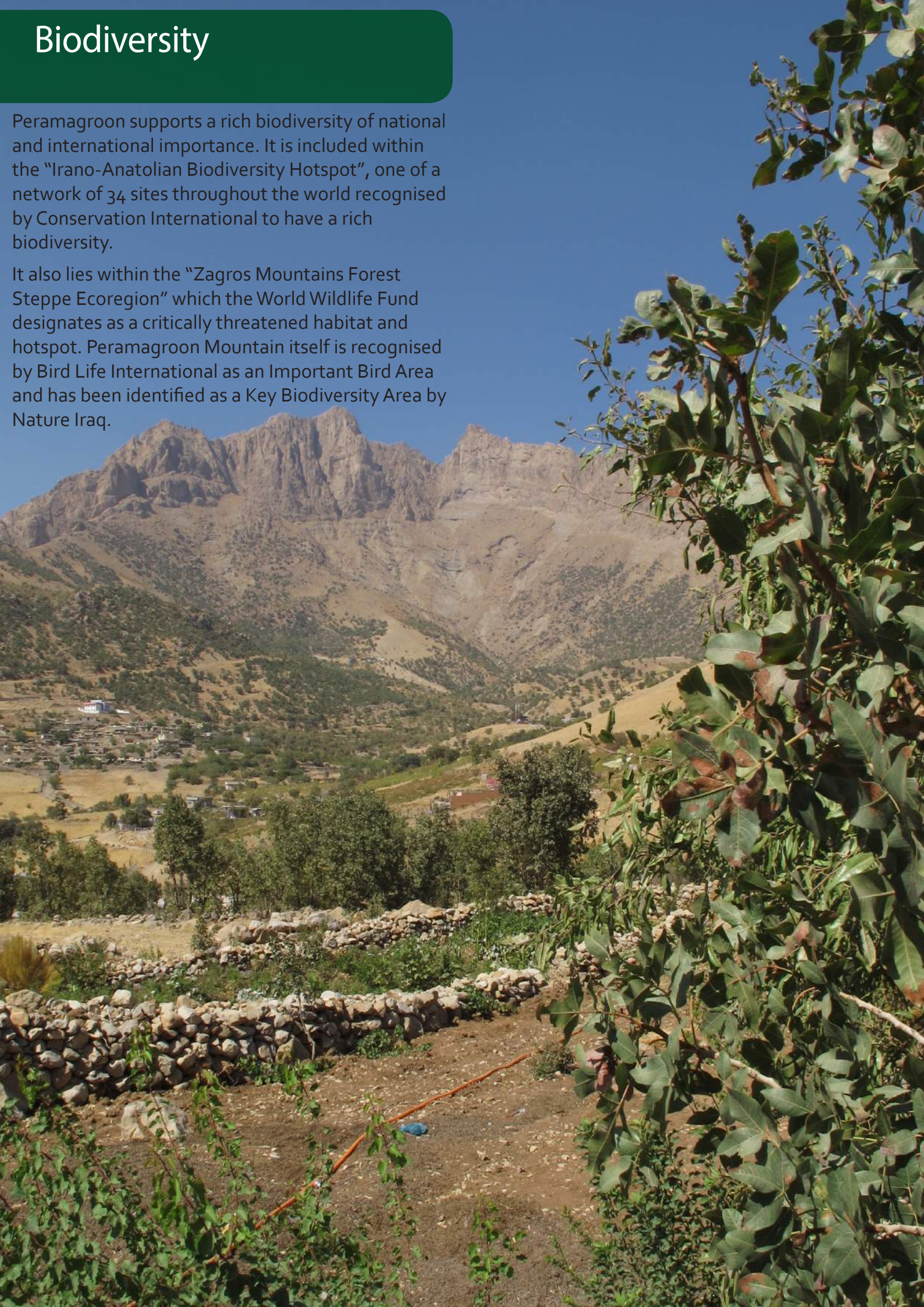
Geological cross section across Piramagroon: (adapted from Professor Kamal Haji Karim http://kurdistan-geology.com)

Larva flow stretching from escarpment west of Zewe. This is the site of some interesting plant diveristy.

Biodiversity

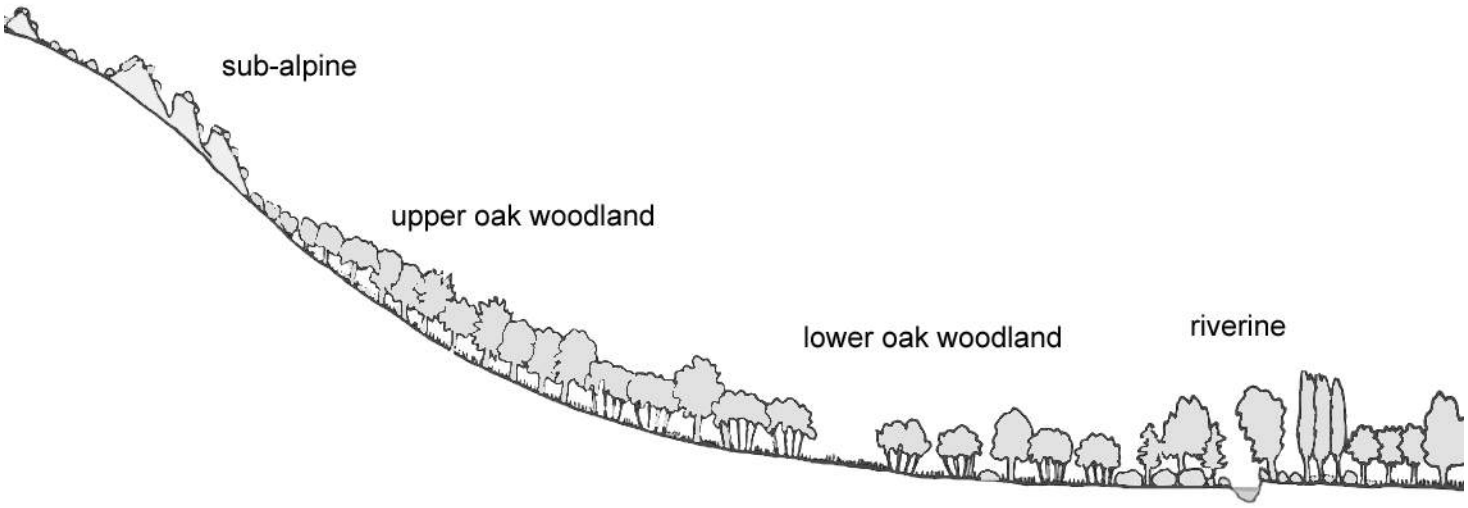
Peramagroon supports a rich biodiversity of national and international importance. It is included within the "Irano-Anatolian Biodiversity Hotspot", one of a network of 34 sites throughout the world recognised by Conservation International to have a rich biodiversity.

It also lies within the "Zagros Mountains Forest Steppe Ecoregion" which the World Wildlife Fund designates as a critically threatened habitat and hotspot. Peramagroon Mountain itself is recognised by Bird Life International as an Important Bird Area and has been identified as a Key Biodiversity Area by Nature Iraq.



Natural Habitats

Peramagroon supports a varied mosaic of natural, semi-natural and man-made habitats. The vegetation is altitudinally zoned with four principal natural habitats distinguished. Riverine woodland, lower oak woodland, upper oak woodland and sub-alpine.



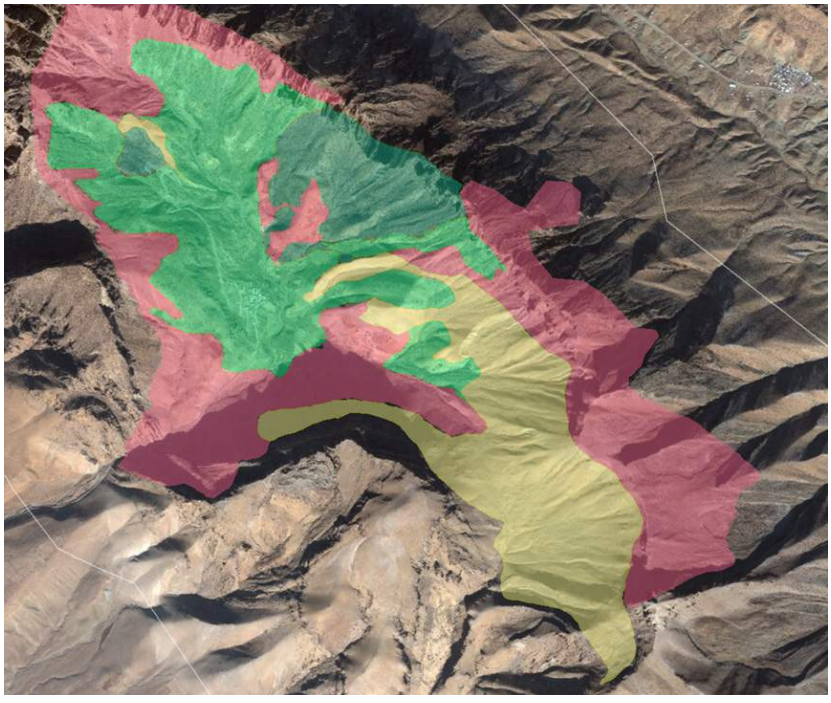
Zone	Topography	Typical Plants	Notes
Riverine Woodland	stream sides	Salix acmophylla and Paliurus spina-christi and plantations of Populus alba.	Only small patches still remain. Good examples can be found at Mergapan.
Lower Oak Woodland	lower mountain slopes below about 1600m	Quercus aegilops together with Acer monspessulanum. Crataegus azarolus, Pistacia eurycarpa and Pyrus syriaca.	These woodlands are often coppiced.
Upper Oak Woodland	upper mountains slopes above about 1600m	Acer monspessulanum, Pistacia eurycarpa, Pistacia khinjuk , Pyrus syriaca, Quercus aegilops and Quercus infectoria	These woodlands are sometimes coppiced and are similar to the Lower Oak Woodland but richer in species
Sub-alpine	upper parts of mountain, above about 1800m	Species of Prunus, Astragalus, Acantholimon, and Prangos	This zone is dominated by low thorny herbs, dwarf shrubs, bulbs and cushion plants and herbaceous members of the family Apiaceae


Sub alpine zone
Upper woodland and cliffs
Lower Quercus woodland
Riverine woodland and
Orchards

Top - Sub-alpine zone. Bottom - Lower oak woodland

There is historic evidence that the area around Sulaimani was once covered in oak woodland. It is suggested that this was cleared by wood cutters and for the production of charcoal over 200 years ago. Evidence for the presence of oak forest in the past is provided by the small number of oak trees which occur, together with their associated flora, in protected areas – such as walled graveyards. Over large areas on Peramagroon, particularly near villages and in the south of the range towards Sulaimani, the trees very dispersed or completely absent. This vegetation is described as degraded steppe and almost certainly is found in areas which in the past were covered by oak woodland.

View towards Sulaimani showing the thinning of woodland



Map showing the tree density around Zewe. This clearly shows a decreasing density towards Sulaimani.

Plants

c. 811 species of flowering plants and ferns have been recorded on Peramagroon which represents 25% of the 3300 species recorded from Iraq in just 0.04% of the total land area of the country.

Around 120 species are thought to be endemic to Iraq – that is found nowhere else in the world. 20 Iraqi endemic species are found on Peramagroon and a further 5 species are found only on Peramagroon itself.

Piramagroon endemcs: Centaurea gudrunensis, Astracantha zoharyi, Cousinia gigantospaera, Pimpinella hadacii, Anthemis micrantha.

Iraqi endemics on Piramagroon include: Fritillaria crassifolia subsp. poluninii, Astragalus lobophorus var. pilosus, Delphinium micranthum, Scrophularia kurdica and Camelinopsis kurdica.

Habitat of several endemics including Galium hainesii.

Top: Campanula acutiloba – found only in Kurdistan. Middle: Orabanche – a species not yet scientifically described. Bottom: Stachys lavandulifolia xxxxx>

Many of the plants found on Peramagroon are culturally and economically significant: they provide food, medicines and building materials. Crops were first domesticated in Kurdistan nine thousand years ago and it is still possible to see growing in the mountains the ancestors of barley, wheat, lentils and chickpeas – the first plants to be cultivated anywhere in the World.

Modern developments in crop breeding mean that these ancient varieties have great economic importance. The ancestors of many other foods including almond, walnut, pistachio, apricot, plum, and grape are also found in Kurdistan.

Quercus infectoria: galls and acorns gathered for tanning and dyeing, and acorns used as fodder for livestock; the galls are used to make ink.

Quercus aegilops: The acorns are used as winter feed for livestock; the trunks are frequently used for pillars or rafters in village huts, while the branches are used very extensively for covering the roofs.

Pisum sativum – the Pea – wild relatives of several important crops including peas, lentils, flax, wheat and barley are found on Piramagroon.

Acer monspessulanum – provides a hard white wood used to make cooking implements and ornaments.

Rheum ribes – rhubarb – the young stems are collected and sold as a food

Several species growing on Peramagroon are widely cultivated in gardens in Europe and America including bulbs, such Tulipa, Fritillaria and Ixilirion, herbaceous plants such as species of Alcea, Aubretia, Campanula and Gentiana, and of course, many trees and shrubs, including several important species of fruit tree.

Above top - Aubretia parvifolia, a common rock garden species. Above - Geranium stepporum. Right top - Rosa elymataica – a beautiful rose widespread in the mountains of Kurdistan. Right middle - Ixilirion tataricum – an attractive bulb. Right bottom - Gentiana olivieri – many species of Gentian are horitculturally important.

Mammals

Peramagroon is home to a number of mammals including the wild goat (Capra aegagrus), Persian Squirrels (Sciurus anomalus) European Hare (Lepus europaeus), Wild Cat (Felis silvestris), Red Fox (Vulpes vulpes), Golden Jackal (Canis aureus), Indian Crested Porcupine (Hystrix indica), Indian Grey Mongoose (Herpestes edwardsi) and Wild Boar (Sus scrofa). Historically the endangered Persian Leopard (Panthera pardus saxicolor) was found on Peramagroon but has not been recorded recently.

Left - Wild Goat (Capra aegagrus). Above - Persian Squirrels (Sciurus anomalus)

Birds

Over 140 species have been recorded at Peramagroon of which 95 breed. The breeding bird species diversity and abundance is very high - possibly the highest in the whole Kurdistan Region. Twelve species of birds of prey breed, with good populations, including Egyptian Vulture, Lammergeier, Golden Eagle and Short-toed Snake Eagle.

Peramagroon holds eleven breeding species that are restricted to the Irano-Turanian biome, with especially high densities of See-see Partridge, Eastern Rock Nuthatch, White-throated Robin, Kurdistan Wheatear and Eastern Cinereous Bunting. Five Mediterranean biome-restricted species breed, including Masked Shrike, Western Rock Nuthatch and Sombre Tit, and three Eurasian High Montane biome-restricted species breed, notably White-winged Snowfinch and Red-fronted Serin.

In terms of conservation importance the Egyptian Vulture is globally Endangered and the Eastern Cinereous Bunting globally Near-threatened

Short-toed Snake Eagle

Female Kurdistan Wheatear

Reptiles

No comprehensive inventory of reptiles is available for Peramagroon but the following have been recorded: Laudakia nupta (Large-scaled Rock Agama), Apathya Cappadocia urmiana (Urmia Rock Lizard), Agama stellio, and Trapelus lessonae.

Trapelus lessonae

Fish

Fish are found in Chami Mergapan but they have not been scientifically assessed. Parts of the stream dry out in summer and historical information is needed to determine if this has always been the case or if development in the area has led to an overall decrease in water resources.

Insects

There is no comprehensive inventory of insects on Peramagroon but recent surveys have shed light on two important groups: The Odonata (dragonflies) which are important indicators of water quality and the Lepidoptera (butterflies and moths). Seven species of dragonfly were recorded of which three were new for Iraq. The total number of dragonflies recorded in Sulimani Governorate is 16 and further surveys on Peramagroon area are likely to discover more. Over 50 species of butterflies and moths have been found in Sulimani Governorate, most of which were recorded on Peramagroon.

Southern White Admiral

People and place

History and Cultural Heritage

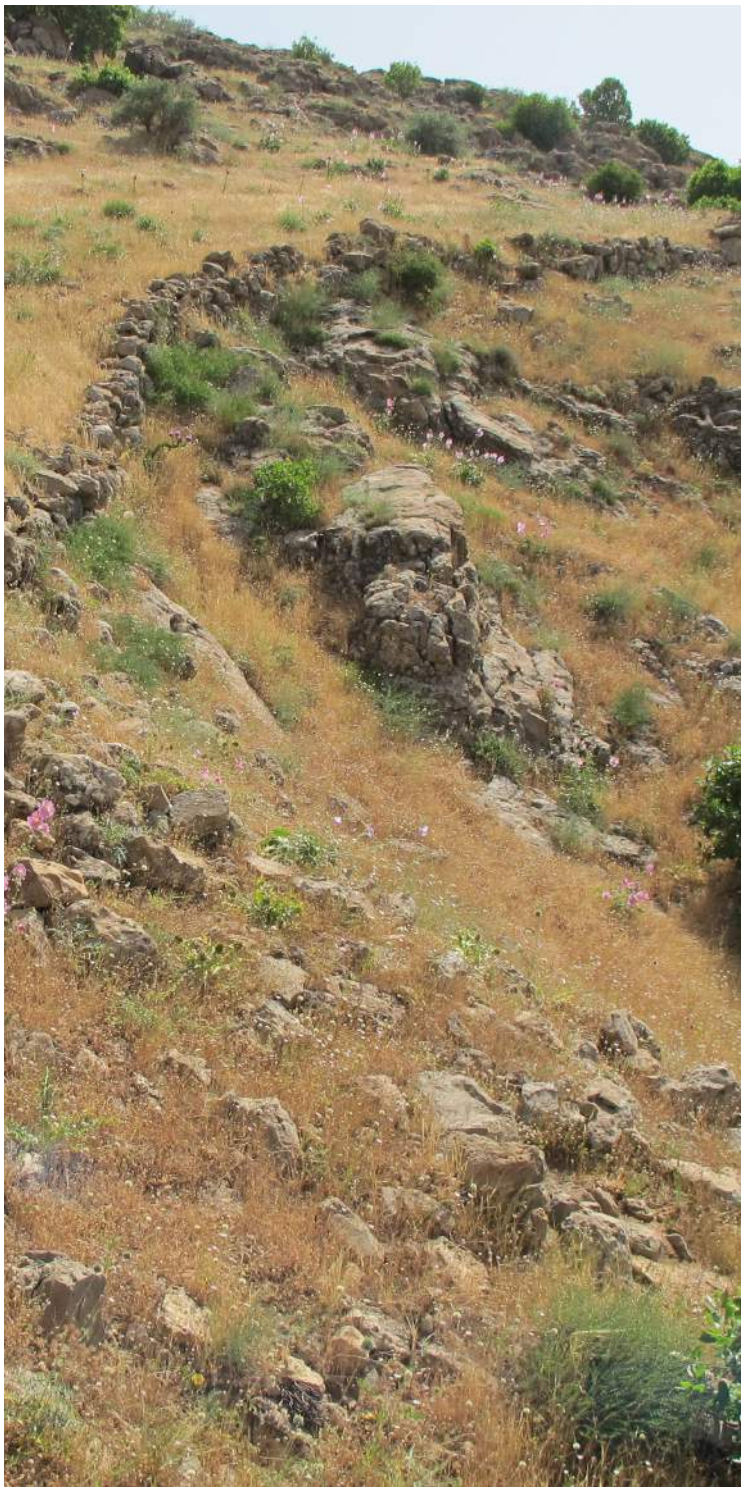
The region around Peramagroon is steeped in history. Not far to the west is Jarmo (Qal'at Jarmo) the site of one of the oldest agricultural communities in the world, dating back 9000 years.

The relatives of the crops first cultivated by man can still be found growing on Peramagroon. Even older, than Jarmo, are the caves at Hazar Merd (Ashkawty Tarik) just south of Sulaimani which show evidence of Palaeolithic occupation dating back some 50,000 years.

Few archaeological sites are known on Peramagroon but undoubtedly its strategic position means that more are likely to be discovered. Of recent interest are the secret caves occupied by the Peshmerga during the Saddam regime.

Places of interest on Peramagroon:

- Qimmat Mirquri is a small mountain settlement on West of Zewe which was excavated by a team from the Sulaymaniyah Board of Antiquities. The settlement has been attributed to the Parthian period (3000 years ago) because of a nearby rock relief which shows a man in Parthian royal dress.
- Within the picnic area at Zewe is located the shrine of "Peramagroon" the local saint after whom the mountain is named . Two smaller tombs are also located within the shrine area, one is for Tawfiq Wahbi the Kurdish writer, researcher and ex-Iraqi minister.



Qimmat Mirquri excavation.

- An area above the village of Zewe have been developed as a picnic area. The water from the springs has been diverted into channels and the surrounding slopes have been landscaped with steps and picnic spots, the area still maintains dense vegetation which supports a diverse and rich fauna and flora. Zewe is within easy reach of Sulaimani and as such is a popular visitor destination.

Above: Shrine at Peramagroon. Left: Rock relief at Qimmat Mirquri.

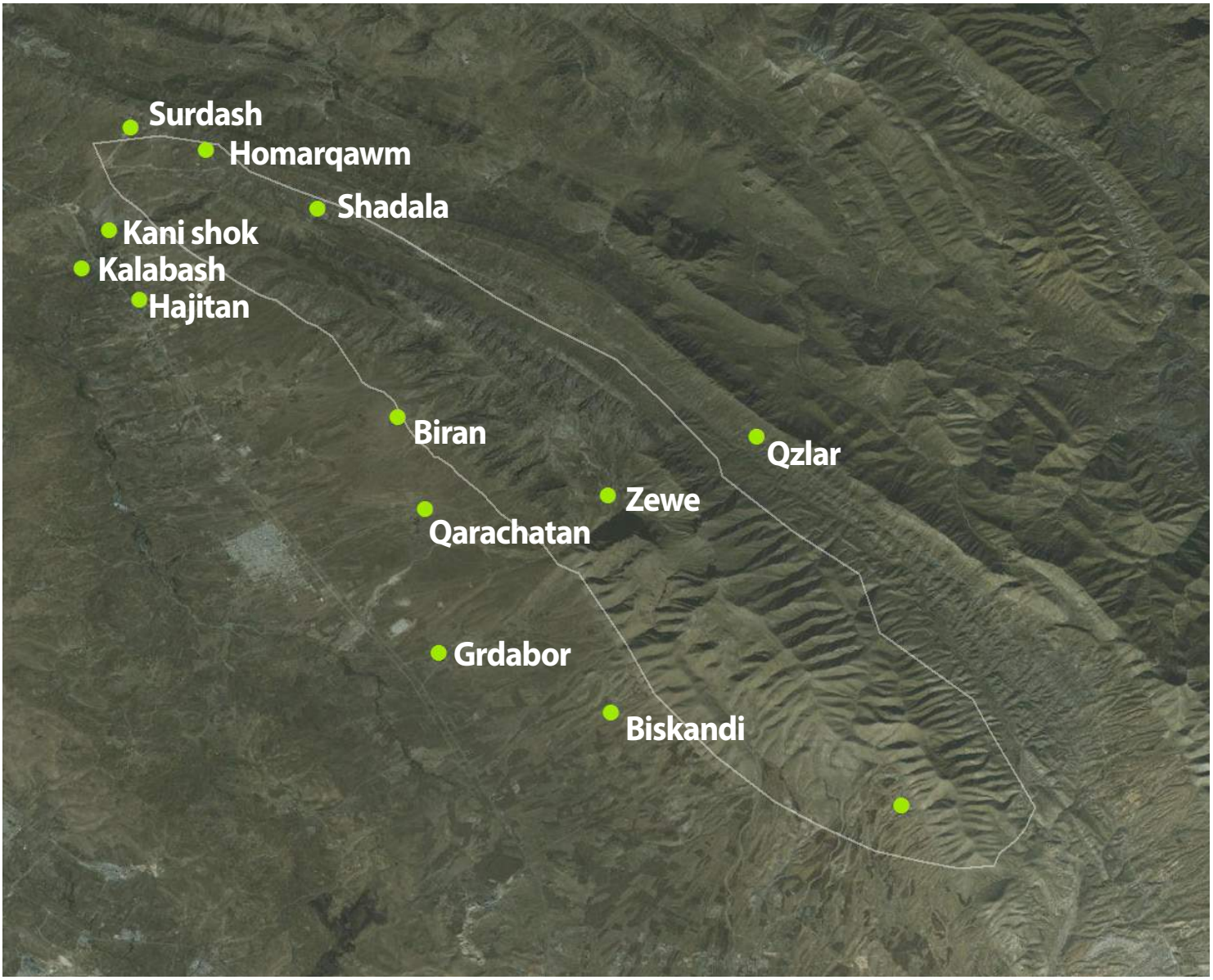
Sairan (picnic) culture is deeply rooted in and remains popular in Kurdish culture. The Picnic season stretches from the beginning of March until the end of October, and reflects the deep appreciation of the Kurdish culture for nature and strong links with their cultural and natural roots. This tradition, however, has not evolved to address some necessary environmental and cultural challenges, sometimes caused by the Sairan itself. The large numbers of people coming from the towns to a limited number of picnic sites (which provide water and shade) is placing great pressure on these sites and is in many cases spoiling them with inappropriate and poor quality infrastructure soon giving the sites a "tired" look. Picnickers are getting more disconnected from the very basics this tradition was built upon

Schools, communities and administration

Peramagroon is located in the Sulaymaniya Governorate of Kurdistan, Northern Iraq. It is divided almost equally between two administrative districts: Dokan and Sulaimani. Thirteen villages are found across the area with populations ranging from 28 in Biskandi to 650 in Surdash(see Fig *). All villages show a noticeable drop in their populations in winter.

There are 11 schools with between 10 and 150 pupils. The new settlement of Peramagroon, which lies to the west of the study area, was built in 1988 to house people forcibly removed from the mountain villages by the Saddam regime because of activity by the Peshmerga.

Village	Population Summer	Population - Winter	Houses	School	Students
Qzlar	500	450	85	Yes	101
Shadala	400	350	100	Yes	85
Homarqawm	500	300	45	Yes	22
Surdash	650	600	120	Yes	150
Kani shok	350	300	50	Yes	45
Biran	60	50	20	Yes	10
Qarachatan	200	160	29	Yes	20
Hajitan	500	450	90	Yes	84
Kalabash	50	50	8	No	-
Zewe	300	200	45	Yes	20
Grdabor	350	300	40	Yes	31
Biskandi	28	28	5	No	-
Sutka	150	150	42	Yes	60



It is clearly a time of great change for the people of Peramagroon. The principal trend is for people to move from the country to the city.

For example, the valley of Mergapan is experiencing rapid change. Many new houses are being built, particularly as second homes for people from the city who often have no traditional links to the area but who appreciate the beauty of the area. This is leading to fundamental changes in landuse and traditional agricultural systems and is resulting in a ribbon-like development along the base of the valley.

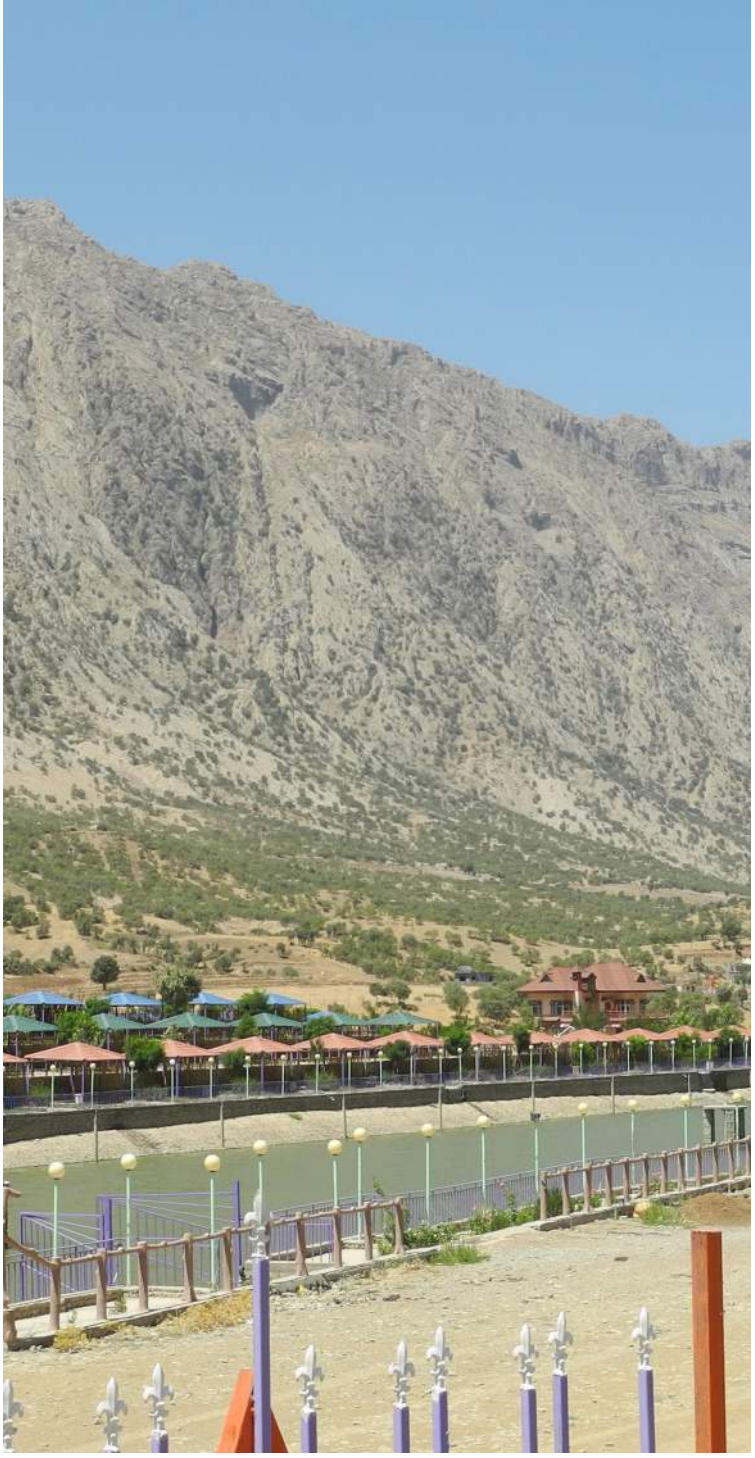
Likewise the village of Zewe is changing rapidly. Most conspicuously, the local community is largely abandoning traditional agriculture for life in the city. A study of the area revealed similar trends to that seen in Mergapan. The following quotes from local people powerfully express the changes which are happening

"*many are people moving to the city*"

"*people beginning to use their farms as weekend retreats*"

"*farms no longer provide the principle income for families*"

"*A lot of people who have a little bit of land (e.g. 3 dunams) will sell some of it to help finance a move to Sulaimani. The land they sell is often used for second homes for people visiting at the weekend. There do tend to be links between the population of Zewe and those buying this land e.g. in-laws*"



Above and Below - Development at Mergapan

There are no roads to the upper parts of the Piramagroon – this is an important factor in conserving the biodiversity and cultural landscape

Rural Livelihoods

Until the recent past the great majority of people on Peramagroon practiced what is best described as a mixed mountain farming system.

Grazing was the dominant land use on the hills and mountains and on shallow soils in the valleys. There was rain-fed cultivation of wheat, barley and pulses in rotation with summer fallow on the deeper valley whilst around the villages fields were irrigated with spring water, principally for tobacco, fruit and vegetables. The resultant systems were well-adapted to the local conditions, resilient and supported a rich biodiversity. Furthermore, these systems were the culmination of traditional land management systems developed in an unbroken sequence over the last 10,000 years. Their cultural significance should not be underestimated – they are seen to embody the true spirit, traditions and virtues of the Kurdish people.

However, agricultural profitability in Kurdistan has experienced a slump over the last few years and these systems are being changed or even abandoned at an alarming rate. It is not within the remit of this booklet to consider the causes for this but it is clear that reasons include: shortage of water, competition from imported foods, poor economic returns from agriculture, movement of people from the country to the cities (including those forcibly removed during the Saddam era) due to poor rural services and a lack of interest in farming, particularly amongst the young who prefer life in the town to the harsh and difficult life of a farmer. Many farms are subsidised by relatives working in the towns or for the government.

Livestock

Sheep, cattle and goats are the dominant livestock on Peramagroon. Typically the livestock graze on the foothills and mountains during the late winter, spring and summer but then rely on cereal stubbles and crop residues (if they are available) in summer and autumn, and on feed supplements in early winter. The main changes reported during the surveys were: an increasing lack of water due to springs drying up and the water from snow melt diminishing; less people to herd the animals as people move to the cities and the expense of winter fodder.

"*there are a lot of domestic animals, approximately 800 sheep and 150 cows. This number of animals needs a lot of pasture, therefore the village uses most of its land for grazing. In spring, summer and autumn generally there is enough grass to feed their animals but in winter they need to buy fodder*"

Teacher, Homar Qawm

"*When I was a young man I was a Shepherd. From late spring to late autumn we were woke early and took the animals out for grazing on our village lands. Everyday there were two or three shepherds working together, we spent all the day singing and eating and it was a great time. But now we have fewer animals and fewer shepherds and we have to take our animals further because of all the new fences and buildings*"

Elderly shepherd from Zewe

"*I have just has ten cows c. 10 which I take every day to the same place. There are small springs in this area where they can drink water from but now the springs have dried up and he has to take his herds further to find water. In the past there were many more animals. Now there are less and less shepherds because there is less water and because people go to the city in search of easier work, for instance working in the police*".

Jalal, an elder from Zewe

Field crops and orchards

Rainfed wheat, barley and pulses are grown on the deeper soils on the plains and some valleys. Around the villages all vegetables and fruit crops, except vineyards, require irrigation. However, lack of sufficient water is a limiting factor. Springs are widely reported as drying up and there is less water available from snow fed streams. There is no data on the number of wells in Peramagroon but they are plentiful. The area sits over a rich aquifer and there are potentially large amounts of readily available ground water.

"Lack of water is a big issue for the whole village, there is not enough for any cultivation. All they have is a small number of domestic animals (200); There used to be a small stream from melted snow which they used for irrigation but now they have to go to Peramagroon for fruit and vegetables"

Hama Salah a village elder from Biskandi

"Lack of water is a big issue for the whole village, there is not enough for cultivation so they only have domestic animals"

Shwana a shepherd (in his 30's) from Sutka

"There is not enough of water for daily needs and agriculture. Until the 1990's there was a snow-fed stream crossing the village which they used for their agricultures and their animals, but now it is only a very little water in the stream which flows for two month"

Hama Raza a village elder (in his 50's) from Zewe

"The village's source of water is wells, natural springs are very rare, there are many problems related to lack of water in the village, water tankers are very expensive and because the road to the village is so bad so the tanker cannot get to the village easily."

The mayor of Biran

Mixed orchards and fields near Zewe

Forestry

The forests of Peramagroon are grazed by flocks of sheep and goats and by herds of Kurdish cattle. On Peramagroon, and especially around Zewe, about 90% of the trees are Oak (Quercus aegilops).

In many areas the trees are coppiced, which is a traditional method of woodland management widely practiced in the Middle East and Europe. Coppicing exploits the capacity of certain species of tree to respond to cutting back by growing multiple stems from the stump or roots. In a coppice-managed woodland, tree stems are cut down to near ground level on a cyclical basis depending on what the coppiced wood is used for.

Traditionally the cycle of cutting was 8-10 years when the wood was used for charcoal, fuelwood or for building or on a three-year rotation when used for the supply of foliage, used as winter cattle fodder. In the past the forests were carefully managed so that fodder was available for the flocks during winter when deep snow covered the ground. Some trees remained un-coppiced, so that the trunks could be used for pillars or rafters in village houses. Coppiced branches were used extensively for constructing roofs.

Coppicing is no longer practiced on Peramagroon and there is little evidence of any other form of woodland management. The main reason for this is that other sources of fuel for cooking and heating are available and concrete has largely replaced wood for building. Also, the Forest Police are very active in preventing cutting. It is illegal to cut even small branches of a tree without the permission of the Forest Police.

The lack of forest management has important implications for both maintaining biodiversity and preserving the landscape. Coppicing has been practiced for hundreds of years in Kurdistan and has shaped the appearance of the forests. The importance of coppiced woodland has long been recognised in Europe. The cultural landscapes found in Europe created from centuries of traditional management are becoming increasingly recognized as having high conservation value.

Coppiced woodlands create a diversity of habitats which in their turn support a rich biodiversity. It is likely that biodiversity of the Kurdish forests will decline as coppicing dies out. Research is urgently needed to understand the relationship between forest management and the maintenance of biodiversity in Kurdistan but it is already clear that the management of forests plays an important role in livestock husbandry as well as in maintaining biodiversity.

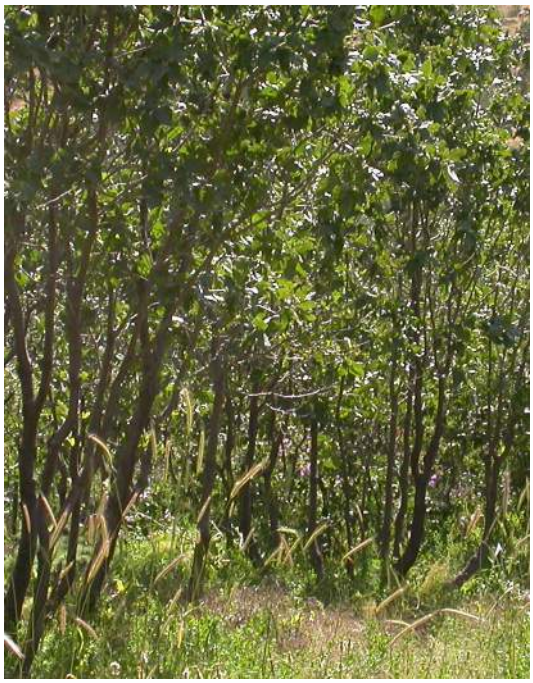
The coppicing cycle begins when a young tree is cut down to ground level in winter.

The following spring young shoots sprout from the stump and roots.

A multi-stemmed shrub develops. After between 3 and 15 years the stems are once again cut to ground level and the wood used for building etc. The frequency of cutting depends on how the coppiced wood is to be used.

The stumps sprout the following spring and the cycle continues: with each coppicing cycle the coppiced "tree" spreads a little until it can become many metres across. The resulting multi-stemmed trees can be hundreds of years old far out living their un-coppiced neighbours

Uncoppiced Oak



Coppiced Oak

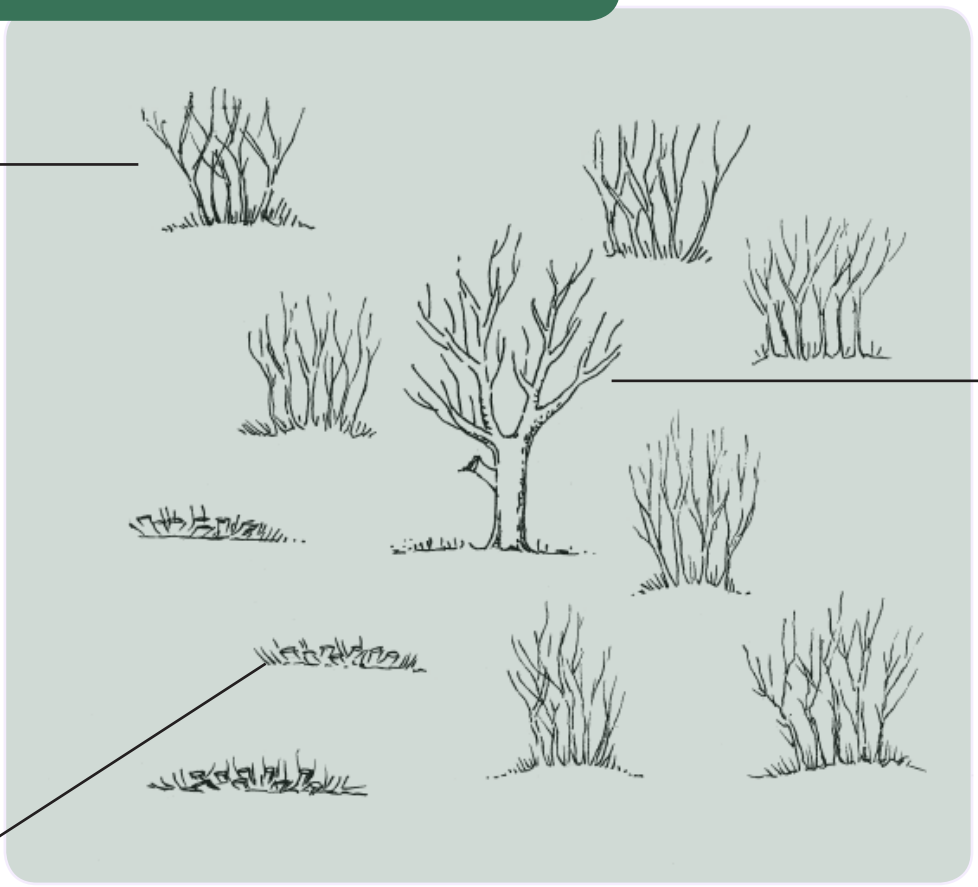
There has been no re-foresting using introduced species on Peramagroon but plantations of Populus nigra are widely planted along stream sides. The tall straight trunks are used for building and scaffolding.

Coppiced woodland provides a number specialised habitats which probably support greater biodiversity than un-coppiced.

Populus nigra plantation

Coppicing as a tool for managing biodiversity. The traditional management of oak woodland by coppicing has largely stopped in Kurdistan. Indeed, the cutting of trees is discouraged or even totally banned by the Forest Police. However, the reintroduction or strengthening of coppicing could be an important tool not only for increasing or maintaining biodiversity but also for preserving the unique appearance of the Kurdish oak woodlands. Research is needed to compare coppiced and un-coppiced woodland for biodiversity and ecosystem service values. The inclusion of coppicing in management plans for National Parks and Protected Areas should be considered.

Coppiced trees provide dense shade and their multiple stems accumulate leaf litter and protect plants growing at their base from grazing by livestock



Traditionally a few trees are left un-coppiced in the woodland – these can supply the thicker trunks required, for instance, to support roofs. Un-coppiced trees also provide valuable nesting and perching places for birds and shade for livestock. In UK these trees are known as standards and the woodland is referred to as "coppice with standards"

After coppicing the woodland is "opened up" providing the extra light and warmth preferred by some species

"*Compared with the past tree copping is now much reduced because of other sources of material for heating, cooking and building: now petrol and gas are used for cooking, and electricity for heating and concrete as a construction material*"

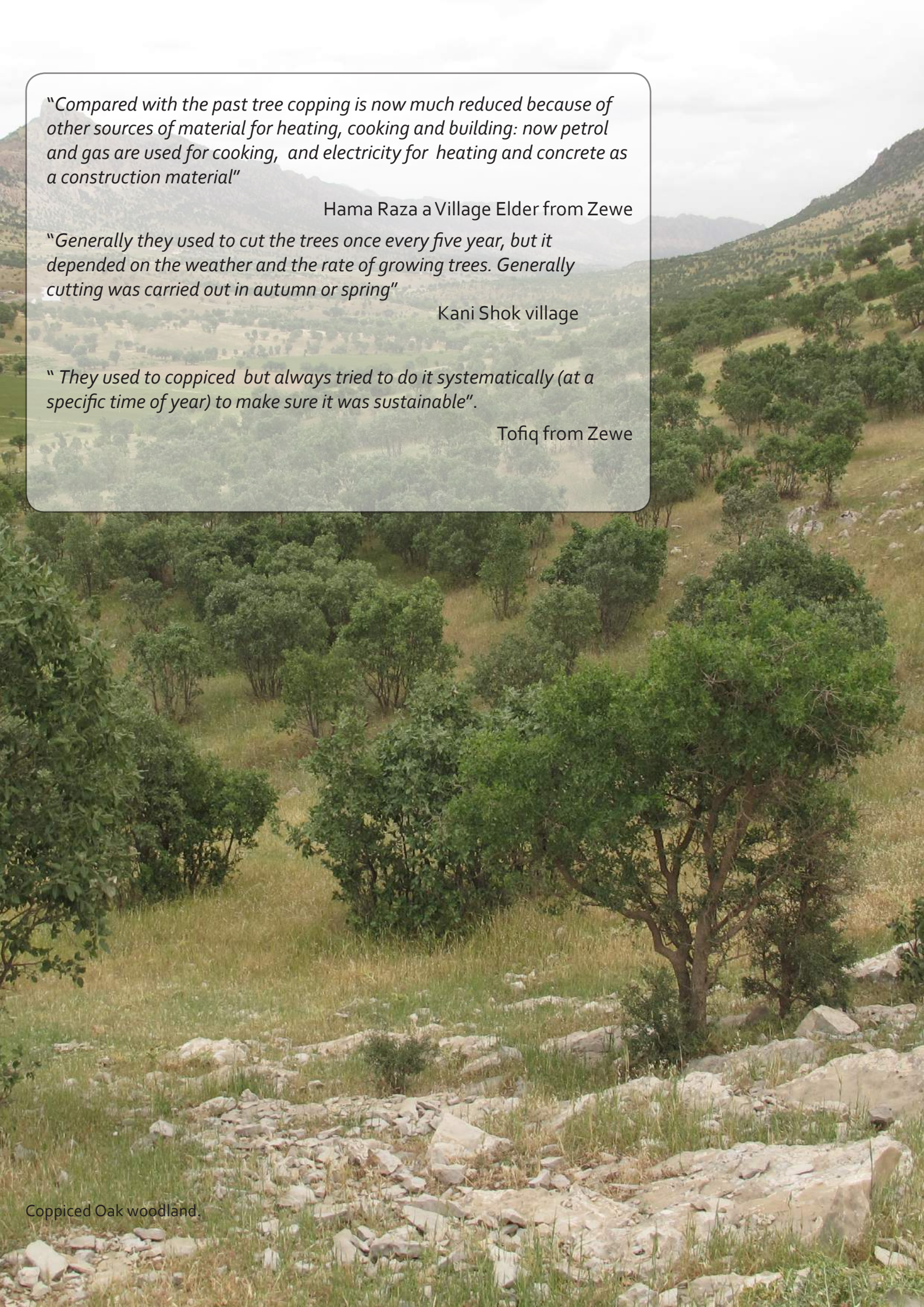
Hama Raza a Village Elder from Zewe

"*Generally they used to cut the trees once every five year, but it depended on the weather and the rate of growing trees. Generally cutting was carried out in autumn or spring*"

Kani Shok village

" *They used to coppiced but always tried to do it systematically (at a specific time of year) to make sure it was sustainable*".

Tofiq from Zewe



Coppiced Oak woodland.

Oak woodland with uncoppiced trees. Some of the trees in this woodland may have been coppiced a a long time ago but haven't been for many years.

Conclusions

The rich biodiversity and vegetation of Peramagroon has developed with and been maintained by traditional landuse practices over the last ten thousand years. These landuse practices have also produced the landscape which epitomises the very spirit and culture of Kurdistan.

As these systems change so both the biodiversity and the landscape is threatened. It is clear that traditional agriculture cannot sustain rural livelihoods at a level required by the present population. Consequently, if the biodiversity and landscape are not to be destroyed then a new approach to managing the environment is urgently needed.

New land management systems need to be based on a thorough understanding of the relationship between the natural environment and local livelihoods and likewise any new developments or new system of land management need to be tested against their likely impact on biodiversity, the rural environment and livelihoods.

In many countries rural livelihoods supported by tourism are increasingly important as people in the burgeoning towns and cities lose their connections with the countryside but wish to maintain links with their cultural heritage.

However, it is clear that people from the towns will not want to visit areas defaced by inappropriate development and devoid of vegetation and wildlife. It is therefore important that the unique landscapes of Kurdistan are preserved for future generations in a way that they can support rural livelihoods in a rapidly changing world.

Bibliography

- Slemany during 1999, by Suleimani Government, Library of Sulaimani.
- History of Kurd, 2006, by Kaiwan Azad Anwar, Sulaimani, Library of Sulaimani.
- Geology department, University of Sulaimani.
- Ghazanfar, S.A., et al. (present editor) (1966-). Flora of Iraq, Ministry of Agriculture, Baghdad, Iraq & Royal Botanic Gardens, Kew, UK.
- Guest, E. (1960). Flora of Iraq (Vol. 1). Baghdad: Ministry of Agriculture of the Republic of Iraq.
- Nature Iraq (TBC) Key Biodiversity Areas of Iraq. Priority sites for conservation and protection. California. Tablet House Publishing.
- M. Jennifer Sjölund and Alistair S. Jump (2013). The benefits and hazards of exploiting vegetative regeneration for forest conservation management in a warming world.
- Rechinger, K.H., ed., (1963-). Flora Iranica: Flora des iranischen Hochlandes und der umrahmenden Gebirge, Graz, Austria.
- Zohary, Michael (1973) Geobotanical Foundations of the Middle East. Stuttgart, Gustav. Fosher Verlag - Stuttgart/ Swets & Zeitlinger. Amsterdam XXIV + 739 pp.