

Deir el Nouriyeh cliffs of Ras Chekaa

Introduction

The promontory of Ras Chekaa is the first piece of scenically attractive coastline one meets on a journey north of Beirut. It contains a mosaic of woodland and olive groves, with an undisturbed maquis on the escarpments. Woodland and scrubland as a whole forms just 6 % of the land area in Lebanon, and 6-10 % of the Batroun district (UNEP, 1996), indicating the rarity value of such landscapes.

The flora and fauna of the wooded habitats here have been little studied, although the marine environment is better known. There is good potential for developing a programme of study to gain more understanding of this special area.

Regional context

The narrow coastal plain between Beirut and Tripoli is highly developed. From the capital to almost Batroun a conurbation extends from the shoreline into the foothills of the Lebanon mountains. Some agriculture and market gardening is practiced, notably banana plantations, citrus and plasticulture, with *Arundo donax* cane along the streams. Any semi-natural vegetation of significance is confined to the steep slopes inland of the plain where *Pinus halepensis* maquis dominates. Around Batroun, evergreen shrubland is more common on the plain as the density of building decreases. Interspersed with olive orchards are abandoned terraces with low garrigue vegetation. The coastline itself is rocky, and largely modified with sea defences.

In the coastal zone around Chekaa, agricultural production is restricted to the olive groves on the narrow strip of black hydromorphic soils mixed with transported material from the white rendzina upslope. To the east the land rises abruptly, and the soils are poor rendzinas formed on marl. The climax oak maquis is replaced by a degraded garrigue. The land is not productive and the agroecosystem centres around meagre stands of vines and olives. The plains of Amioun and Koura to the east of Ras Chekaa, with their deep alluvial soils, were once a major olive production zone. They have been seriously disturbed by red clay quarrying operations of the Chekaa cement factories. At Koura the olive groves have been devastated, with the loss of 6,000 trees, some of which were 1000 years old. The clays are scraped to a depth of 10 m, leaving holes over an area of 3 km² where rainfall accumulates. A new Quarrying Law (6 September 1994), which covers guidelines for environmental impact assessments of new quarries and rehabilitation of disturbed sites. (World Bank, 1995).

Description

Location and geomorphology

Ras Chekaa is a limestone promontory 7 km north of Batroun. Its steep slopes rise to a height of 208 m and contain a plateau of approximate area 7 km², on which are sited the villages of Ouajh el Hajar and Hamat, and the convent of Deir en Nouriyeh, whose property includes the proposed reserve area. The original convent is sited halfway down the cliff, with rooms dug out of the rock as well as small buildings on a ledge. The new and larger convent building sits above it at the top of the cliff. Three narrow valleys with seasonal streams dissect the plateau and drain it from the ESE to WNW.

Lots of Hamat:	
<u>Lot #</u>	<u>Surface area (m2)</u>
1542	816547
1544	371039
1545	47906
1546	39572
1555	63149
1556	3106
1550	9513
1551	53
1552	4542
1553	2024
1554	630
1558	16650

The geology of the area is a sequence of massive pale Miocene limestones capping a thick sequence of Late Cretaceous and early Tertiary pale chalks. The chalks are a soft, easily eroded unit and the whole headland is thus unstable and liable to slide even under normal conditions. The headland bears evidence of a number of major landslide scars and some of these may have been triggered by earthquakes. It is widely recorded that famous earthquake of 551AD precipitated an enormous slide creating a natural harbour for Batroun. The steepest screes and cliffs are to be found on the north and west facing sides of Ras Chekaa. A relatively flat wedge of land is to be found on the western edge of the promontory.

The coastal roads have taken a number of courses around Ras Chekaa. The original Ottoman road survives as a ledge of less than a kilometre where the French-built road which superseded it cuts through a tunnel. The ledge makes an attractive walk with views down to the sea below and across the bay to the north. There also exists here two short tunnels. Traffic on the French road is minimal, now that the main highway runs round the headland along a valley to the east rather than following the coastline to the west. The disused railway line hugs the coast at a lower level to any of the roads, and at one place has a section of tunnel.

The shoreline of Ras Chekaa is rocky and devoid of sand. A horizontal platform (c. 10 m wide at Hannouch) separates the supralittoral and infralittoral zones.

Vegetation/habitats

1. Cliff maquis

The cliff maquis is best developed at Deir el Nouriyeh on the north side of the promontory. The vegetation is dense on all but the least stable slopes, a few paths attached to the convent, and the ledge of the Ottoman road described above. This latter area provides an open habitat for a number of herbaceous species that may otherwise have a much more restricted occurrence in the area. These include *Cyclamen* and *Narcissus* species. The shrubland is dominated by the evergreen oak with an average height of approximately 3 m,

but reaching 4 or 5 m in places. Other abundant shrubby species are the lentisc *Pistacia lentiscus*, spiny broom *Calycotome villosa*, Spanish broom *Spartium junceum* and *Poterium spinosum*. The carob *Ceratonia siliqua* is present but more scattered. At the lower levels the bushes are shaped by the prevailing winds and salt spray, with a streamlined and leafless seaward profile.

This is the Thermophilous *Quercus calliprinos* vegetation community, a Thermo-Mediterranean forest type described by Abi-Selah *et al* (1976, 1982, 1988). The second type of this series is the Carob-Lentiscus series dominated by the lentisc. This is also represented in the region, forming a narrow coastal strip north of Batroun.

2. Woodland

Both on the top of Ras Chekaa and in the narrow valley running down from the village of Hamat are extensive areas of evergreen oak woodland. Belonging to the same vegetation formation described above, they differ in having a proper *Quercus calliprinos* tree canopy reaching heights of 6-10 m. These woodlands were the most remarkable vestiges of the original climax vegetation type of the coastal plains discovered in the survey of Chouchiani *et al* (1974). The understorey is open, with *Laurus nobilis* and *Ruscus aculeatus* amongst the shrubs present. There are ferns growing in the rocks, and an interesting fungi flora in the autumn. The reason for the oaks attaining maturity as trees and not shrubs is not certain, but may be the result of a combination of relative shelter from the prevailing winds and a lack of goat grazing, which tends to create bushes rather than trees out of this species.

3. Olive orchard

Olive growing is the main agricultural activity of Ras Chekaa, and the terraced groves have trees of some age and hold interest as low-intensity farming habitats. The ground is stony and tilled in most areas, in others with a better *terra rossa* soil which may be cultivated in places.

Existing land uses

The main agricultural use of the cape is the cultivation of olives. Some arable cultivation is practised on the property of the convent. A few small industries were present on the narrow coastal wedge to the west of the headland; the salt pans there were abandoned, however. Some cattle were seen on the pasture of the abandoned terraces.

Biodiversity

Terrestrial fauna

The avifauna of Ras Chekaa has not been systematically recorded. Like Ras Beirut to the south, it would be an obvious place for seawatching during the spring and autumn migrations. For example large numbers of egrets, herons and shearwaters can be seen off the Lebanese coast in the right season (Macfarlane, 1978). The strategic coastal position and abundance of woody cover also make the area important for migrating passerines, and again there is an opportunity to gather a lot of information through regular study and observation.

The following bird records were made at Ras Chekaa on 12 April 1996 :

White Pelican *Pelecanus onocrotalus* (a flock of 35 flying north along the coast)
Red-rumped Swallow *Hirundo daurica*
House Martin *Delichon urbica*
Wren *Troglodytes troglodytes*
Blackbird *Turdus merula*

Sardinian Warbler *Sylvia melanocephala*

Ruppell's Warbler *Sylvia rueppelli*

Lesser Whitethroat *Sylvia curruca*

Willow Warbler *Phylloscopus trochilus*

Macfarlane (1978) also makes note of Alpine swift *Apus melba* and sightings of Purple Heron and Sparrowhawk have been made.

There are no known published records of other terrestrial animal groups at Ras Chekaa.

Terrestrial flora

Like the fauna of Ras Chekaa, the flora is poorly studied. A brief survey on 15 November 1996 of the cliff below and to the east of the convent, revealed the presence of 24 species, though the true diversity will be considerably more. The plants are listed below:

Trees and shrubs:

Quercus calliprinos

Pistacia lentiscus

Ceratonia siliqua

Spartium junceum

Calycotome villosa

Asparagus acutifolius

Phillyrea media

Poterium spinosum

Hypericum thymifolium

Laurus nobilis

Myrtus communis

Dittichia viscosa

Ruta (graveolens)

Climbers:

Smilax aspera

Clematis cirrhosa

Rubia peregrina

Herbs:

Cyclamen sp

Urginea maritima

Ranunculus sp

Hyparrhenia hirta

Bellis perennis

Crithmum maritimum

Narcissus sp

Taraxacum sp

Two quadrats of *Quercus calliprinos* woodland were studied at nearby Selaat and Hama by Chouchiani *et al* (1974). Shrubs present were *Pistacia lentiscus*, *Calycotome villosa*, *Poterium spinosum*, *Hypericum thymifolium*, *Cistus creticus* and *Stachys distans*, with *Hyparrhenia hirta* and *Andropogon distachyas* in the herb layer. Other species recorded in the quadrats were: *Pistacia palaestina*, *Rhamnus punctata*, *Brtomus syriacus*, *Styrax officinalis*, *Cercis siliquastrum*, *Dryopteris libanotica*, *Phillyria media*, *Smilax aspera*, *Rubia peregrina*, *Asplenium adiantum*, *Asparagus acutifolius*, *Clematis cirrhosa*, *Hypericum serpyllifolium*, *Helichrysum sanguineum*, *Fumana thymifolia*, *Dactylis glomerata*, and *Lotus corniculatus*.

Marine fauna and flora

A study of the benthic marine life at Hannouche, Ras Chekaa, has been made by Bitar & Bitar-Kouli (1995). They described the assemblages of the supra-, medio- and infra-littoral zones, and noted the presence of one alga indicative of clean waters. The records make an important reference work for marine studies related to pollution impacts at other sites along the Lebanese coast.

The presence of submarine freshwater springs off the coast at Ras Chekaa is likely to enhance the biotic diversity of the waters here. The springs have been studied by Kareh (1967, 1968).

The new National Centre for Marine Sciences is sited at Batroun and so the capability exists for the area to be studied further as part of a protected marine reserve.

Threats

1. Building

Piecemeal destruction of important habitat by urbanisation or other forms of development/land 'improvement' is a possibility. One large building project beside the road out of Hamat towards Deir el Nouriyeh was seen. However, the inherent geological instability of the area should act as a disincentive to building projects, and church ownership of the land may afford better protection than would otherwise be the case.

2. Fire

There is a risk of areas of the woodland, maquis and orchard habitats being destroyed by fire. Evidence of fires in similar habitats were observed along the coastline between Beirut and Chekaa. These will mostly be of accidental origin. Small camp fires had been lit along the path of the old Ottoman road, and there is a chance, albeit small, that a fire could catch the maquis vegetation of this area.

3. Pollution

Two Portland cement plants are located in Chekaa, and in 1993 had a combine output of 2,372,000 tonnes (World Bank, 1995). Hot water effluents are discharged into the sea from these plants, but with a southerly current the impact will be to the north of the town and not around the cape. Another pollution hazard is from particulate emissions associated with the handling of raw materials and the final product, as well as combustion emissions. Dust emissions can cause damage to plants and crops, but the effect is unlikely to be serious beyond several hundred meters of the plant, and again, with prevailing south-westerly winds, the worst impact is downwind of Ras Chekaa. Also, the Societe des Ciments Libanaise (SAL) at Chekka has received loan finance for rehabilitation, a condition of which is the installation of particulate controls.

Fertilizers are manufactured at a factory in Selatta, between El Batroun and Ras Chekaa. Some 400 tonnes/day of triple super phosphate and simple super phosphate are produced (World Bank, 1995). Phosphates and sulphates are discharged into the sea, but evidence of pollution and eutrophication along the coastline of Ras Chekaa has not been observed. Air pollution is likely to be caused by the production of hydrogen fluoride (HF) gas as a by-product. This is potentially harmful to human, plant and wildlife. There are also emissions of dust from the crushing of the phosphate rock. Winds from the south and west predominate in this region, so any air pollution from this factory is likely to pass over the Ras Chekaa headland.

Litter and dumping were evident beside roads and in picnicking spots. Along the Ottoman road there were plastic, paper and metal wastes.

Conservation strategy

In comparison to Aammiq, the habitats of Ras Chekaa are not under tremendous threat. The cliffs of Deir el Nouriyeh are obviously not prime land for economic use, although some of the other wooded areas of Ras Chekaa could be lost by development.

A conservation strategy, therefore, can focus on realising the potential of Ras Chekaa as a site of natural beauty, biodiversity importance and historical interest, rather than on conservation management issues.

In terms of natural beauty, the wooded landscapes need preserving in their current state. They are increasingly rare in the coastal zone, and the oak woodland is one of the best examples in the country.

In terms of biodiversity importance, the area is significant because of its position as a coastal headland on a significant Middle East bird migratory route, and the habitats it provides for migrating passerines. It would be an excellent place to start a bird ringing programme, and this activity is included in the proposals. Also, the flora and fauna of the maquis and woodland is yet to be documented, and the opportunity should be taken to do so, and thereby to contribute to understanding of Mediterranean shrubland habitats.

And in terms of the historical interest, the convent of Deir el Nouriyeh is a significant site that merits more attention and public interest than it presently has.

It is suggested that a development plan for the protected area should encompass the headland of Ras Chekaa as a whole, integrating the aims of landscape/habitat preservation, amenity creation and the support of biodiversity research.

The proximity of the National Centre for Marine Sciences at Batroun is significant, as the programme of marine studies along this stretch of coastline would be greatly complemented by work on the cape, gaining a better, integrated understanding of the whole coastal zone across the artificial division of the marine and terrestrial science disciplines.