

## A: Why Lebanon is so important for Biodiversity.

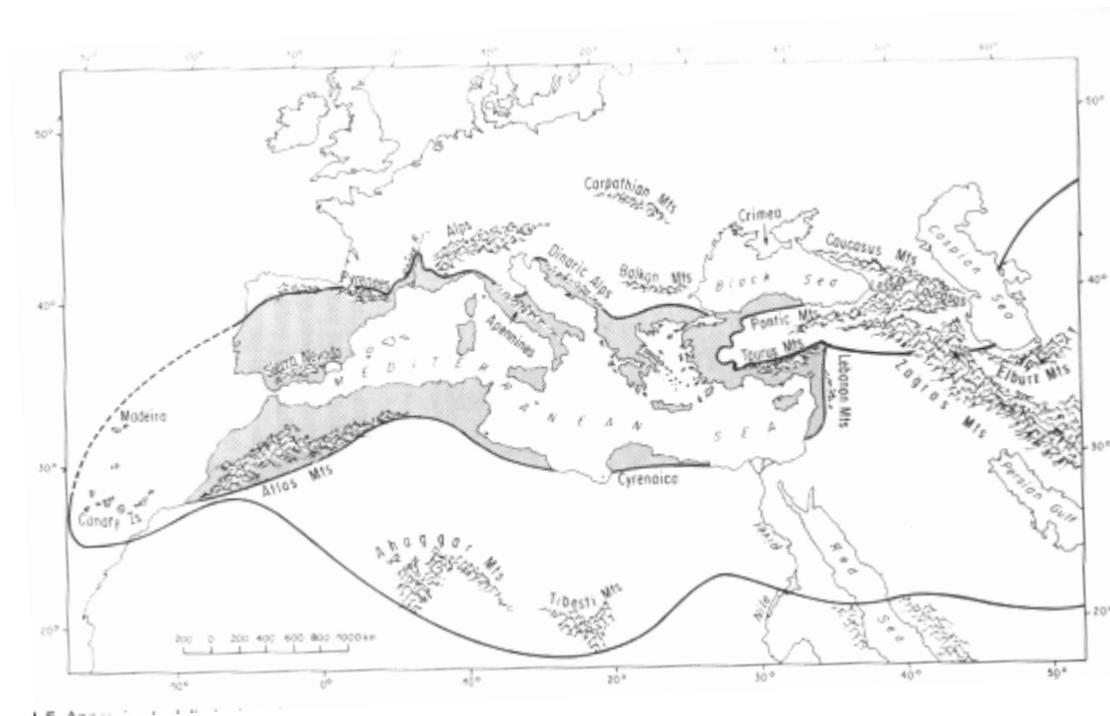
In a relatively small land area Lebanon holds a very high level of biodiversity. By setting Lebanon in its global context the significance of this richness in its fauna and flora can be better appreciated. Indeed what can seem common at a local level can be highly unusual at global level.

There are 3 main reasons why Mount Lebanon hosts high levels of Biodiversity:

### **1. It is part of the Mediterranean “Hotspot” for biodiversity.**

Myers (1990)<sup>1</sup> recognized the Mediterranean basin (see Fig. 1) as one of the world’s “hotspots” harboring exceptionally high percentages of the world’s biodiversity in relatively small areas. Many reasons have been put forward to explain such natural richness but for our purposes here it is important to recognize the end result of the evolutionary, geographic and climatic changes in the nature of the extant biodiversity of the Mediterranean basin. This can be illustrated by the following two examples out of many that could have been chosen:

- The Flora of the Mediterranean includes more than 25000 species of flowering plant<sup>2</sup>, this is approximately 10% of all known flowering plant species on earth, although the land area of the basin is only 1.5% of the earth’s land surface.
- The Mediterranean is the richest area in Europe in terms of invertebrates, 75% of the total European fauna is found in the basin.<sup>3</sup>



**Figure 1 Approximate determination of the Mediterranean land area**<sup>4</sup>

### **2. Regional Hotspots within the Mediterranean**

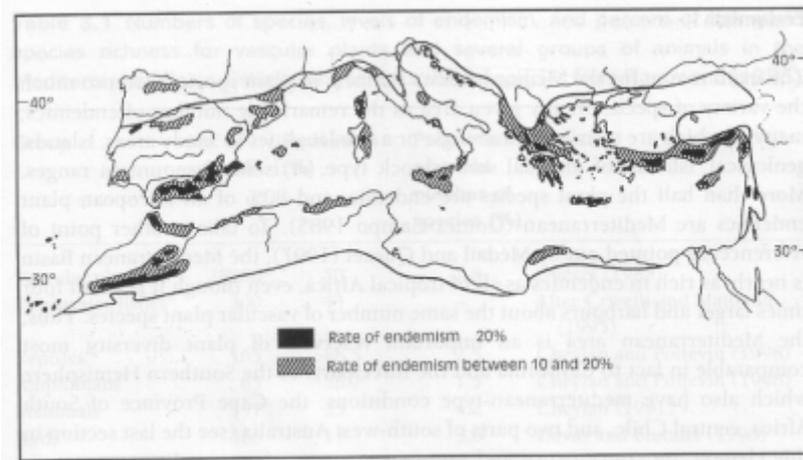
<sup>1</sup> Myers, N. (1990) The biodiversity challenge: expanded hotspot analysis. *The Environmentalist*, **10**, 243-256

<sup>2</sup> Quezel, P. (1985) Definition of the Mediterranean region and origin of its flora. In plant conservation in the Mediterranean area (ed. C. Gomez-campo), pp 9-24

<sup>3</sup> Baletto, E. and Casale, A. (1991). Mediterranean insect conservation. In the conservation of insects and their habitats (ed. N.M. Collins and J.A. Thompson) pp 121-142

<sup>4</sup> Biology and Wildlife of the Mediterranean Region. J. Blondel and J. Aronson.

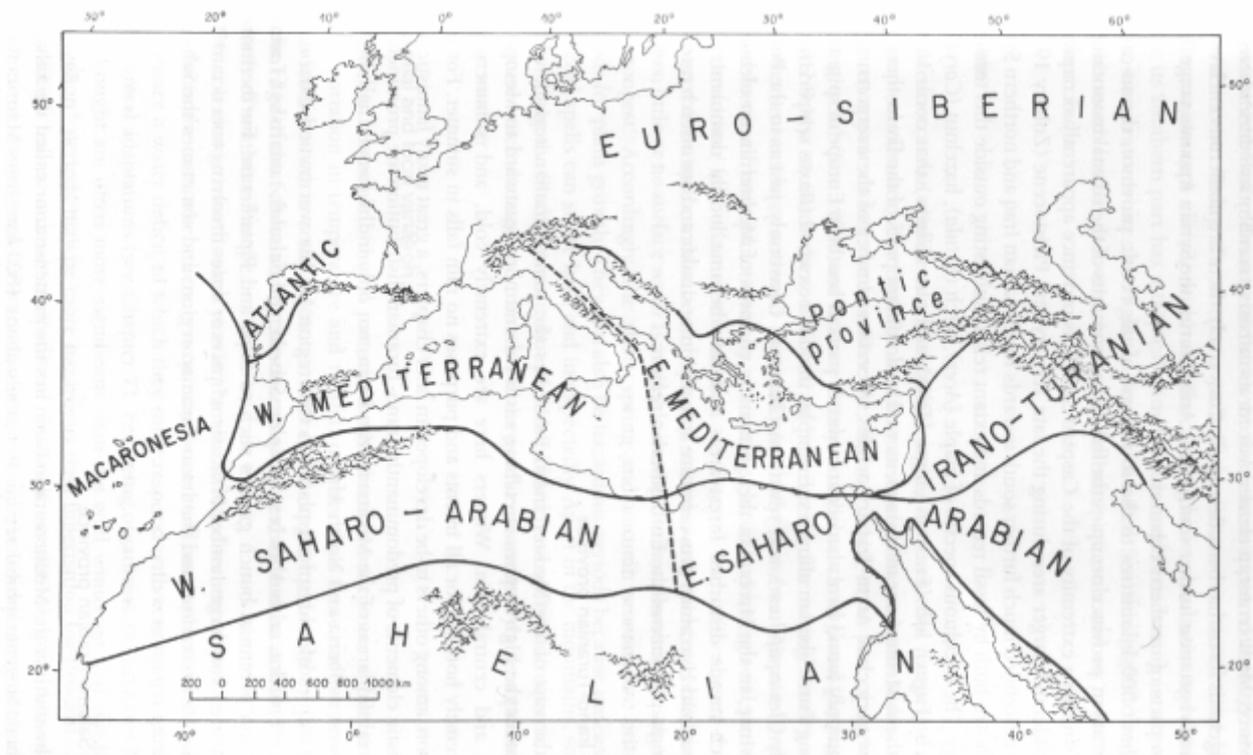
Even within the context of the richness of the biodiversity of the Mediterranean basin the Mount Lebanon area is noted as a “regional hotspot”. It is observed that endemism increases with altitude and so it is little surprise that very high levels of endemism amongst plant species have been observed in the Mount Lebanon chain.<sup>5</sup> See Fig. 2.



**Figure 2 Hotspots for Plant endemism in the Mediterranean basin**

### **3. Due to its proximity to neighbouring Biogeographical regions**

A third reason for the high biodiversity of the Mount Lebanon area is that, located as it is, adjacent to four bio-geographical regions it has been influenced by elements of the neighboring floras and faunas. See Fig. 3.



**Figure 3 Subdivisions of the Mediterranean area and delineation of the major bio-geographical regions and provinces<sup>6</sup>**

<sup>5</sup> Biology and Wildlife of the Mediterranean Region. J. Blondel and J. Aronson.

<sup>6</sup> Quezel, P. (1985) Definition of the Mediterranean region and origin of its flora. In plant conservation in the Mediterranean area (ed. C. Gomez-campo), pp 9-24

The land area of Lebanon and neighbouring countries can be seen as a land bridge linking Europe with Asia, including Arabia, and Africa. As well as a cross roads for human history the area has seen both plants and animals spread from their ancestral zones to colonise new ones many of which are still represented in the extant Lebanese flora and fauna.

One example illustrates the point:

- Of the four quadrants of the Mediterranean basin the Eastern quarter is richest in mammals with 106 species with 23 species of Asian origin that do not occur elsewhere in the basin. An example of a Lebanese species of African origin is the Striped Hyaena (*Hyaena hyaena*). Where as the wild boar (*Sus scrofa*) is an example of a European coloniser (see Mammals).

#### 4 Migration pathways of Soaring Birds (see Migration)

Due to their mode of flight, over long distances soaring birds such as raptors, storks, cranes and pelicans avoid sea crossings and so fly on well documented migratory flight paths between their wintering grounds and summer breeding grounds. Lebanon lies on one such migration route, between wintering grounds to the south, particularly sub Saharan Africa and Western Palearctic breeding grounds to the north, for more than 30 species of raptor. Indeed due to the relative positions of the Black, Caspian and Mediterranean seas Lebanon is at one of the most concentrated points on this complex migration route. Well known as a “bottle neck site” it plays host to large concentrations of migrating soaring birds each spring and autumn. See Fig 4 and 5.



Figure 4 Migration routes of raptors in the Middle East : Autumn<sup>7</sup>

Seasonal Maxima:

- C: (just to the South of Lebanon)
- Honey Buzzard = 437 000
  - Lesser Spotted Eagle = 141 000
  - Levant Sparrowhawk = 44 000

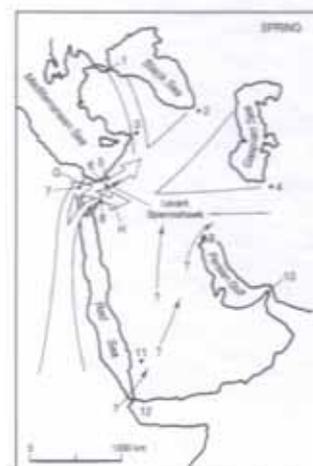


Figure 5 Migration routes of raptors in the Middle East : Spring

<sup>7</sup> Raptor Migration in the Middle East Shirihai, H. Yosef, R. Kirwan, G. Spaar, R.