Israel

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Description

Israel is characterized by a steep precipitation gradient from North, 1200 mm rainfall, to South, less than 60 mm rainfall, along only 600 km. It is an intersect of three main climatic and three phyto-geographic zones, i.e. the Mediterranean, the Saharo-Arabian and the Irano-Turanic provinces. The vegetation changes dramatically from North to South; from a typical Mediterranean chaparral and some forest patches in the Mediterranean zone, through a shrubland in the semi-arid zone (which is the transition between the Mediterranean and the arid zone), and a very sparse steppe type shrubland in the desert. In the extreme desert, vegetation is distributed only in the dry riverbeds that flood one to several times in winter – only in rainy winters.

Those climatic conditions are not suitable for traditional coppice. Indeed, traditionally there was no coppice in this zone. However, some main traditional practices are small scale coppice. Several examples are:

The species *Ficus sycomorus* was first brought to Israel by man during the dawn of history, 6,500 years ago, perhaps even 10,000 years ago. It re-sprouts and the trunk elongates and thickens very quickly. The wood was used for construction (mainly roofs) and for heating. In ancient Egypt the wood was also used for coffins. In Israel, doors of an ancient synagogue were found that were made from *Ficus sycomorus* wood. About a tenth of all wood pieces that were found at Masada from the Roman period were made of *Ficus sycomorus* wood. Its widespread use led to re-sprouting and its management as coppice. The species is found in the coastal plans, on sand dunes above aquifers.

Similarly, *Tamarix* spp. is a native species that was used and probably planted, cut and re-cut since ancient times. Remains of *Tamarix* were found in archeological excavations as building material and firewood beginning from the Upper Paleolithic Period, 25,000 years ago, until today. The Romans used the timber of this species in the construction of a giant siege tower with a battering ram, built for their assault on the fortification of Masada in 73 CE.

A third example is the *Faidherbia albida*, originating in the sub-tropical savannas, but found in Israel in fragmented distributions along the southern shore and ephemeral rivers. Its introduction by man in ancient times and its growing in vicinity of agricultural fields cannot be ruled out. In Israel, the species propagates only by clonal means and re-sprouting is vigorous, which makes the species an excellent coppice.

In general, resprouting characterizes all woody species in the Mediterranean zone of Israel – except for *Pinus halepensis*. This trait allowed traditional practices such as small scale clear-cutting, grazing and the use of fire to encourage herbaceous species growth. Small scale clear

Figure 1. Resprouting that allowed the production of beams; *Quercus ithaburensis* (Photo: Orna Reisman-Berman)

cutting was in a sense similar to traditional coppicing – where clear-cut is selective and is conducted locally. At the time of the Ottoman Empire, a massive clear-cut of oak forests was conducted, mainly the forests of *Quercus itaburensis*.

In the modern era, starting around 1950, traditional practices such as small scale clear-cutting were excluded, whereas the chaparral expanded, becoming a dense thicket.

A large scale experiment was conducted along the gradient in Long-Term Ecological Research (LTER) stations on the effect of clear-cutting on ecosystem biodiversity. The results demonstrated that patchiness of herbaceous and woody species is of importance, and that both small scale clearcutting and grazing help to maintain the ecosystem biodiversity. This implies that the small scale clear-cutting, a form of coppicing, should be integrated in this ecosystem.

As of today it has became clear that traditional practices have a role in shaping an open vegetation form that allows the growth of herbaceous species, increasing the biodiversity and productivity of those systems. This can mean that re-introducing small scale clear-cutting or a form of coppicing can be an appropriate management tool to the Mediterranean chaparral ecosystem in Israel.

There were some trails of true coppicing in Israel with alien species. In the 60s very few plantations of *Populus nigra* were planted for the production of matches. However, in spite of the extensive irrigation and fertilization that the saplings received in agricultural soil, they did not yield even one quarter of the expected production. At the beginning of the 21st century, there was a nationwide trail of introducing the *Paulownia* as a logging-coppicing tree species. The *Paulownia* was considered attractive due to its high resistance to drought and its modest living requirements. However, the trial failed and did not reach an industrial capacity.

Figure 2. Resprouting that allowed the production of beams; *Ficus sycomorus* (Photo: Neot Kdumin archive)

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