

DEATH OF ELM TREES IN THE HYRCANIAN FORESTS OF IRAN

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Abstract

The Hyrcanian Forests of Iran are located in the northern of Iran, near the Caspian Sea. All of these forests are mixed natural broadleaf forests which the elm species covers less than 1% of forest stand. During last three decades nearly all mature elm trees have been damaged by pests and diseases. In this paper, reduction process of elm trees during last three decades in the Hyrcanian Forests of Iran will be discussed.

Keywords: Hyrcanian Forests, Elm, Broadleaf forest, Insect and Diseases.

1. Introduction

The total forest cover in Iran is 12 million hectares, which amounts to 8% of the total land area. About 1.8 million hectares of these forests are located in the north of Iran (i.e. the Hyrcanian Forests) on the northern slopes of the Alborz Mountains overlooking the Caspian Sea (Figure 1). The length of this forest strip is about 1000 km with a width of about 30 km. The Hyrcanian Forests consist of mixed broadleaf deciduous species (Figure2).

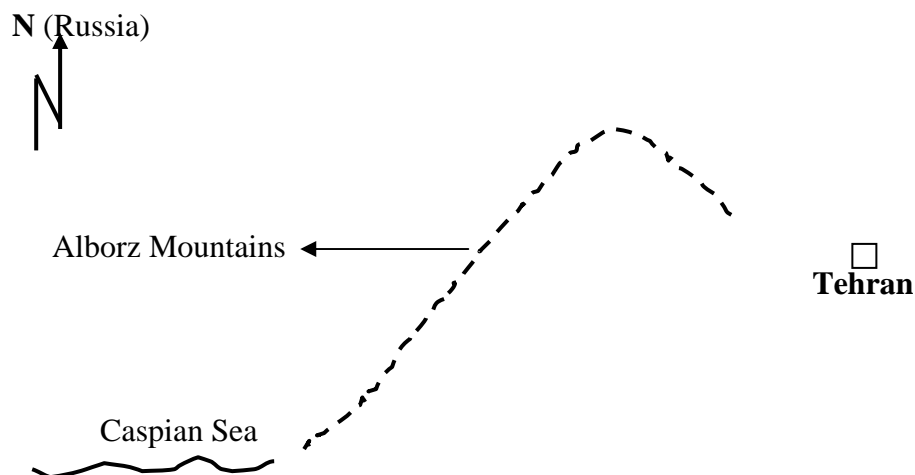


Figure 1: Forest location of the Hyrcanian Forests of Iran.

Commercial harvesting operations are carried out in northern forests, while all other forests in Iran are non-commercial.

These forests have an uneven topography and very steep slopes. The regions with slopes greater than 100% have been designated as protected areas, where harvesting operations are prohibited. The first harvesting development and regeneration planning began nearly 40 years ago with the introduction of the shelterwood and selection management systems. Clear cutting operations are prohibited, except for small areas which are nearly flat. During last 10

years, all of these forests have been harvested by private companies through contracts. Per capita timber consumption in Iran is about 0.2 m^3 per annum, which amounts to $12 \text{ million m}^3 \text{ an}^{-1}$ for the whole population.

There are 3400 small villages in the Hyrcanian forests of Iran which about 2314 of them including less than 20 habitable and while others have more than that. About one million people are living in these forests accompanied with 78,390 rural families.

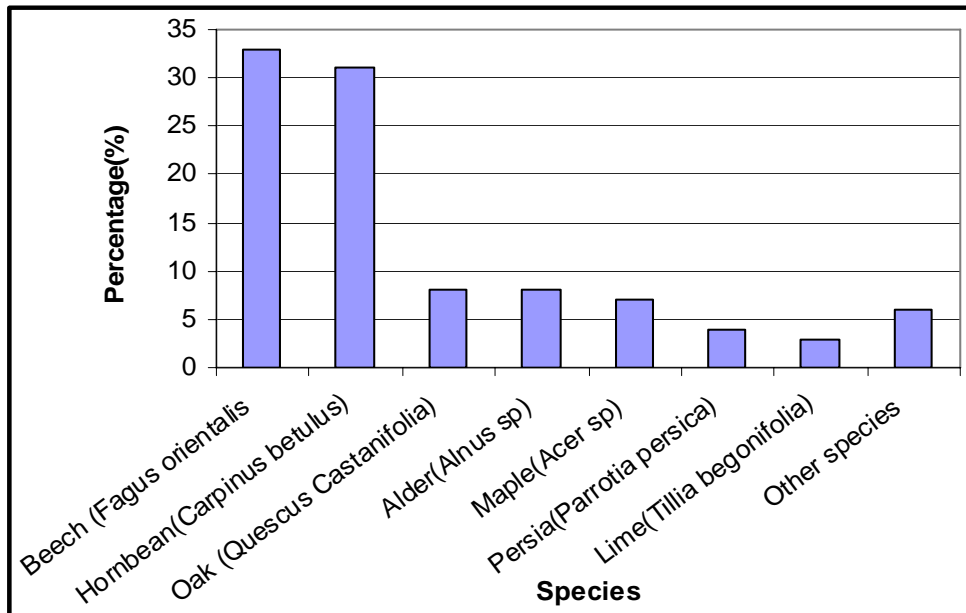


Figure2: Species composition of the Hyrcanian Forests of Iran.

2. Background

The Elm tree (*Ulmus glabra*) is one of the most important trees from the Iranian people viewpoints, because of following reasons:

- it is a native species in the Hyrcanian Forest of Iran
- for the nice designs and ornaments on texture of wood
- high ranks between the Iranian people as their culture.

The above mentioned characters have been caused that elm is a lovely trees not only in the north parts of Iran but trough whole country. Iranian citizens are very interest to use elm timber for buildings, furniture, table, chair and etc. At the moment, elm timber is the most expensive timer and also too scarce in Iran.

3. Distribution

The elm specie is distributed in large scales in north forests of Iran. It grows from under the see level up to 2000 m. Because of different elevations, texture colors are varying. The main color is brown and with a light colors as red, green a etc. The timber is hard and semi-hard and quite heavy. The shape of this tree is very nice and with beautiful leafs and grains (Figure3).



Figure3: Leaf and grain of elm in the Hyrcanian Forests of Iran.

4. Discussion

During last three decades a serious problem has been damaged the Hyrcanian Forests of Iran as "Elm Death" phenomenon. This problem came from pests and diseases through leaves, buds and bark which have been died a tree for a short time (2 years). The inventory of forest stands about 35 years ago showed that elm species covered nearly 0.3% of forestlands in percentage. After 20 years later, it reduced to nearly zero percentage (Figure 4). The regeneration situation was not so good during that period time too.

As a result, all mature trees were dried, except in a very special case. Fortunately, the new statistic data shows the young sapling plants are growing as well.

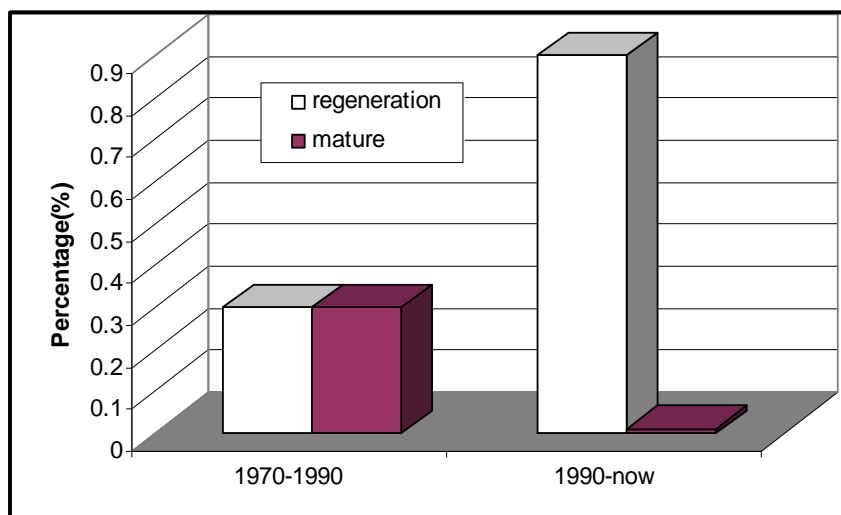


Figure 4: Elm species composition in the the Hyrcanian Forests of Iran.

5. Conclusion

The elm tree is a native species in the northern forests of Iran. It grows mixed with other broadleaf deciduous species in that area in very different elevation. All of elm trees have been disturbed during last 35 years by pests and diseases. Based on ecologists and biologist points, by finishing of life cycles of pests and insects and also finishing all hosts, this disaster has been subsided.

As a result, it is expected to have a new generation of elm species in future. Statistic information indicates that since 15 years go amounts of young regeneration plants have been increased.

Death of Elm trees in the Hyrcanian forests of Iran. Jan 2006. 183-186. S M Hosseini. Hosseini, S.M. (2006) Death of Elm trees in the Hyrcanian forests of Iran. UFRO Working Party 7.03.10 Proceedings of the Workshop, Gmunden, Austria. 183-186.Â

Sheikholeslamzadeh, S., Sadeghi, H. & Sheikholeslamzadeh, E. (2010) Injurious mites associated with broad leaf trees in green spaces in Mashhad. Proceedings of the 19th Iranian Plant Protection Congress, Tehran, Iran, 362. Recommended procedures and techniques for morphological studies of Eriophyoidea (Acari: Prostigmata). Jan 2010. The Hyrcanian forest, which once stretched from á¹~ÁleÁj in the west through GÁ«lÁn and MÃzandarÃn into the western parts of GorgÃn, covering the Caspian lowlands as well as the lower parts of the northern Alborz slopes, shares many formal similarities with genuine tropical forests: a several-storied growth structure, a great capacity for regeneration, dense undergrowth with liana vegetation, and a large variety.Â These ecologically favored locations exhibit a wide variety of different species (tamarisks, willows, poplars, wild fruit-trees, elm, plane) combinations being dependent on the availability of water, on climatic conditions and the variety of soil. The Caspian Hyrcanian Mixed Forests ecoregion, in the world's temperate broadleaf and mixed forests biome, is a zone of lush lowland and montane forests covering about 55,000 square kilometres (21,000 sq mi) adjoining the shores of the Caspian Sea of Iran and part of that of Azerbaijan. The forest is named after the ancient region of Hyrcania. Since 5 July 2019, the Hyrcanian Forests have been a UNESCO World Heritage Site. Selective logging and damage to unharvested trees in a hyrcanian forest of iran. Farshad Keivan Behjou and Omid Ghafarzade Mollabashi *. Selective logging in mature hardwood stands of Caspian forests often causes physical damage to residual trees through felling and skidding operations, resulting in a decline in bole quality and subsequent loss of tree value. This study evaluated the logging damage to residual trees following logging operations.Â The study was conducted in parcels 228, 231, and 232 in Chafroud forests in the North of Iran, located at coordinates of 37Â°25â€™TMN and 49Â°26â€™TME. The altitude ranged from 1250 to 1450 m above sea level, and the average annual precipitation was 1450 mm.