

## Present status of *Platanus orientalis* L. in Shopian district of Kashmir valley

Syed Shahbaz Ahmad<sup>1\*</sup>, Suchi Modi<sup>1</sup>, Imtiyaz Ahmad Hurrah<sup>2</sup>

<sup>1</sup> Department of Botany, School of Biological Sciences, Rabindranath Tagore University, Madhya Pradesh, India

<sup>2</sup> CSIR–National Botanical Research Institute, Lucknow, Uttar Pradesh, India

### Abstract

The present study aims to estimate the extent of degradation and analyze the reduction spectrum of *Platanus orientalis* L. This is the only species that represent the family Platanaceae in India, where it thrives specifically in Kashmir valley only. The current study was restricted to Shopian district, an unurbanized area of Kashmir, dominated by different climatic types and topography. There were no records of existence of chinara trees in 31 villages and 108 villages out of 244 have less than 5 chinara trees, a sign of serious concern. A total of 1808 trees were recorded during this survey, out of which 160 were degraded which constitutes 8.85% of total chinara cover of Shopian. Villages like Dachipora, Gonahpora Arsh, Manihal and Tengwan display maximum degradation. Maximum percentile degradation 7.09% was likely observed during 2005–2020 as compared to 4.23% between 1990–2005. Furthermore higher reaches of Shopian district with dominance of alpine trees shows zero records of Chinara population.

**Keywords:** degradation, villages, *platanus orientalis*, industrialization

### Introduction

Chinara is a deciduous tree in the Plantaceae family that grows up to 98 feet (30 m) known for its longevity and spreading crown (Irtiza, 2016) <sup>[4]</sup>. In Asia countries especially Iran, Turkey and India, *Platanus orientalis* is unanimously recognized as Chinara (Khachatryan & Hovhannisyanyan, 2016) <sup>[6]</sup> However its local name in Kashmir valley is Buny (Islam S.T et al., 2018). *Platanus orientalis* is an intolerant tree although grows along stream banks, on sandy and acidic soils and on wet sites but arid, damp, temperate climate is preferred. The tree is vulnerable to many insects that can be managed by insecticides. (Sheikh, 1993) <sup>[13]</sup>. It is commonly used for landscape design, tolerance to pollution, tolerance to difficult soil conditions (Zencirkiran, 2012) <sup>[16]</sup>. In the village of Chattergam of Budgam district with a diameter of 14.78 m and 31.85 m in height, the world's oldest Chinara tree (about 627 years) is present and is believed to be planted in 1374 A.D. (Wadoo, 2007).

There are nine species of the genus *Platanus*, two from Europe and Asia, the others from North America to Mexico. The only existing member of the Platanaceae family is *Platanus*. Other genera are known from the fossil record only (Rix, et al 2017) <sup>[10]</sup>. Species include oriental plane (*Platanus orientalis*), London plane (*Platanus acerifolia*), American Sycamore (*Platanus Hispania* Munchh) or buttonwood, waterbeach (*Pus occidentalis*) are known to the world. In North America, Mexico, Europe and India, six or seven species are recognized (Nixon and Poole, 2003) <sup>[8]</sup>.

The girth of the tree can exceed 50 feet. There are 5 to 7 lobed (rarely 3 lobed) dense leaves and an oblong crown in the alternate palmately-nerved leaves. The leaf petioles protect the buds until autumn, (Gray, 1879) <sup>[3]</sup>. In April, before the leaves appear, they are dark green, turning to light green and then to golden yellow or yellowish red in autumn. The flowers are unisexual, locally called as Boneh Doon, in globose heads about 1.5 to 3 cm in diameter

(Imran and Samiullah, 2011). The plane tree is known as a female tree with epicormic branches at the root, while the male tree has no epicormic branches. The achenes in these heads do not burst in June to July and seeds grow in these heads. The seeds in the heads will hang on the tree for over a year. The seeds are minute and light in weight and the fertility percentage should not exceed 50. The fruit is a rounded head, 2.5 to 7.5 cm in diameter, with several small nuts seeded with one seed (achenes). From June through August, the seed matures (Sheikh, 1993) <sup>[13]</sup>.

The trees are propagated by seeds and cuttings. Seed propagation requires that the soil is well pulverized and that the composition of the soil is sandy loam. In the raised beds, seeds are sown and well moistened with water and covered with ash or hay. After the conclusion of the second growing season, the seedlings are removed from March to April for planting. Laying and planting of the cuttings will also lift the seeds. During November, the cuttings (20-30 cm in length and 5-7 cm in mid width) are taken from healthy tree branches. In early March, the cuttings are poured under the soil and then removed and planted. (Piotto and Di Noi, 2003; Hartman et al., 2011, Showkat et al, 2017) <sup>[9, 1, 14]</sup>.

Plane trees are pollinated by the wind. The male flowers have 3-8 stamens, while the female flower has a superior ovary with 3-7 carpels. Male flower-heads fall off after the pollen has been shed. The flowers are thin, inconspicuous and hypogynous with a short receptacle, the perianth is reduced, and the sepals 3-4 are rarely 8 free or basifixed. Petals are 3-4 occasionally 8 truncated vestigial, sometimes absent in female flowers. (Saima et al., 2018) <sup>[11]</sup>.

The Chinara tree is a lovely, ornamental plant during the whole year. Its leaves and bark are of medicinal value (Ganai and Nawachoo, 2003). Chinara wood (Lace wood) is used to make delicate furniture pieces, and twigs and roots are used to make dyes. (Sharma, 2008) <sup>[12]</sup>. In summer, the shade is well established and in fall, a golden tapestry spreads out. The wood is light to grayish brown in color.

The wood is moderately durable, heavy and strong. (Sheikh, 1993) [13]. The wood is also used for the manufacture of small boxes, trays, furniture veneers for cabinet making, carvings, coaching buildings, general turnery and wood pulp. From the branches and roots, a fabric dye is extracted. (Mohammad Imran Kozgar and Samiullah Khan 2011).

**Materials and Methods**

**Study site**

Shopian (area 612.9 sq km) derived its name from its town Shopian about which the geologist Frederic Drew stated that Shopian got the name from a distortion of word shah-payan, i.e. “royal stay”. However, the local people hold the view that Shopian was earlier named as “Shin-Van” meaning “snow forest” or “The Forest of Shias”. District Headquarter is situated at a distance of 51Km from Srinagar & 20Km from Pulwama at an altitude of 2146m (7041 ft) above sea level. The district lies in close proximity of Pir Panjal mountain range. The district is located between N 33.67614, E74.7344 to N 33.78015, E 75.01473. Presently the district consists of seven Tehsils (Shopian, Barbugh, Hermain, Chitragam, Zainpora, Keller, Keegam) 244 inhabited villages.

**Field survey and methodology**

The study was carried out from June to December wherein each village and habitation of all the villages was surveyed frequently. Besides self-study, investigations were made from native dwellers, number dars, chowkidars, patwaris and revenue department. The degraded biomass was calculated roughly, trees with more than 20% degradation (considerably degraded trees), with 20% dead biomass (partly degraded trees) and 0 – 5% dead biomass (Healthy trees). Trees lost since 1990 were counted under two categories viz naturally dead trees (trees dead with sure variety of diseases or physiological failures) and anthropogenically dead trees. Any freshly planted tree, in open areas or in protected areas as educational institutions, public parks or hospitals for ornamental and aesthetic purposes since 1990, were additionally calculated.

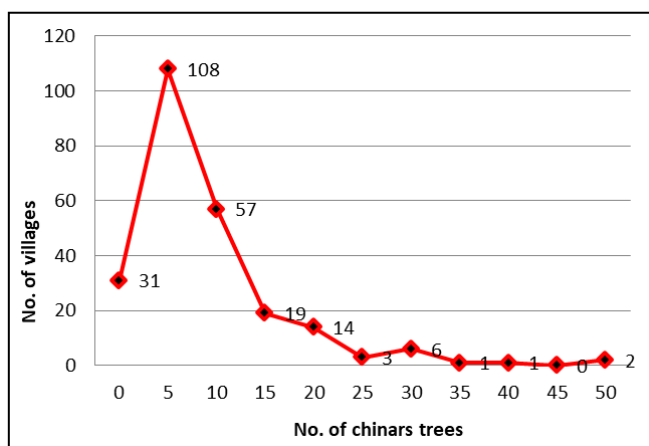


Fig 1

**Results**

The total number of existing trees of chinar in District Shopian is 1808. Most of the trees are found in the villages like Audoora, Pargochi, Batpora, Kiloora, Barbugh, Chotipora Manihal, Haripora, Homehun, Hushangpora,

Kanhama, Keegam, Narwin, Nazimpora, Nowpora, Nully Poshwari, Bongam, Bon Bazar, Sindoo Shirmal, Tengwen & Turkwangam, which have more than 20 trees of chinar. The highest no. of chinar trees were found in villages Batpora (55), 54 in Pargochi followed by Audoora with 38 chinar trees. There are 108 villages harboring just 1 – 5 chinars trees and 31 villages were such having no record of this heritage tree.

A total of 160 trees were observed as degraded, which constitute 8.85% of the total Chinar cover of Shopian. Maximum degradation was found in Dachipora, where all the four Chinar trees were felled, followed by Ganopora Arsh, Manihal and Tengwen, where three trees have been cut down in each.

The total number of completely dead trees recorded was 135, out of which 110 were destroyed due to the anthropogenic activities and 25 due to some natural cause. Total number of Chinar trees in 1990 were 2032 which were reduced to 1946 in 2005 and 1808 in 2020. The percentage degradation of trees due to human activities is 5.65% and due to natural causes is 4.42%.

The tree population has been reducing over the years. Total number of Chinar trees that were cut down since 1990 are 224, i.e. 11% reduction in population size. Between the years 1990 to 2005, 86 trees have been cut down and Between 2005 to 2020, 138 trees have faced the axe which shows overall degradation of 4.23% and 7.09% respectively. Villages like Heerpora, Padpawan, Muji Pather, Devpora, Nagbal Keller, Burihalan etc with an average elevation of more than 2000 meters amsl, do not have any sign of Chinarrather dominated by pine trees. No. of existing newly planted trees were very less; 07 in Nazimpora, 03 in Degree College Shopian and one each in Chanapora and Thairun.

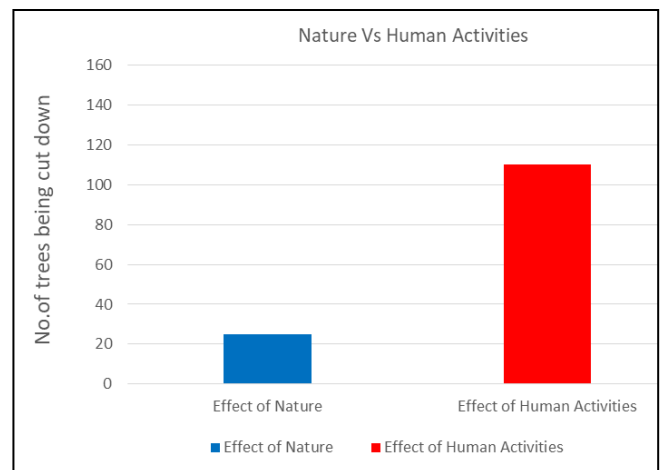


Fig 2

**Discussion**

Our study revealed that the highest number of chinar trees were found in villages like Pargochi (54), Chotipora Manihal (35), Audoora (38), Keegam (31), Nazimpora (32), Bongam (32), Bon Bazar (30), Sindoo Shirmal (32), Zainapora (42), with average age of chinar trees in entire Shopian ranges above 100 years. The research shows the pathological state of the trees except where the chinar trees are degraded or unhealthy. There are many instances where chinar trees are protected from direct anthropogenic effects at few places including Pinjura, Tukroo, and Mispur either

by fencing or by declaring them sacred. The degradation rate in 1990 was comparatively low because of less urbanization, industrialization and less construction of roads and buildings. Nevertheless, the number of trees has decreased since 1990 due to many reasons *viz.* the lawlessness of the citizens, industrialization, road macdemization, Development, housing and population growth. It is more vulnerable due to the declining ground area and the large size of the tree. In most instances, the trees are felled without any permission. Although in many areas of the Shopian district new trees have been planted, the rate of establishment is very slow. Newly planted trees need extreme care until they acclimatize and flourish effectively in the given environment, so that this heritage will be survive long. 213 villages have representation of at least one tree while rest of 31 villages has no sign of chinara. The reason being, either the villages are located at high altitude posing different environmental constraints or the trees have been cut down earlier. Other evidence support that there has been no plantation of this tree over recent past in these villages. Majority of villages (108) have less than 5 chinara trees, which depicts the vulnerability of chinara in Shopian district. Unchecked and unplanned felling of trees may soon increase the number of such villages with no chinara trees.

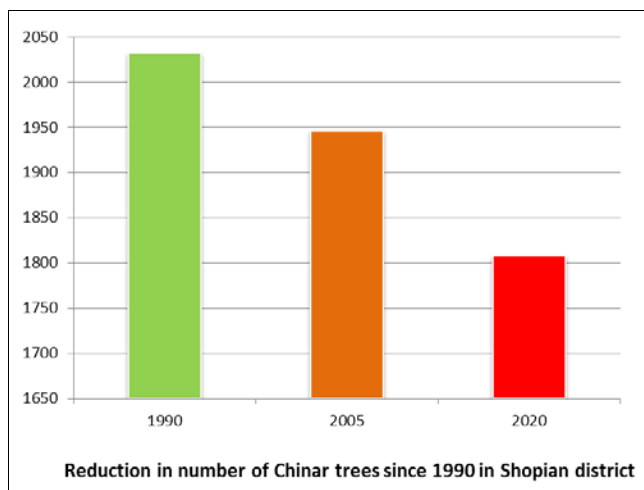


Fig 3

### Conclusion

The current study has specifically assessed the environmental status of Chinara in Shopian district. It is clear that almost every village in the district has at least one Chinara tree, with the exception of villages such as Sedow, Padpawan, Heerpora, Nagbal Keller, Cheramarg, Mujipather, which at high altitudes lack this heritage plant. After evaluating the situation in Shopian, it was found out that the number of chinara trees cut down in 1990 were lower than the last decade 2005-2020 but still degradation rate is not as much as was reported in Pulwama. The explanation for its less deterioration in Shopian than Pulwama may indeed be due to the awareness of the people and laws enforced by the government for the protection of the heritage tree. The requisite measures must be taken in order to solve the damage caused to the heritage farm. This Kashmir valley heritage tree was protected and for this government declared 15 March as "The Chinara Plantation Day". Civil society and the government must make concerted attempts, and we should urge people to plant

saplings in their homes and even in fallow areas. Save Chinaras, save natural beauty prosperity and peace should be encouraged. Without Chinara, there is no significance in Kashmiri's life. The heritage tree of our valley must be preserved and enough steps taken to rebuild and glorify our valley.

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