J. Himalayan Ecol. Sustain. Dev. Vol. 13 (2018) **ISSN 0973-7502**

Present Status of *Platanus orientalis* L. in District Pulwama of Jammu and Kashmir

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ABSTRACT

With the elevated echelon of urban augmentation in Kashmir and the associated developmental pressure, a critical point has been reached to safeguard the chinar heritage. Since chinar is the natural treasure it symbolize for the long-term future and the indifference and apathy that exists cannot be afforded which may result extinction of chinar tree. The present study has been carried out in district Pulwama to find out the magnitude of degradation and reduction spectrum of chinar tree botanically identified as *Platanus orientalis* L. and commonly known as "Bouin" in Kashmiri. The study encompassed all the four tehsils of district namely Awantipora, Pulwama, Pampore and Tral. The total number of chinar trees that presently subsist in the district is 4358, out of which 2406 are healthy and 1952 have turned old and senile. The study shows that there were 2829 chinar trees in Pulwama tehsil, 507 in Awantipora tehsil , 437 in Pampore tehsil and 585 in Tral tehsil. The overall degradation of Chinar tree in the district is 44.79%. As per the existing tree cover of district Pulwama the highest degradation (non-healthy condition) was seen in Pampore tehsil (48.51%), followed by Awantipora tehsil(45.36%), Pulwama tehsil (45.35%) and lowest was seen in Tral tehsil (38.8%).The study revealed that reduction rate of *Platanus orientalis* increased since 1990. From 1990-2000 the reduction rate increased from 7.8% to 12.3% from 2000-2014. During this time only 159 new trees have been planted. Among them mostly are in the tehsil Pulwama. The degradation and reduction (natural and anthropogenic) spectrum as analysed for the chinar trees encountered. During the survey it was revealed that the process of degradation and reduction of chinar tree is going on an alarming rate which is a serious matter of concern. Furthermore, the tree has been found exterminated in almost all high altitude villages and habitations (above 1750 m amsl) of the district.

Key words: *Platanus orientalis L, Kashmir, Pulwama, Anthropogenic, Degradation*

INTRODUCTION

The plant *Platanus orientalis* L. called as Plane or Chinar,is a decidious tree, naturally found in south-eastern Europe, Middle East and India (Kavadas, 1956.; Saima, 2018). Chinar is found naturally in riverine soil; however, it is quite capable of thriving in

dry soils as well, once it is established. The tree known for its elegance and exuberance has remained an attraction for artists and litterateurs. Kashmir Valley is the home of world's oldest chinar tree (627 years old) which is located in village Chattergam of district Budgam, believed to be planted in 1374 A.D by an Islamic mystic Syed Abul Qaim Hamdani (RA) who accompanied Mir Syed Ali Hamdani (RA) from Iran to Kashmir, which has a girth of 31.85 m atground level and 14.78 m at breast height (Wadoo, 2002). In the Kashmir valley almost every village has at least one tree (Lawrence, 1895). The tree is basically planted for ornamental purposes, especially by roadsides and parks (Mozaffarian, 1994 and 1996; Abdullah, 2017) and is one of the main features of gardens in Kashmir (Rix and Fay, 2017). It is widely planted to improve the microclimate (Pourkhabbaz *et al*., 2010), and also utilized for medicinal values (Ganaie and Nawachoo, 2003). During 1990's due to turmoil in the valley, destruction of chinar trees took place at large scale and the trend has not stopped yet. The tree is feeling the brunt of ongoing widening of the national highway (NH I) in Kashmir valley, other roads, railway track construction and increase in other commercial constructional activities. In spite of enjoying status of state tree and having legal protection, the tree is facing a huge risk for its existence within the valley. Active participation of local communities is a critical component towards the conservation of chinar tree in Kashmir valley. Framing of laws is not sufficient to preserve the tree but at the same time awareness must be raised among the masses for its preservation. Serious steps must be taken to expedite social forestry to improve the diminishing condition which in turn can prove more beneficial. Social inclusion is the core element of conservation of chinar tree, local participation should be made a major tool for protection and management and in return they must be given right to harness the tree for their domestic benefits (fuel, timber etc.) in judicious way. Further government and concerned authorities should start awareness programmes regarding importance and protection of heritage tree and should encourage plantation drives in education institutions, idle lands and forest areas. The species is also considered threatened within some countries and has been classed as Data Deficient due to insufficient population studies (Baristow and Rivers, 2017). No systematic scientific study related to *Platanus orientalis* has been carried out so far in the world and particularly in Kashmir. Pulwama is typical district of Kashmir valley with all the general features of the valley. The present study has been carried out keeping the objective of enumerating the number of the trees and to assess their environmental status. The results can be extrapolated for the whole valley to provide a general picture for time being.

MATERIAL AND METHODS

Study area

District Pulwama (area 1086sq. Km), a district of south Kashmir is one of the most affected area with respect to the obliteration of the chinar trees (Saima, 2018). The district is located at 33°37'-34°06' N latitude and 74°33'- 75°14' E longitude with an average altitude of 1630m amsl (Singh and Andrabi, 2014).

The district is flanked by two high mountain ranges namely Zanskar range in north-east and Pir Panjal range in south-west side. It is bounded by Srinagar in the north, in the west by Shopian and Budgam and in the east and south by Anantnag and Kulgam. Pulwama district comprised of 550 villages, which until 2007 were grouped in 5 tehsils including Awantipora, Pampore, Pulwama, Shopian and Tral. District Pulwama was bifurcated in to 2 districts in 2007 viz. District Pulwama and District Shopian. District Pulwama now has 4 tehsils viz. Awantipora, Pampore, Pulwama (Kakapora, Pulwama, Rajporaand Shahoora) and Tral (Tral and Aripal). The total number of villages came down to 331 and 4 Community Blocks. The total area of the district is 951Km^2 (Mir and Saleem, 2016).

Table. 1. Showing approximate geographical area of different tehsils of district Pulwama

Tehsil-wise total geographical area of district Pulwama		
Name of the Tehsil	**Area (Km^2)**	**Constituencies and villages**
Pulwama	356	206 villages, 4 constituencies Shahooora, Kakapora, Pulwama and Rajpora
Tral	365	88 villages
Pampore	215	30 villages
Awantipora	151	49 villages
Total	1086	373 Villages

Source: State Revenue Department J&K 2016.

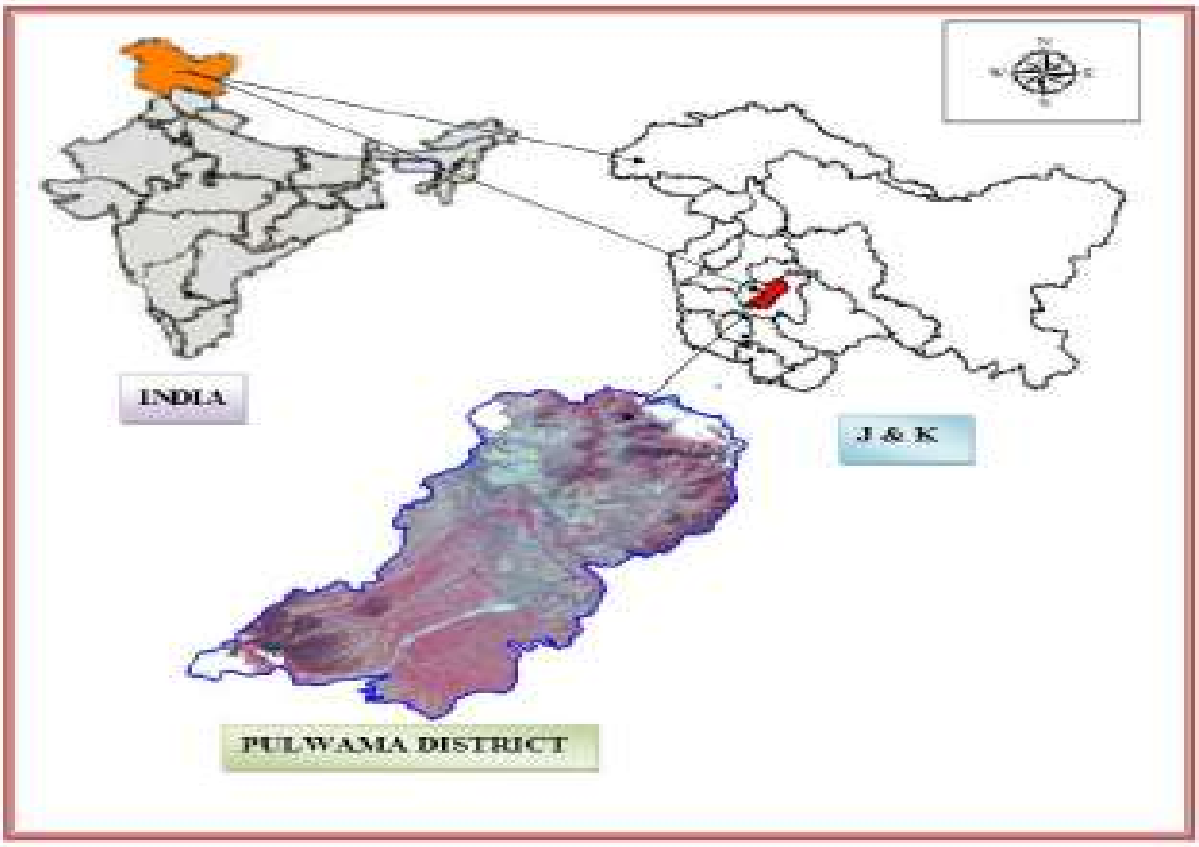

Fig. 1. Showing district Pulwama map

Field survey and methodology

The study was carried out in 2014-2015 wherein every village and habitation of all the four erstwhile tehsils (Pulwama, Pampore, Awantipora and Tral) were visited. All the villages were surveyed regularly and besides self-study, investigations were made from local dwellers, numberdars, chowkidars, patwaris and revenue department as well. The biomass was estimated roughly, Partially degraded trees (with dead biomass less than 20%), Significantly degraded trees (with dead biomass more than 20%) and Healthy trees (with no or less than 5 % dead biomass). Trees lost since 1990 were calculated as naturally dead trees (trees dead without human intervention or with certain type of diseases) and anthropogenically dead trees (trees dead due to direct human intervention). Further newly planted trees since 1990 were also calculated (all those trees planted in open areas or in protected areas as colleges, parks and hospitals for decorative purposes).

RESULTS AND DISCUSSION

The number of existing chinar trees at present in Tehsil Pulwama were found to be about 2829. More than 20 chinar trees were found in villages like Achan, Arihal, Chandgam, Bundzoo, Bellow, Bonoora, Chandpora, Deer, Drusoo, Gabarpora, Gooso, Haal, Kakapora, Khedarmooh, Koil, Mitrigama, Newa, Payer, Pirtaki, Rahmoo, Tomlahal and Vasoora. Out of the 2829 chinars, number of degraded trees constitutes 1283 accounting for 45.35% of the total tree cover of tehsil Pulwama (Table 1). The total number of trees lost since 1990 in the tehsil account for 776. A general degradation spectrum was seen almost in all villages of tehsil Pulwama, however most affected villages were Sirnoo, Monghama, Drussu, Washbugh, Bellow and Rajpora villages. Correspondingly the number of trees in tehsil Awantipora were 507, out of which 230 trees are degraded which is about 45.36% of the total tree cover of the tehsil. In tehsil Awantipora, 20 or more chinar trees were found in Awantipora town and villages of Panzgam and Malangpora only. It was also found that about 100 chinar trees were hacked along the national highway (NH-1A) during its various construction phases. Likewise in tehsil Pampore more than twenty chinar trees were found in Shaar Shali (61), Pampore town (53), Khrew (51), Lethpora (29) and Wuyan (23) villages. Out of the total 437 trees about 212 (48.51%) were found degraded. Highest degradation in the tehsil was seen in the villages of Androosa, Khrew, Dusoo and Lethpora. The total number of dead trees in the tehsil since 1990 is 142. In tehsil Tral, most of the villages have very few number of chinar trees. The total number of chinar trees existing at present in Tral Tehsil is 576. Highest number of chinar trees were found in Gang (96) being a small habitation, followed by Tral town (80) and Monghama (24).

Total number of trees in tehsil Pulwama in 1990 was 3440, which was reduced to 3164 in year 2000 and 2829 in 2014. Since 1990 number of dead trees accounts to 742 (137 naturally and 605 anthropogenically), a reduction of 17.76% to the original number was found. During this time only 131 new trees have established that too in colleges, schools and few in public parks. In tehsil Pulwama human activity was found responsible for 81.5% of the total reduction whereas apparent natural causes were found responsible for 19.5% of the reduction. Similarly the total number of trees in tehsil Awantipora in 1990 was 632, since 1990 one hundred and sixty (160) chinar trees have been lost but only four new trees have been established, resulting overall reduction of 23. 52%. It has been found that 71.2% of the chinar trees were damaged

anthropogenically and about 28.8% were affected naturally in the tehsil Awantipora. The number of trees in tehsil Pampore dwindled from 542 in 1990 to 526 in 2000 and437 in 2014, which is a reduction of 19.37% of the original number. The total number of trees in tehsil Tral was 732 in 1990, which was dwindled to 576, which implies that Tral witnessed the reduction of 20.73%.

Humans have always been ignorant about the benefits of nature and the pit they put themselves in is depressing. Owing to turmoil and increase in habitational areas, population and various constructional works (houses, schools, hospitals, government departments etc.) are main reasons behind the degradation and reduction of *Platanus orientalis* tree cover. The dwindling numbers of *Platanus orientalis* is one of the sad and symptomatic stories of the environmental and cultural heritage threats that exist in Kashmir, and illustrate the present state-wide ignorance and apathy towards the values of centuries of traditions and harmonic coexistence with nature and place. The present study seems that the plantation of the chinar tree has remained a conscious and deliberate social cause as otherwise the tree has no such a big economic importance, neither its wood has remained any product of demand. The tree has got acclimatized very well with the environmental conditions of valley; the favourable altitude within the study site is up to 2000 meters above sea level. The present study also reveals a pathetic situation of trees, except in few places; however at places like Khangund (Tral), Tengpona, Tiken and Kakapora, the chinar trees are fenced and protected partially from direct anthropogenic effects. The study also revealed that most of the tree number decline is due to the direct anthropogenic factors rather than natural causes. River Jehlum passes through tehsil Awantipora and a large part of it are swampy areas not fit for growth and survival of chinar. The tehsils of Pampore and Tral have a large kerawa (plateau) area which usually remains dry and therefore resulted in reduction in the establishment of the chinar trees. Further a large part of these tehsils is mountainous and therefore unsuitable for chinar tree growth. A sharp decline of trees since 1990 can be attributed to lawlessness which prevailed in the state and also to the rapid growth of population and unscientific urbanization which is still rampant in the State (Saima, 2018; Gozkar and Samiullah, 2010; Raina, 2010). Even though the chinar tree enjoys a status of 'heritage tree' but its wanton cutting is still prevalent in the region purely because of poor implementation of the concerned laws.

Table 2. Tehsil-wise present status of chinar tree in district Pulwama

S. No.	Name of tehsil	Total number of existing tress	Partially degraded trees	Fully degraded trees	Number of healthy trees	Naturally dead trees	Anthropo-genically dead trees
1.	Pulwama	2829	854	429	1546	137	605
2.	Awantipora	507	176	54	277	15	145
3.	Pampore	437	151	61	225	29	112
4.	Tral	585	160	67	358	30	131
Total		4358	1341	611	2406	211	993

Table 3. Tehsil-wise reduction of chinar trees since 1990

Name of tehsil	No. of trees in 1990	No. of trees in 2000	Total number of trees in 2014	Total number of trees lost since 1990	No. of newly established tree since 1990
Pulwama	3440	3164	2829	742	131
Awantipora	663	603	507	160	04
Pampore	542	526	437	141	16
Tral	738	673	585	161	08
Total	5383	4966	4358	1204	159

Source: Revenue department Pulwama

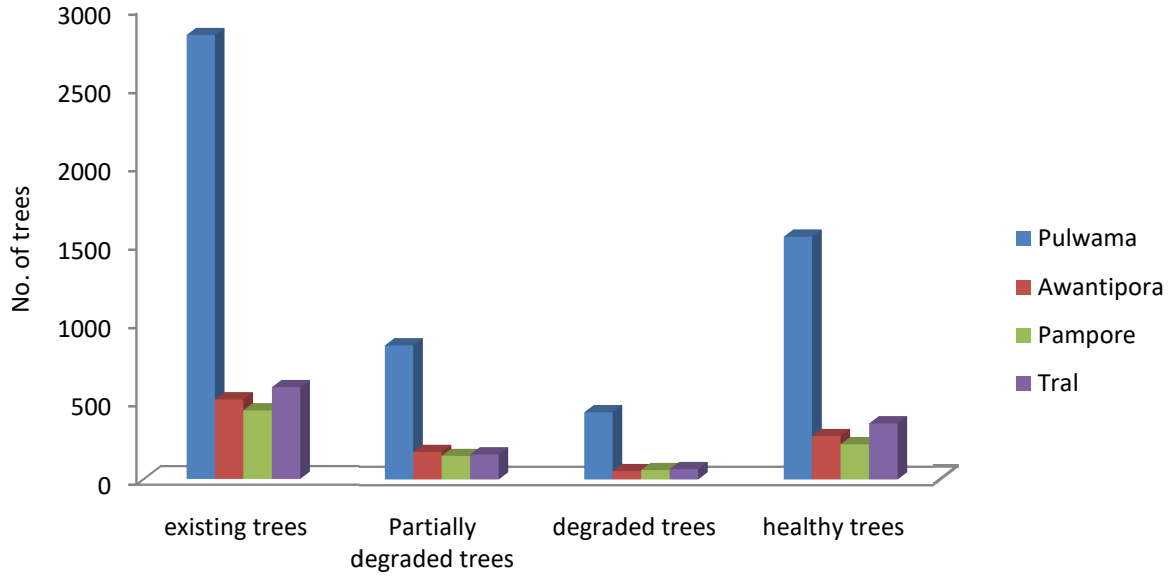

Fig. 2. Environmental status of chinar tree in district Pulwama

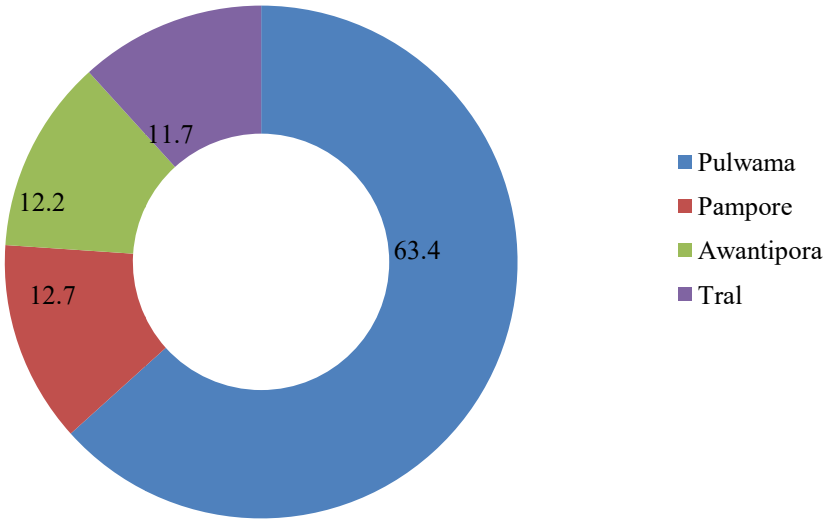

Fig. 3. Graph showing %age wise degradation in various tehsils of district Pulwama

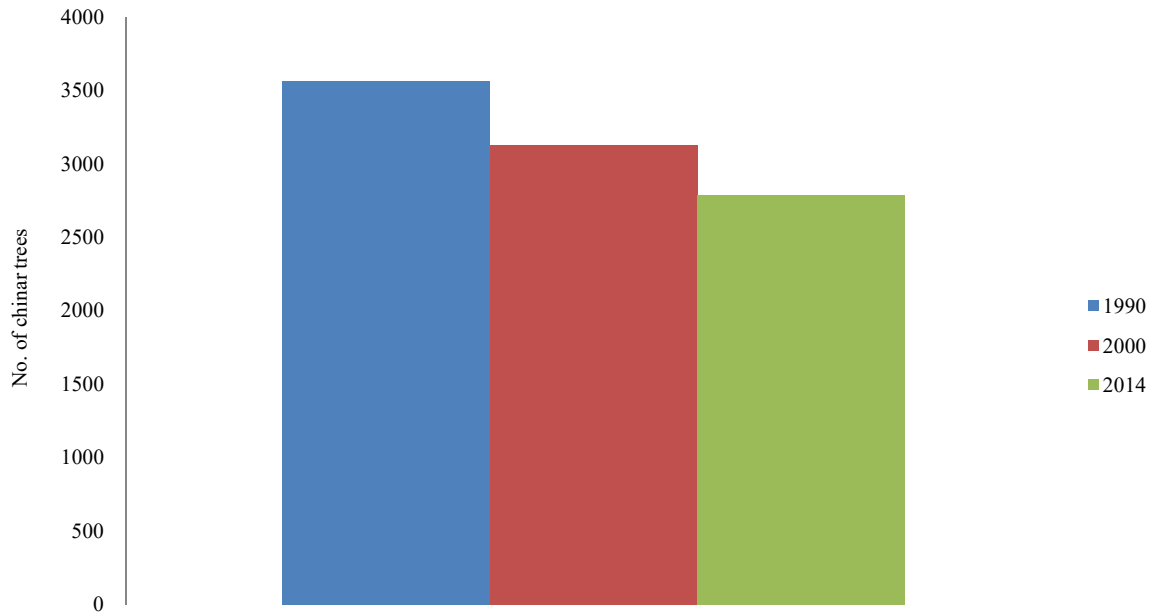

Fig. 4. Graph showing reduction of chinar tree in tehsil Pulwama since 1990

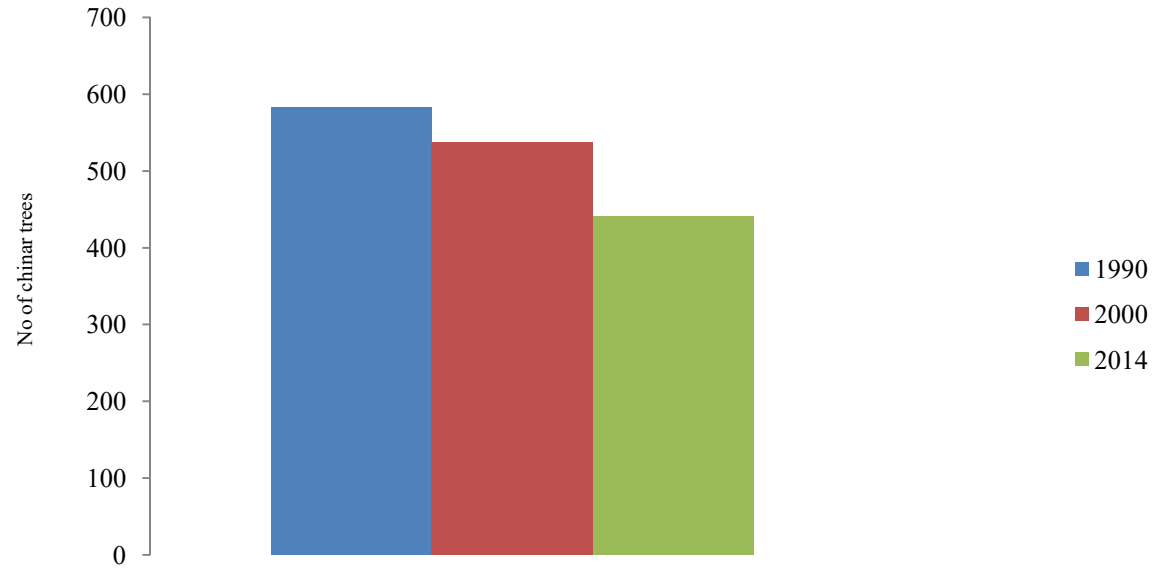

Fig. 5. Graph showing reduction of chinar tree in tehsil Pampore since 1990

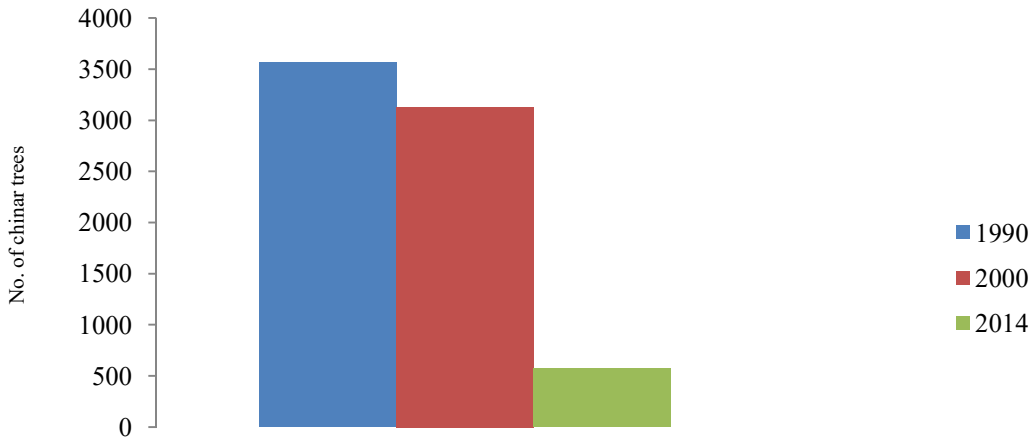

Fig. 6. Graph showing reduction of chinar tree in tehsil Awantipora since 1990

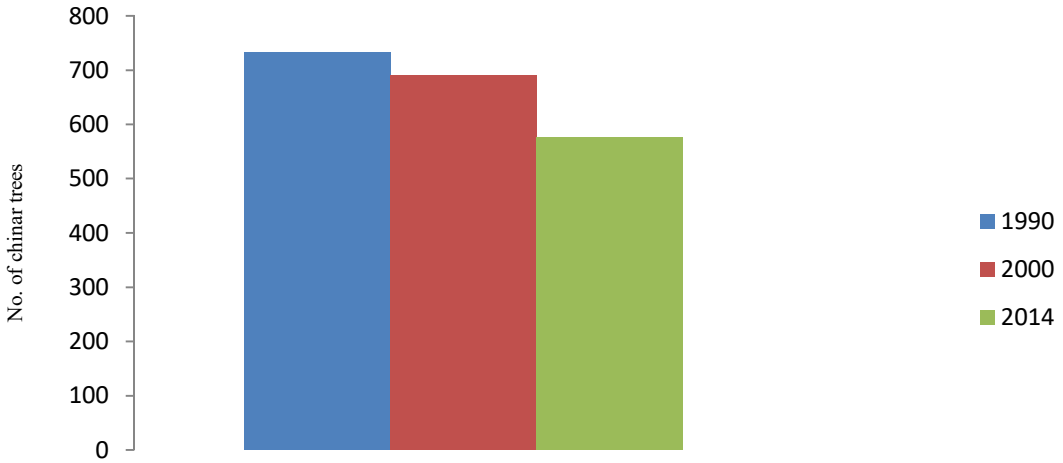

Fig. 7. Graph showing reduction of chinar tree in tehsil Pampore since 1990

CONCLUSION

The current study clearly evaluates the environmental status of chinar tree in district Pulwama. From the study it is evident that the chinar tree is facing the axe ruthlessly at an alarming rate. The degradation in Pulwama district is 45% of the total trees cover and almost 23% of the tree is reduced since 1990. Hence it is important that the steps must be taken to drastically reduce the rate of degradation. A conscious effort at civil society level as well as at the government level must be taken to protect

this precious heritage of Kashmir. Laws are to be modified and government agencies which are responsible for their protection are to make responsible for their census, management and protection. Chinar tree should be given real status of heritage tree by implementation of legal protection, halting the corrupt tolerance of illegal felling, high penalties for damaging and felling chinars. A 'Chipkoo' type movement should be launched to spread the awareness about the importance of the Chinar trees.

REFERENCES

Abdullah, P. 2017. *Platanus orientalis* L, http: // www.efloras.org/ florataxon. aspx.

Baristow, M. and Rivers, M.C. 2017. *Pltanus orientalis,* Oriental Plane-Tree. The IUCN *Red List of the threatened species*. ISSN 2370-8235.

Ganaie, K.A. and Nawachoo, I.A. 2003. Traditional treatment of toothache by Gujjar and Bakerwal tribes of Kashmir in India.

Gozkar, M.I. and Samiullah, K. 2010. Economic importance of chinar tree. *Science Reporter,* 54-55

Kavadas, D. 1956. Botanical Flora Dictionary. Athens, Genus Plantanus, **Vol-VII**; 3171-3174

Lawrence, S. W. R 1895 Kashmir Gazetteer, *History of Kashmir Valley* (II) 189-190

Mir, K.A. and Saleem, M. 2016. *District Survey Report of Pulwama District*. Geological Division Directorate of Geology and Mining, Srinagar, Jammu and Kashmir

Mozaffarian, V. 1994. Plant Systematics, dicotyledons. Daneshe *Emrooz Publications, Tehran,* **2**: 35-36

Mozaffarian, V. 1996. A dictionary of Iranian plant names. *Farhange Moaser publications Tehran*, 418-419

Pourkhabbaz, A., Rastin, N., Olbrich, A., Langenfeld-Heyser, R. and Polle, A. 2010. Influence of Environmental pollution on leaf properties of urban Plane trees, *Platanus orientalis* L. Bull. *Environ Contam Toxicol*., **85**: 251-255

Raina, J. N. 2010. Chinar trees of Kashmir, Deccan Herald.

Rix, M. and Fay, M.F. 2017. Platanus orientalis platanaecae. *Curtis Botanical Magazine*, **34** (1): 857

Saima, F., Yadav, B. L., Sumyra M. and Krinpal K. S. 2018. Distribution Pattern & Phenology of Platanus Orientalis growing in Kashmir,

Trends in Biosciences 11(4), Print: ISSN 0974-**8431**: 475-478

Singh, H., Andrabi, R.H. 2014. Changing landuse/ land cover analysis in pulwama district of Jammu and Kashmir. *International Journal of Scientific and Research Publication* **4**(8):1-8

Wadoo, M. S. 2002. Heridity Trees of Kashmir Valley especially Devdar and Chinar, *Trees of Our Heritage* (II) 94-126