

Study on Quality and Quantitative of Dead Wood in Beech of Shast-kolate Forest and Compare with Europe Beech Forest

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Abstract: Study on dead wood is necessary for arrive to stability forest management and management with nature. Thus in this study attempted to therewith survey in quantity and species of dead wood at permanent plot of Shast-Kolate forest, too study quality survey in that and results compare with similar studies in Europe beeches forest. Results in this study shows that dead fallen trees frequency was 5.95 fold dead standing trees frequency. In logs trunks of three quality degree was more of other degree. Whereas in snag trunks with two quality degree have more frequency. So from advice quantity dead wood volume with beeches of Netherlands Dassenberg forest and Germany Bw Feldseewald forest was very proximate. In this forest unlike montane forest reserve of Europe beeches had low ratio dead wood volume to standing volume.

Key words: dead wood, Europe beech, Shast-Kolate, quality degrees, permanent plot

INTRODUCTION

Forestry with nature called type of forestry that in it try in the forest management follow of nature. Mean try nature laws of forest interpolation in booklet of forestry plan. Prerequisite of this subjects is based studies for recognize of this laws. Dead woods appropriate important section of natural forest ecosystems that play a great role in formation of one stand of sustainable and living. Dead wood is one of main portions of natural forests and significant aspects of formation of biodiversity in forest sites^[4]. In Europe, the volume of standing and fallen dead wood is one of nine pan-European indicators for sustainable forest management (criterion 4: maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems)^[12]. Studies dependent to dead woods at virgin forests ratio to permanent plot have this defect that at this forest created very human changes. Thus, in Nature-based forest management can not attention to results of done studies at such forests as indicator and scale. Researches of dynamics of natural forest stands usually does in survey permanent plot ^[6]. So, we can just use done studies at such plots in find relation between forest dynamic on dead wood volume and those quality in forest stands. Nowadays, sustainability of ecosystem is one of basic principles of modern forestry. Nature-based silviculture is acceptable as hoper theory for receive to indicator of sustainable forest management^[7]. With accept this theory, forest

ecosystems of natural and virgin use as first reference for forest management imitation of structure, process and dynamic of such regions formed base purposes of management^[1]. For provide appropriate context for workable performance Nature-based system silviculture, must exist good recognized of properties related to natural forest of region. One of important properties of natural forest that silviculturist using of that as natural indicator of forest^[14] is dead wods. Thus, we tried to surveyed properties of Coarse woody debris (CWD) in permanent plot of Shast-Kollate forest.

MATHERIAL AND METHOD

2.1. The Case Study: Shast Kolate forest is located 3 kilometers northwest of Gorgan city. Present study done at 32 parcel this forest with an area of 80 ha it lies in longitude and latitude of 36 degrees, 45 minutes, to 36 degree, 41 minutes and 54 degrees, 24 minutes, to 54 degree, 20 minutes from north on crop farms, from east on Chomagh vale and Pashmalvin vale, from west on Shast Kolateh river and south is limited by Leila montaine^[5].

2.2. Survey Method: Part of 32 Parcel on area 16.9 ha selected for perform investigation (permanent survey plot). Inventory does with census method. Sake collect data, all snag (dead standing trees) and log (dead fallen trees and stumps) measure by meter and caliper and record diameter, length and height of dead wood.

Quality of dead wood Graded with number of 1, 2, 3, 4 and then determined quality degree of snag and log and those together compare. Living wood volume and Total CWD volume compare with results some of done studies in number of beech forests of Netherlands, France, Slovenia, Germany and Czech Rep. for statistical analysis used from software of Excel and SPSS.

3. Results: Results of this study showed that dead fallen trees commonly fallen in southwest side. Much number of dead trees existent in permanent plot of Shast Kolate to reason decay was not very recognizable (20.68 percent of Total CWD volume, 13.83 m³/ha). Maximum of dead wood volume was to beech species (62.92 percent, 42.07 m³/ha). *Carpinus betulus* (11.17 percent, 7.47 m³/ha) and *Paritia persica* (5 percent, 3.34 m³/ha) the volume of a considerable level of Dead wood allocated to themselves and other species they are not a considerable volume (0.23 percent, 0.15 m³/ha) (No. 1 chart).

But many in the frequency of dead trees in the diameter classes, the diameter chart number 2 indicates that diameter classes lower have much frequency. The diameter classes of 30, 35 and 20 respectively the largest number of dead trees allocated to execute. Diameter average of dead standing trees was 67.13 centimeters. This is while diameter average of fallen dead trees was much less and 41.22 centimeters

In the number of the greatest level of related to the *Fagus orientalis*, *Paritia persica*, *Carpinus betulus* has been while living trees in the highest number of trees to *Fagus orientalis*, *Carpinus betulus* and *Paritia persica* belonged (no. 1 chart). It also, this chart represents of many different snag and log frequency in 32 parcels. Also measurement length of dead trees showed that log on the average of 10.48 meters long enjoyed and snags also an average length 9.68 meters.

Also qualitative studies in this stand that was done summary of the results of these studies in the table number 2. Based on this table stocks degree 3 compared to the highest in the log constitutes (33.89 percent, n=121). Stocks degree 4 compared to the least in this group of dead trees allocated (16.81 percent, n=60). But in front of the group standing dead trees compared to the highest degree stocks 2 allocated (41.67 percent, n=25) And the lowest level compared to stocks 4. (6.67 percent, n=4).

Also according to the table had frequency log are much frequency snag and 5.95 before it is. In total about 417 dead tree level in 16 hectares of recognized parcel 32 of series 2 forest evaluated 357 trees that of the trees related to the log and 60 trees related to the snag. In comparison with the Chelir section of forest Kheyrod Kenar^[20], dead tree with a degree 3 decay like

this forest of the least frequency to have. Many dead tree of degrees 4 have very importance in the regeneration of tree species like beech plant trees regeneration is more around dead tree of degrees 4.

In comparison with Europe beech forest ratio the total CWD volume on living wood volume in the forest Shast Kolateh was very lower than this forest. In a manner that has been recognized forest reserves in north west of Europe CWD on living wood ratio of posted 30 percent and Mountain beeches in Central Europe this level was 37 percent While in the forest Shast Kolateh only 13.36 percent has been estimated. This is while Christensen *et al.*^[2] studies have shown that the volume of dead woods in the mountain beeches is more than the lowland and submontane. With regard to the fact that plot of a permanent forest Shast Kalateh in the mountainous part that is because of low rate of 36% can be as old as established permanent plot again. Why studies that Christensen *et al.*^[2] has shown that the level of dead woods in reserves with more established as old as above the reserves with established is as old as lower.

Also compared the volume of dead woods in the forest Shast Kalateh with of European virgin beeches (Table 4 and chart 4) showed that the level of dead woods in this forest with the forest of Dassenberg Holland^[16] and Bw Feldseewald Germany^[11] kinship had a lot. In the forest Shast Kolateh like European beech volume level of fallen dead tree more than the standing dead trees. Of course in the Bw Feldseewald Germany forest level of the standing dead trees more than fallen dead trees. With being a lot kinship level of dead wood in Shast kolateh forest with the forest has been mentioned for the least level of dead wood in the between forests surveyed has Shast Kolateh forest.

4. Discussion: Study and survey now, to do with purpose recognize some of the communication between dead wood and some other forest character. The results of this study, indicates that dead trees was in virgin forest in a low quality of (snag with degree 2 and log 2.46). A large part of the volume of dead woods (20.68 percent) to unknown species allocated. Reason to remain anonymous this high percentage was very decay of this group of dead woods. On this basis and with regard to the fact that dead trees usually with varying degrees of quality lower (3 and 4) are increased in this group have been in increase of beech regeneration quite ineffectual great role. Frequency have been generally fallen dead trees (85.61 percent, 41.8 tees/hectares) more than the frequency of standing

Table 1: divisions based on qualitative snag and log in the Shast Kollate forest*

	Degree 1	Degree 2	Degree 3	Degree 4	total
Frequency log	71	106	121	60	358
percent	19.8	29.6	33.8	16.8	100
Frequency of snag	11	25	20	4	60
percent	18.33	41.67	33/33	6.67	100

* Reference: Research findings

Table 2: qualitative divisions of dead tree based on a decay in the Chelir section of forest Kheyrod Kenar*

	Degree 1	Degree 2	Degree 3	Degree 4	Total
Percent	35	30	28	7	100

* Reference: Zolfaghari, 2004

Table 3: The average volume of dead wood in two forest type mountain reserves and lowland/submontane Europe and Shast Kalateh

Forest type	Montaine beeches of Europe central	lowland/submontane beeches Europe north west *	Shast Kolateh forest
Living wood volume (m3/ha)	625	538	500**
Total CWD volume (m3/ha)	220	131	666.81***
CWD/living wood ratio (%)	37%	30%	13.36

Reference: * Christensen *et al* 2005, Daneshvar, 2006, *** Research findings

Table 4: Compared with the results achieved from European beech forests in different countries

country	Czech rep.	Czech rep.	France	France	Germany	Netherland	Netherland	Poland	Slovenia	Iran
Area of forest (ha)	47	10	336	36	102	12	15	1	16	16
Living wood volume (m3/ha)	772	567	-	260	423	402	507	596	660	500
Minimum diameter (cm)	10	10	1	5	7	5	5	6	10	17.5
Standing dead tree volume (m3/ha)	74	52	8	55	39	18	8	34		24.97
Fallen dead tree volume (m3/ha)	185	101	25	165	23	43	56	148		41.84
Total dead tree volume (m3/ha)	285	153	23	220	62	61	65	182	166	66.81
Total CWD volume/living wood ratio (%)	30	24		85	14	16	13	31	25	13
Snag/CWD ratio (%)	29	34	25	25	63	30	13	19		38
Reserve establishment (year)	151	61	89	156	36	19	19	36	96	6
Reference	Vrska et al. (2001b)	Vrska et al. (2000a)	Garrigue and Magdalou (2000)	Wijdeven (2003)	Labudda (2000)	Van Hees et al. (2004)	Van Hees et al. (2004)	Jaworski et al. (2002)	Rozenbergar et al. (2003)	Daneshvar, 2009

dead trees (14.39 percent, 24.97 trees/hectares). This subject with the old plot of a permanent forest Shast Kolateh related. For a very short period of time (7 years) of this plot as a plot of a permanent passes. As mentioned have been reserves as old as any longer with a volume of dead wood have been more^[2]. So he returns to the sustainable management of country's beech forests lasting more than dead woods had fallen

to standing dead woods in the form virgin in nature to remain and in the laws governing the harvesting program's plans to make use of the dead woods has been particularly logs. Also with regard to the number of at least dead woods sandals that are a hole and in creating centres and habitat for life hole worn creatures are a lot of attentions^[9,13]. Returns recommended that protection standing dead woods more in the managed forests.

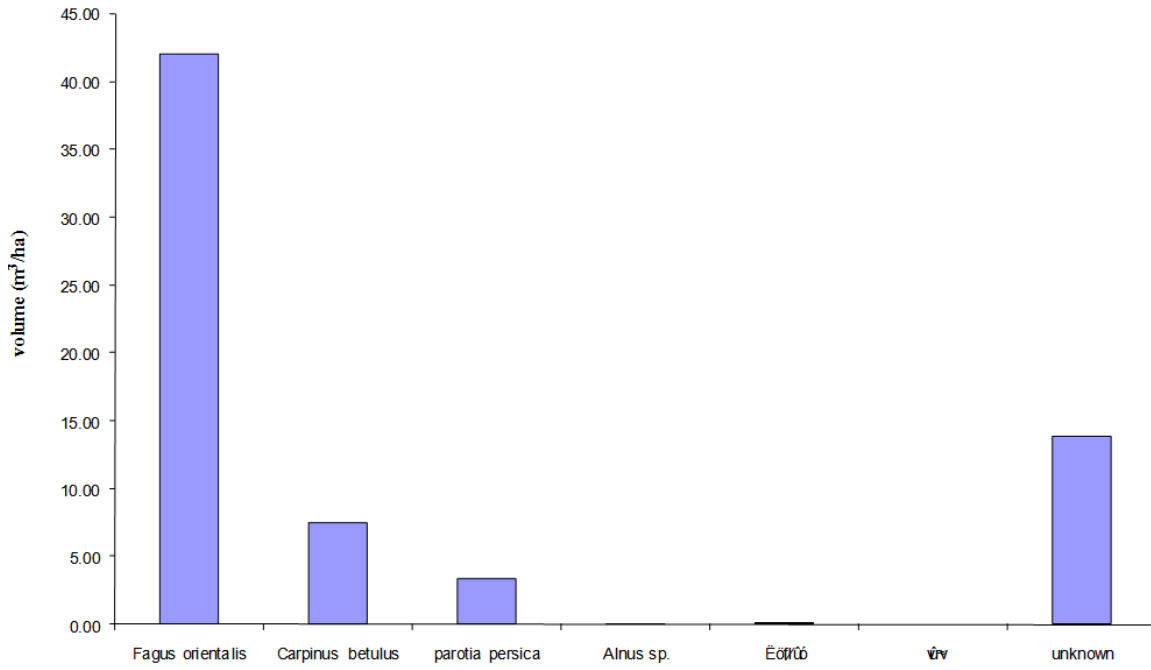


Chart 1: Percent volume dead woods the separation of a spices

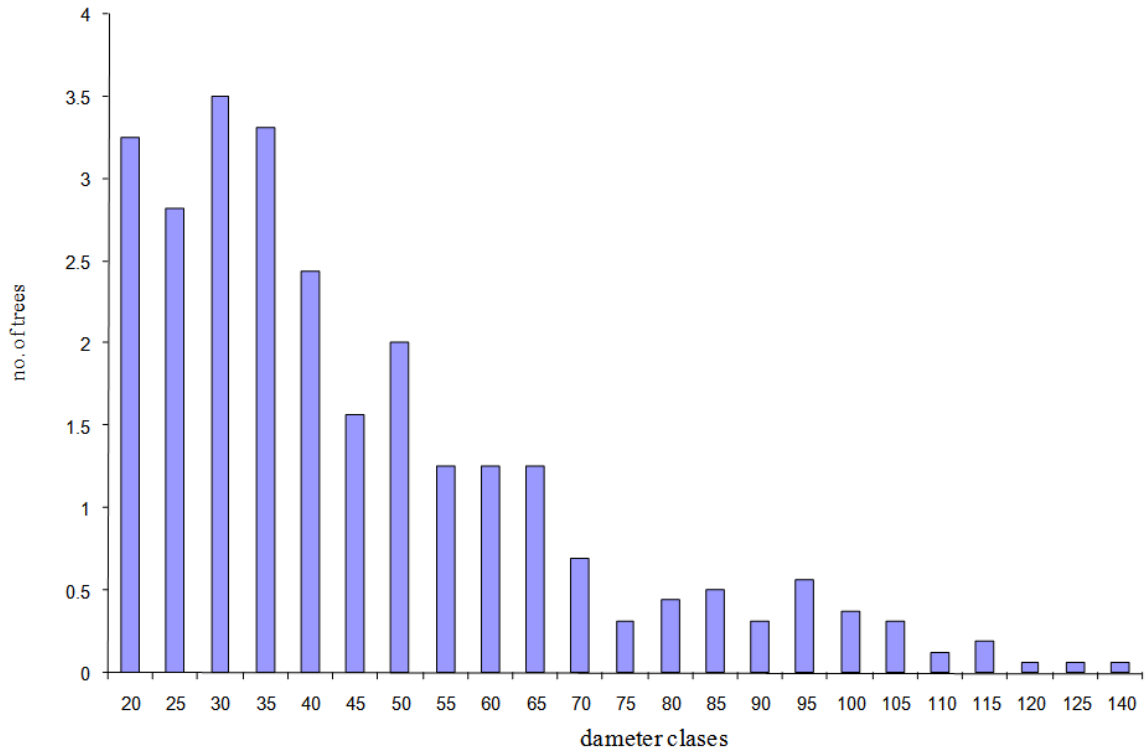


Chart 2: Volume of dead trees in diameter classes in Shast Kolateh forest

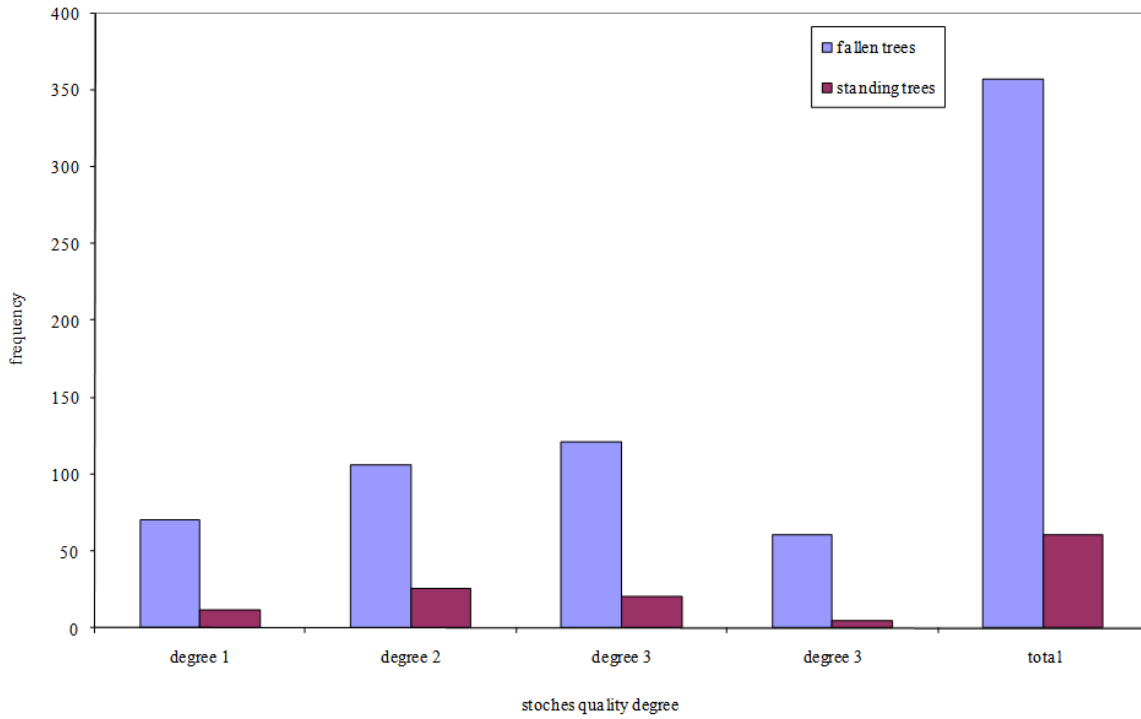


Chart 3: Frequency compare of snag and log them in different degrees of quality

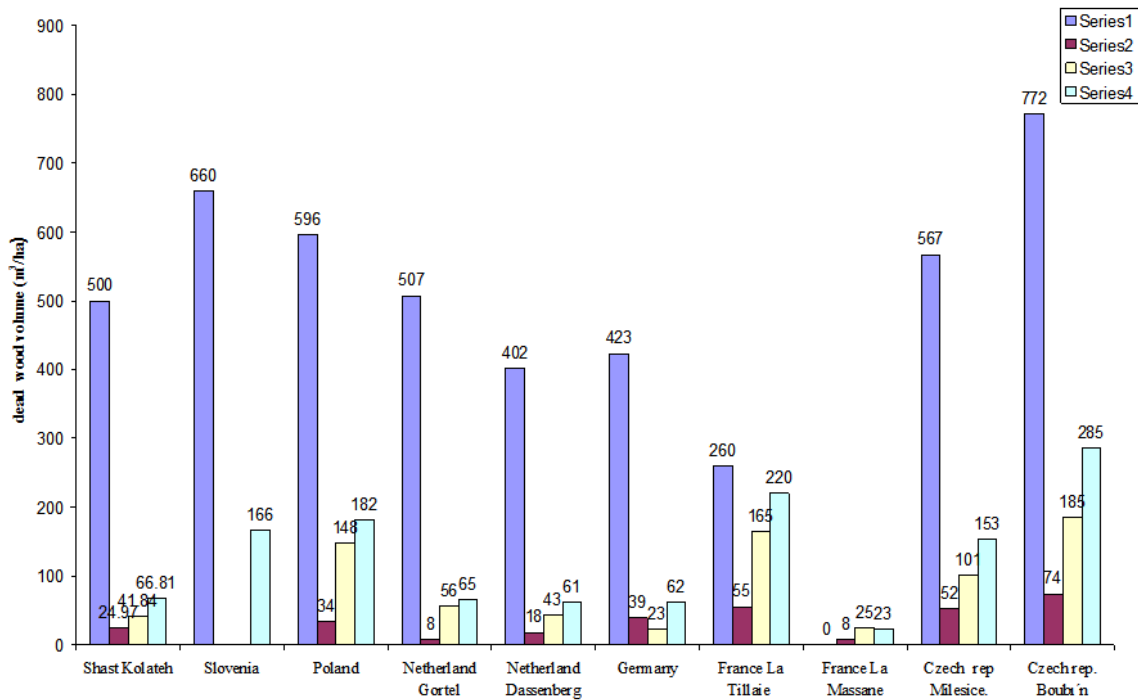


Chart 4: Comparing the volume of dead wood and the volume of the living wood Shast Kolateh forest with the results achieved forests beech European countries in different countries.
 Series 1: living wood volume, series 2: snag volume, series 3: log volume, series 4: Total CWD volume

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