

Silvicultural Evaluation of Storm Damage of Fir (*Abies bornmülleriana* Mattf.) Stands in The Ilgaz Mountains - Turkey

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In Kastamonu Regional Forest Directorate region, that is one of the richest forest region (752 398 ha, 3.6 % of total forest areas) in Turkey, every 5-7 years, a large amounts of unusual allowable cut occurs owing to storm and snow damage. In 11 years period, from 1991 to 2001, 2 089 702 m³ unusual allowable cut befell in the region. This amount is 3.36 % of total yield (62 140 914 m³) of coniferous forests of The Regional Directorate. In a way, 0.3% of the total yield of Regional Directorate breaks down, annually. Usually, the damage intensify on the high altitudes (above 1600 m), and in juvenile, unstable, unsatisfactory thinned and over yielded stands. In the juvenile pine stands, the damage happens in the type of snow breakage whereas in the mature fir stands which to show tendency to change from selection stands to the one-storey stands, the damage happens in the type of storm turndown. It's determined that in Eceler Forest Division, in 2 years period (2001-2002) the total fir unusual allowable cut is classified as 47% of storm breakage, 30.6 % of storm turndown, 22.4% of staghead.

20.6% of total damage (431 413 m³) of The Forest Regional Directorate arised in Kastamonu, İhsangazi, Karadere Forest Enterprises which are on the northern slope of the Ilgaz Mountains in 11 years period. Separately, it's determined that 73.2% of this amount (315 839 m³) arised in only 6 Forest Division (Merguze, Eceler, Kuzyaka, Bostan, Handuzu, Karadere) which are on the foot of the Ilgaz Mountains. What's more, 62% of damage (197 173 m³) is in the selection stands and 78.6% of this amount consist of fir. Because of this situation, explained above, everybody but especially the Foresters have to care about on the fir stands in the region. The unusual allowable cut amount reduced from annual selection yield. So, due to lack of orderly planning of annual yield, convenient silvicultural treatments can't be carried out, in the fir selection stands properly. Also, the large limit diameters are not suitable for these fir stands. Because, the damage amount in the fir selection stand increase while the breast height diameter enlarges. In Eceler division, in 5 years period (1998-2002), the total damage amount of fir stands can be categorized as 25.7% in breast height diameter class 2 (20-35.9 cm), 45.2% in class 3 (36-51.9 cm), 29.1% in class 4 (>52 cm). Owing to these problems, more and more slowly, the fir stands of the Ilgaz Mountains have been collapsed. Besides, the ratio of pine decreases every day because of rapine and faulty treatments. But, these stands are very valuable. First of all, these fir stands spread on the passing region from the forests of The Black Sea region (humid) to the forests of the inner Anatolian region (dry). And these forests have notable functions, such as drinking water supply, recreation, tourism and etc. If the damage continued such a large amount that everybody has to take the risk of absence of the fir stands of the Ilgaz Mountains and the precious functions.

The measurements are as follow for these fir stands of the Ilgaz Mountains;

- The pine ratio in the fir selection stands should be increased by using convenient silvicultural methods, such as group shelterwood methods or group clearcutting methods and pine planting. While the pine ratio increases, damage amount decreases.
- In one-storey fir selection stands, if the conversation to selection structure were impossible or possible in a long time, the planning method should be changed from selection system to the high forest system.
- Functional planning should be applied in the fir stand of the Ilgaz Mountains.

Key words: *Ilgaz Mountains, Abies bornmulleriana, Storm damage*

