Dieback of Abies cephalonica forests in Parnassos National Park, central Greece

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The phenomenon of Abies cephalonica decline was observed during the last decades, and this was mainly attributed to climate change.

What is the tree health status of fir forest in Parnassos mountain, in relation to stand and site conditions?

Materials and Methods

Thirty plots were taken, where all the individuals were measured for their dimensions and health status. All trees were classified according to IUFRO classification for their social status and their vitality. Tree health was estimated in five defoliation classes according to UNECE and EU classification system (UNECE, 2004), as follows:

Class	Tree health	Defoliation (needle/leaf loss) (%)
0	Healthy	up to 10%
1	slight (warning) damaged	11-25%
2	moderately damaged	26-60%
3	severely damaged	61-99%
4	Dead	100%

Results

Figure 1. Tree health status of fir stands at the lower altitudes (<1200 m asl).
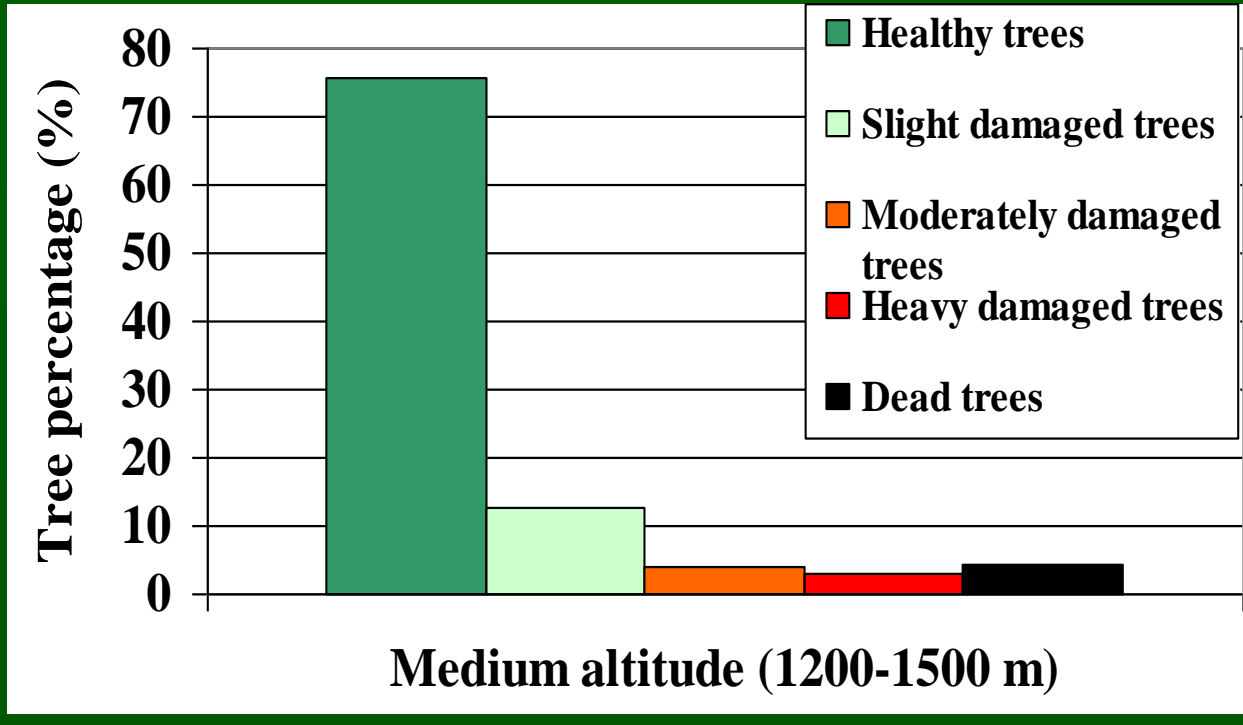
Figure 2. Tree health status of fir stands at the medium altitudes (1200-1500 m asl).
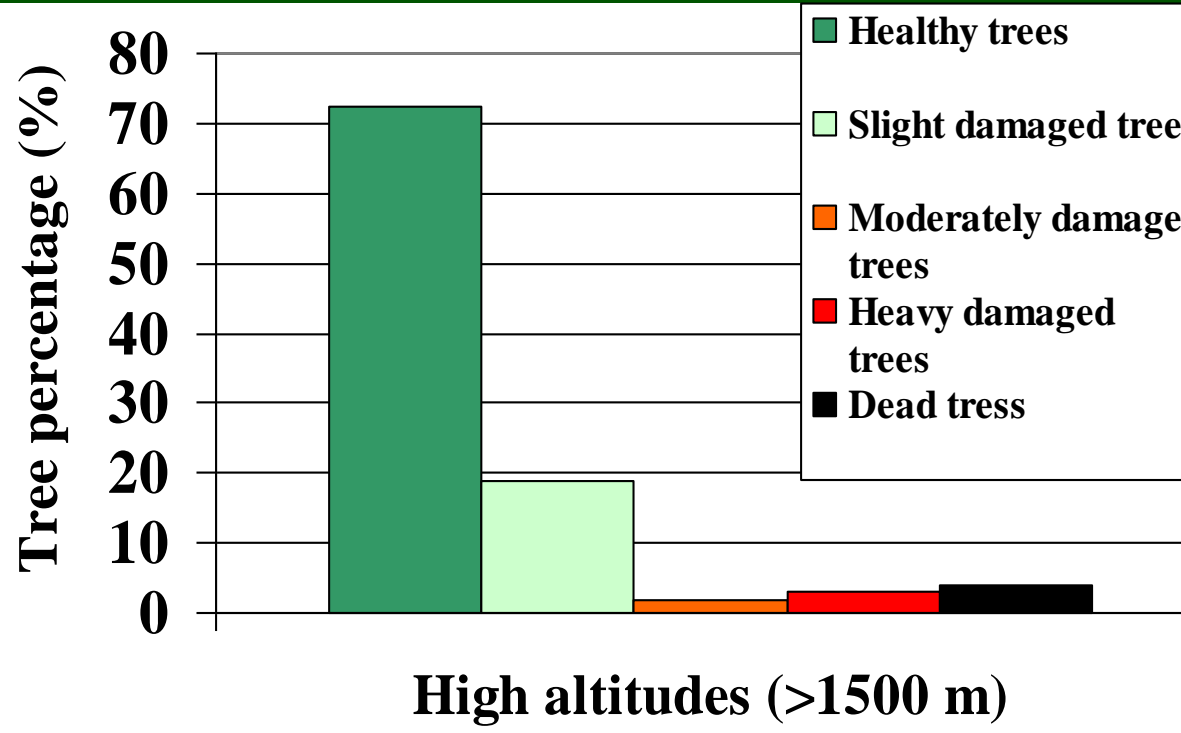
Figure 3. Tree health status of fir stands at the high altitudes (>1500 m asl).
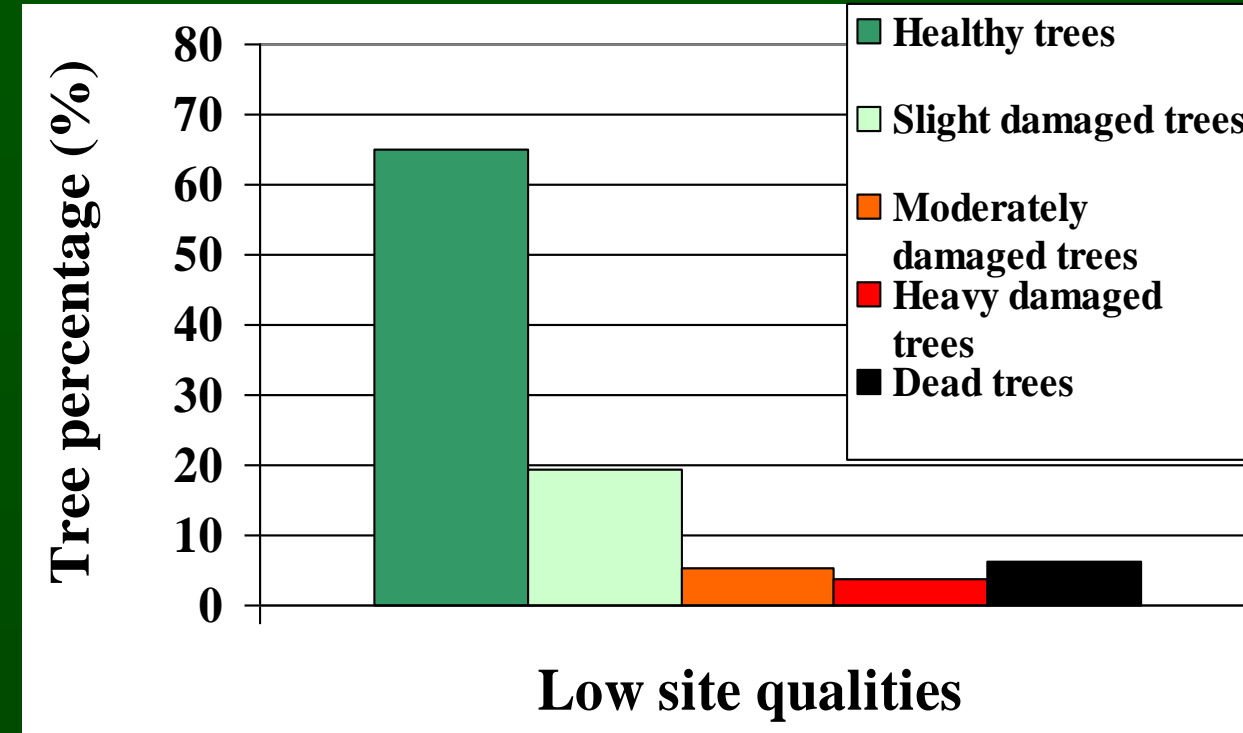
Figure 4. Tree health status of fir stands at the low site qualities
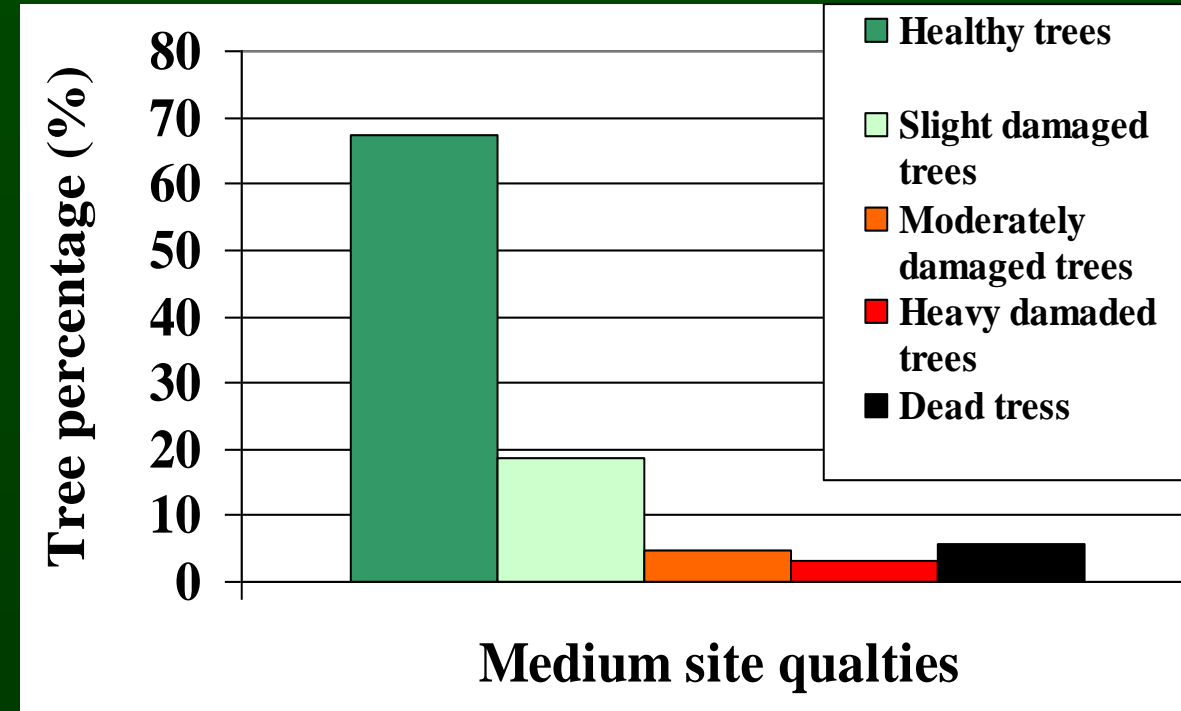
Figure 5. Tree health status of fir stands at the medium site qualities
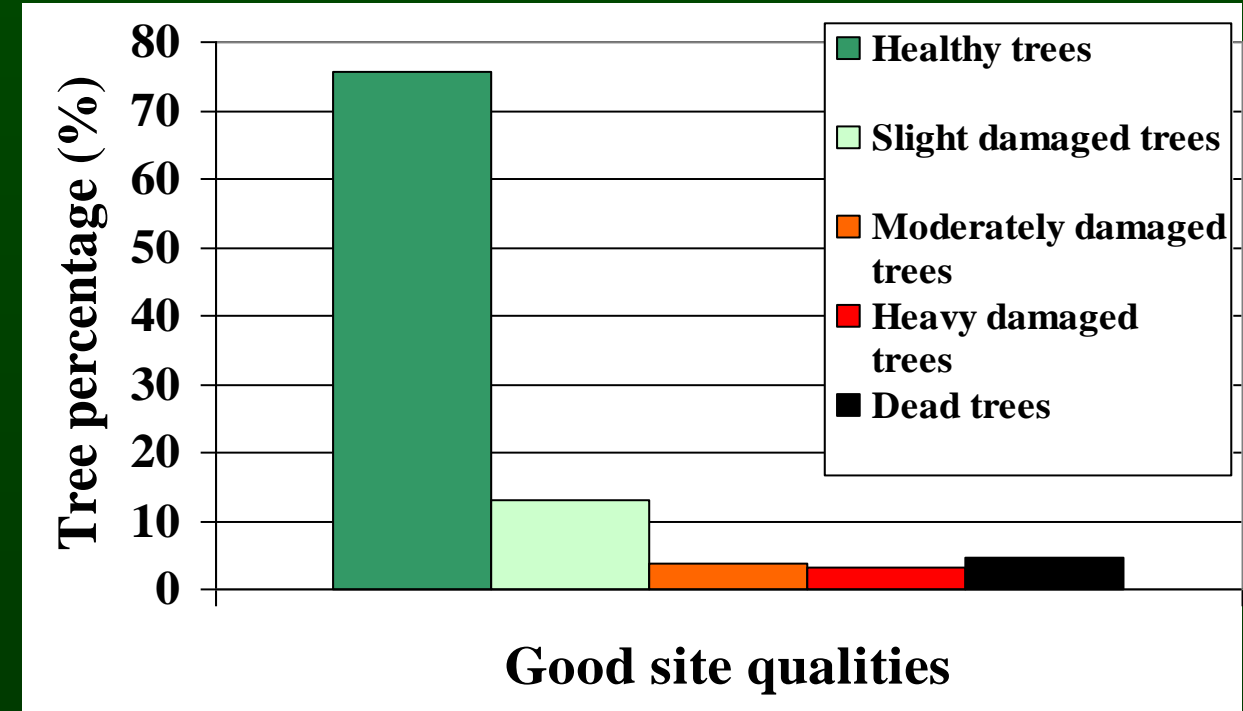
Figure 6. Tree health status of fir stands at the good site qualities

Summary statistics of fir tree health status in the studied area (Parnassos National Park).

Defoliation classes	Tree status	Percentage (%) in the studied fir forest
0	Healthy trees	70.3
1	Slight damaged	14.7
2	Moderately damaged	6.1
3	Heavy damaged	4.0
4	Dead	4.9

Conclusions

➤The fir stands of the area are consisted of pure over-century aged stands, uneven-aged, of mean density 560 trees per hectare, of low vitality, except for the young trees that present vital growth.

➤The great percent of trees (70.3%) were characterized as healthy, while 15% are heavy damaged (classes 2,3, and 4), and 14.7% are slight damaged.
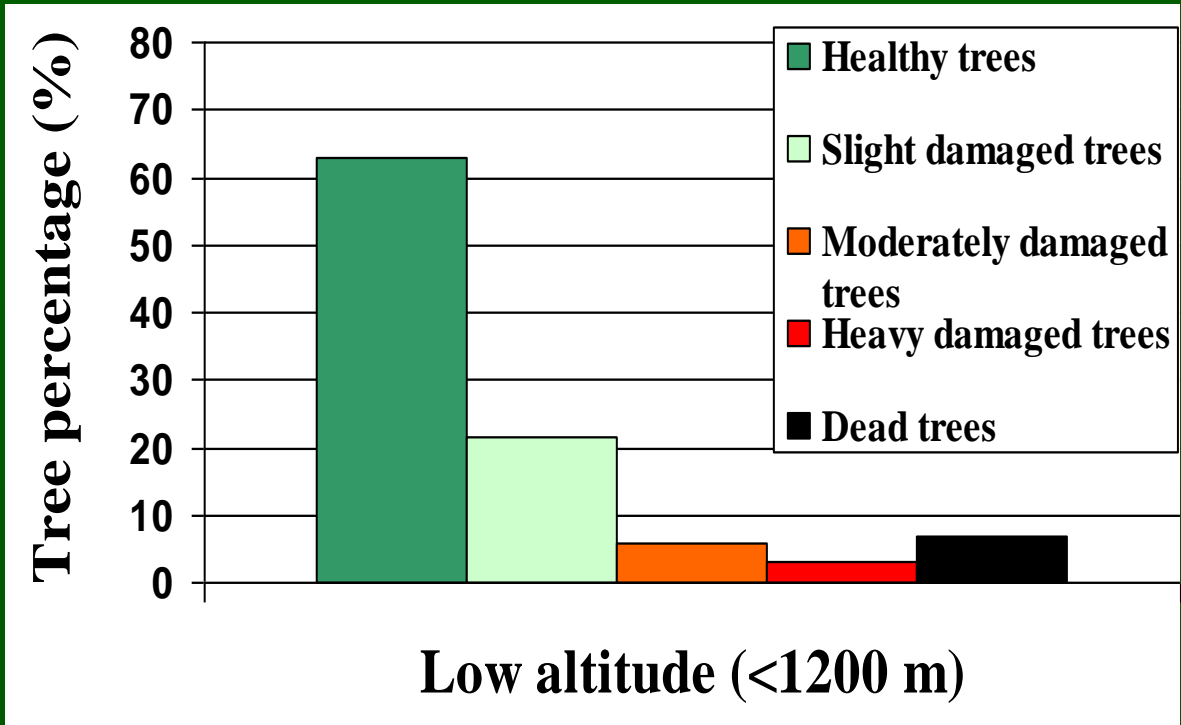
➤The decline of fir trees was mainly observed in the lower altitudes, and in the degraded and of low productivity sites, supporting the explanation that site and climatic factors stress the trees, and reduce their resistance, which in turn may lead to secondary attacks by biotic factors