

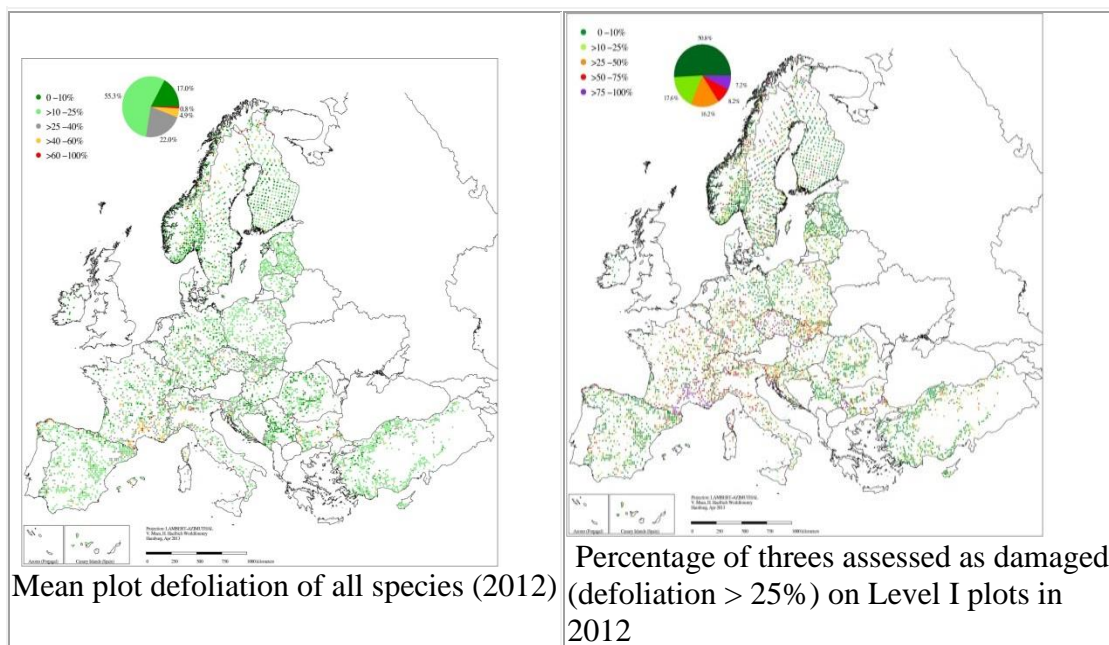
Defoliation

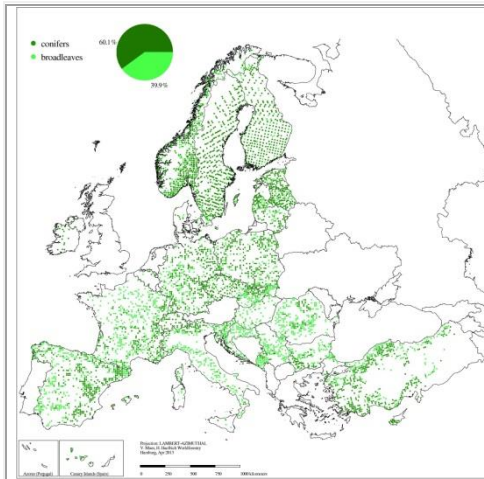
The variation of crown condition expressed by the density of the foliage is mainly the result of climatic, site and tree related factors. Moreover, defoliation may be caused by a number of biotic and abiotic stressors. Defoliation assessment attempts to quantify foliage missing as an effect of stressors including air pollutants and not as an effect of long lasting site conditions. In order to compensate for site conditions, local reference trees are used, defined as the best tree with full foliage that could grow at the particular site. Alternatively, absolute references are used, defined as the best possible tree of a genus or a species, regardless of site conditions, tree age etc. depicted on regionally applicable photos (photo guides). Changes in defoliation and discolouration attributable to air pollution cannot be differentiated from those caused by other factors. Consequently, defoliation due to factors other than air pollution is included in the assessment results, but trees showing mechanical damage are not included in the sample.

The true influence of site conditions and the share of tolerable defoliation cannot precisely, be quantified. Damaged trees cannot be distinguished from healthy ones only by means of a certain defoliation threshold. Some differences in the level of damage across national borders may be at least partly due to differences in standards used. This restriction, however, does not affect the reliability of trends over time.

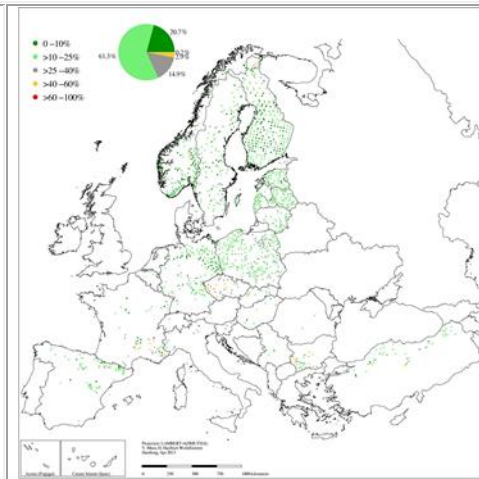
Further information and discussion of results are available in [ICP Forests' Technical Reports](#)

Mean Defoliation 2012

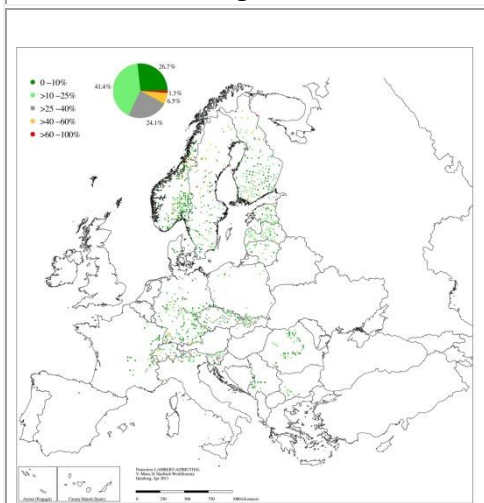




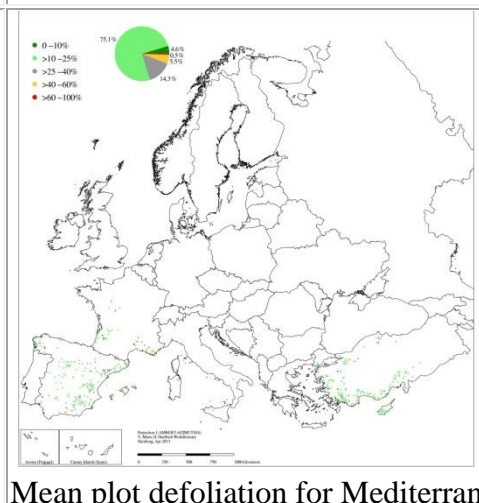
Shares of broadleaves and conifers assessed on Level I plots in 2012



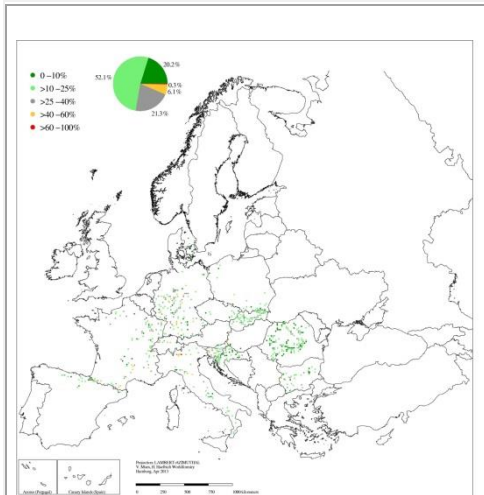
Mean plot defoliation for *Pinus sylvestris* (2012)



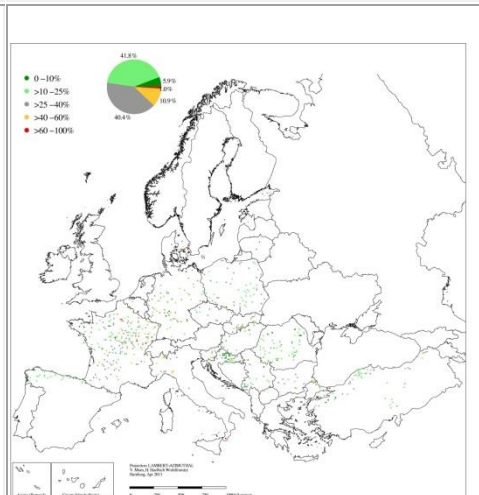
Mean plot defoliation for *Picea abies* (2012)



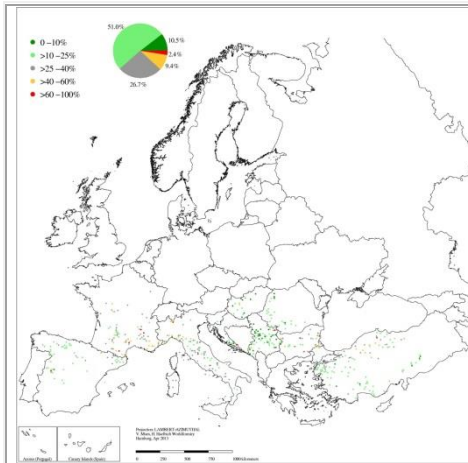
Mean plot defoliation for Mediterranean lowland pine (*Pinus brutia*, *Pinus halepensis*, *Pinus pinaster*, *pinus pinea*) (2012)



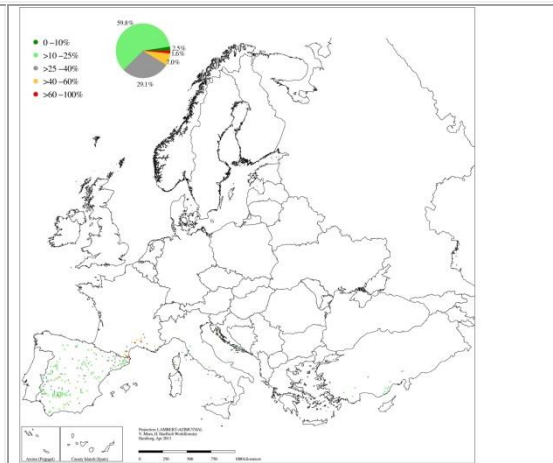
Mean plot defoliation for *Fagus sylvatica* (2012)



Mean plot defoliation for deciduous temperate oak (*Quercus petraea* and *Quercus robur*) (2012)

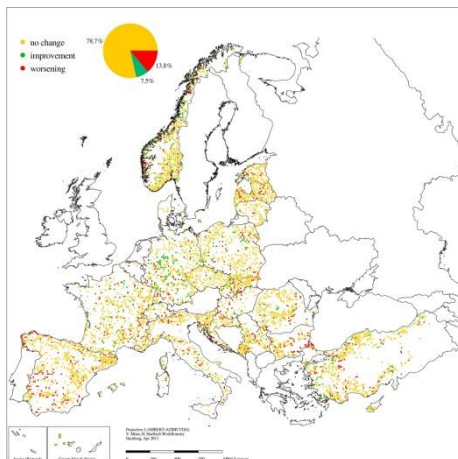


Mean plot defoliation for deciduous (sub-) Mediterranean oak (*Quercus cerris*, *Quercus frainetto*, *Quercus pubescens*, *Quercus pyrenaica*) (2012)



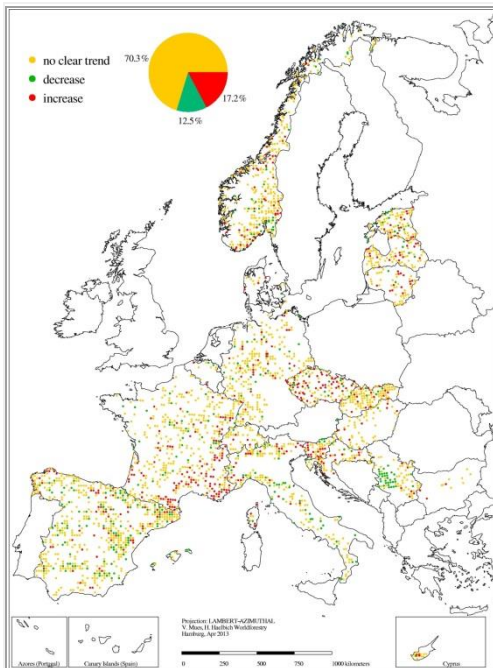
Mean plot defoliation for evergreen oak, temperate oak (*Quercus coccifera*, *Quercus ilex*, *Quercus rotundifolia*, *Quercus suber*) (2012)

Defoliation changes 2011 and 2012

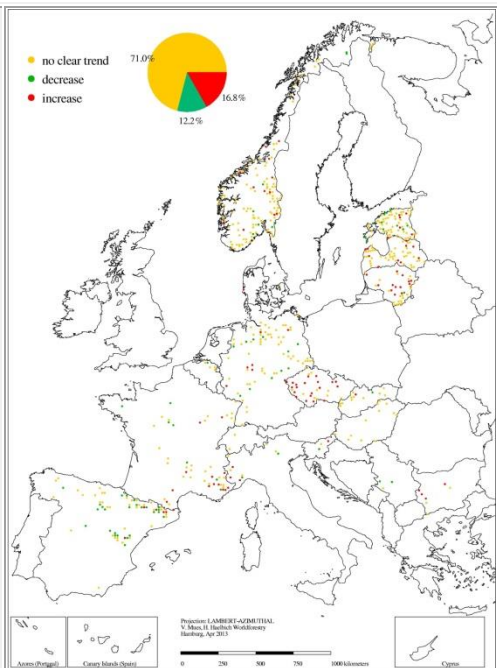


Changes in mean defoliation of all trees assessed on Level I between 2011 and 2012

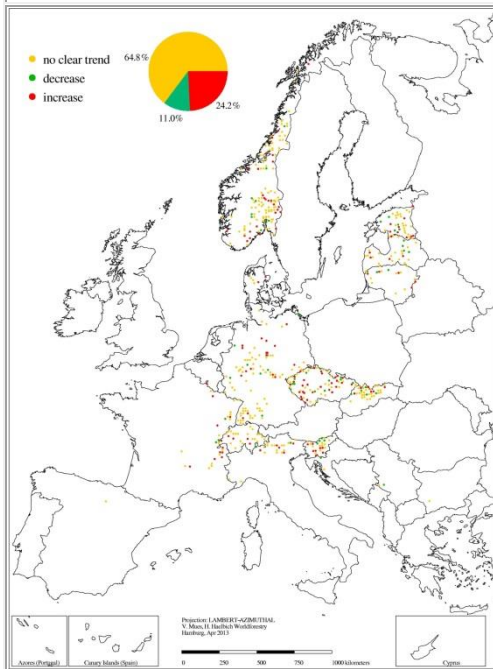
Defoliation Trends 2002-2012



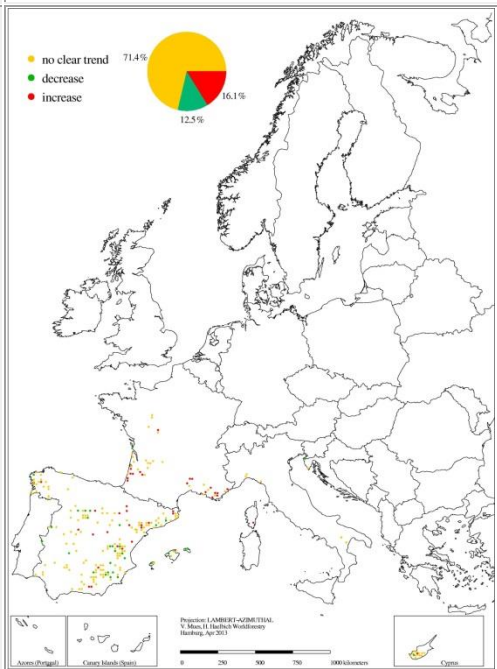
Development of mean plot defoliation (slope of linear regression) of all species over the years 2002-2012



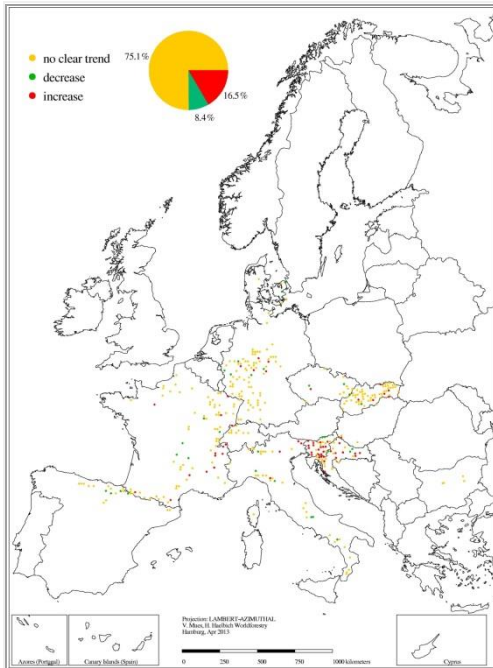
Development of mean plot defoliation (slope of linear regression) of *Pinus sylvestris* over the years 2002-2012



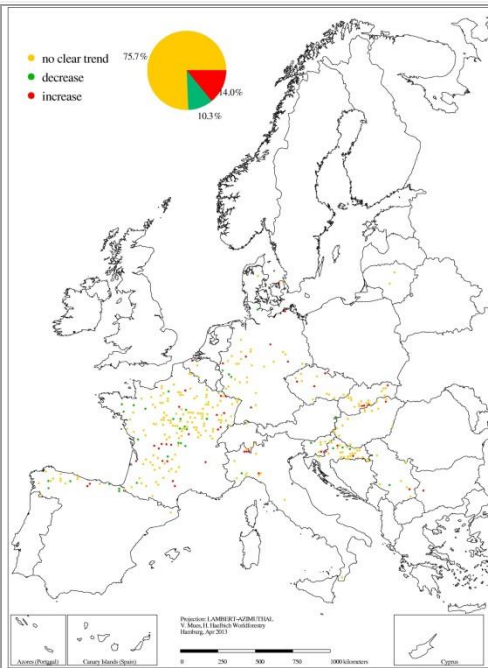
Development of mean plot defoliation (slope of linear regression) of *Picea abies* over the years 2002-2012



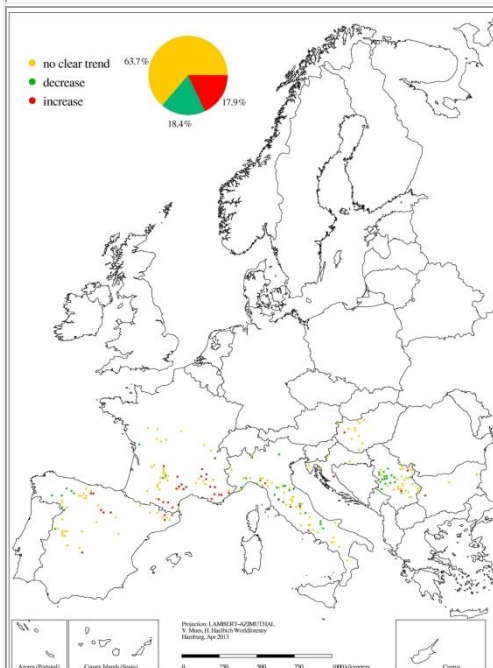
Development of mean plot defoliation (slope of linear regression) of Mediterranean lowland pines over the years 2002-2012



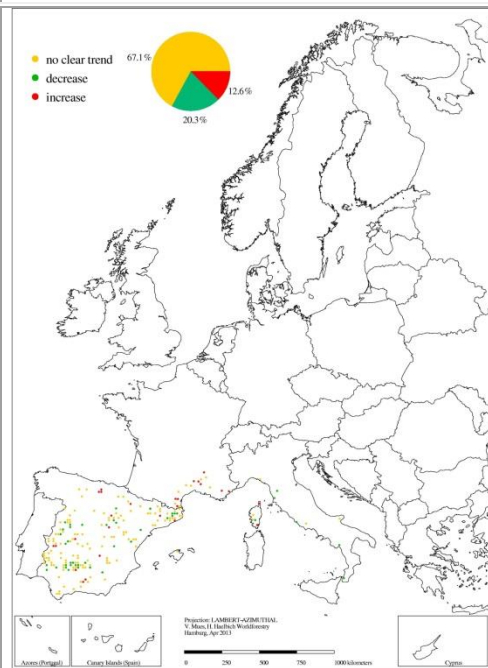
Development of mean plot defoliation (slope of linear regression) of *Fagus sylvatica* over the years 2002-2012



Development of mean plot defoliation (slope of linear regression) of deciduous temperate oak species over the years 2002-2012



Development of mean plot defoliation (slope of linear regression) of deciduous (sub-) Mediterranean oak species over the years 2002-2012



Development of mean plot defoliation (slope of linear regression) of evergreen oak species over the years 2002-2012