

# Forest Health Situation in Trentino, Italy

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## Abstract

The Forest Trees Damages Monitoring (FTDM) of Trentino woodland has been carried out since 1990, in collaboration with the Forest and Fauna Service of the Autonomous Province of Trento, as a tool to support the naturalistic management of forests. In this monitoring program, data are obtained on pests, diseases and abiotic damages, allowing a better understanding of the health status of woods. In addition, it was assessed if past silvicultural choices were justified. Main damages recorded in the last few years are reported and discussed.

**Keywords:** Forest health, monitoring, pests, diseases

## Kurzfassung

### Forstschutzsituation in Trentino, Italien

Das Monitoring von Forstschäden in der Provinz Trentino wird in Zusammenarbeit mit dem Forst- und Faunadienst der autonomen Provinz Trentino seit 1990 durchgeführt, um die naturnahe Forstwirtschaft zu unterstützen. In diesem Monitoringprogramm werden Daten über Schädlinge, Pilzkrankheiten und abiotische Schäden erhoben, die eine genauere Kenntnis des Gesundheitszustandes der Wälder und eine Überprüfung von früher getroffenen forstlichen Maßnahmen zulassen. Es wird über die wichtigsten Schäden der letzten Jahre berichtet und deren Bedeutung diskutiert.

**Schlüsselworte:** Forstschutz, Monitoring, Schädlinge, Krankheiten

Forest Tree Damages Monitoring (FTDM) has been applied since 1990 by IASMA in collaboration with the Forest and Fauna Service of the Autonomous Province of Trento (Ambrosi & Salvadori 1998). The main aims of FTDM are the improvement of woodland phytosanitary protection, the increase of knowledge on potential agents for a better understanding of causal and predisposing factors and the assessment of the past silvicultural choices to suggest indications for the present management.

This extensive monitoring follows a standard methodology based on direct field survey by forest personnel, on periodical compilation of electronic forms about known damages and on report of unknown problems. The latter are identified by diagnostic work carried out by specialists both in the forest and laboratory. All the data have been geo-referred and related to the compartments of woodland management plans. Since 2005

the geo-referencing has been carried out directly by means of a WebGIS system (Valentinotti et al. 2004) to obtain a more accurate mapping.

In this context the situation observed in the last years is reported here. Also in Trentino the current forest health situation appears still strictly related to the effect of the 2003 summer, which resulted in both insects and fungi appearance and trees vitality. As shown in Table 1, pest outbreaks cover most of the reports of damage in the last three years.

*Ips typographus* foci started to increase during 2003 to reach in 2004 a peak never recorded before in absence of storms. More than 15000 m<sup>3</sup> had to be felled by force in 2004, while in 2005 the timber loss reached 25000 m<sup>3</sup> with more than 16700 affected trees. The amount of bark beetle infested timber showed a decreasing trend in 2006 (almost 13000 m<sup>3</sup>) and in 2007 (less than 10000 m<sup>3</sup>). *Tomicus minor*, *T. piniperda* and *Ips acuminatus* on *Pinus* spp. as like as *Xyleborus dispar* on broadleaves were also reported in the last three years, but with low losses of timber.

*Lymantria dispar* and *Operophtera brumata*, often associated with *Erannis defoliaria*, were the most common defoliators which produced remarkable damages in hornbeam and oak coppices between 2003 and 2005. *Coleophora laricella* has a constant presence in larch forests, occupying the third place in terms of records over the last three years. Moreover, *Pristiphora abietina* was frequently observed mainly on adult trees and in mature stands rather than on young trees as was recorded in the past.

A high gradation of *Thaumetopoea pityocampa* followed the anomalous 2006-07 winter after years of low population density. Particularly, the number of nests and the intensity of defoliation showed a huge increase in all pine stands. Even if the spread of the pine processionary moth did not reach the maximum range recorded in 1992, it must be highlighted that it recovered at higher altitudes and in valleys with more continental climate that were never affected before.

For the first time after the massive outbreak in 1989, *Elatobium* (= *Liosomaphis*) *abietinum* was observed again during 2007 spring in several hundreds of hectares all over the Province. The outbreaks of this aphid concerned spruce stands mainly located between 1000 and 1500 m a.s.l. The possible recurrence of the attacks in

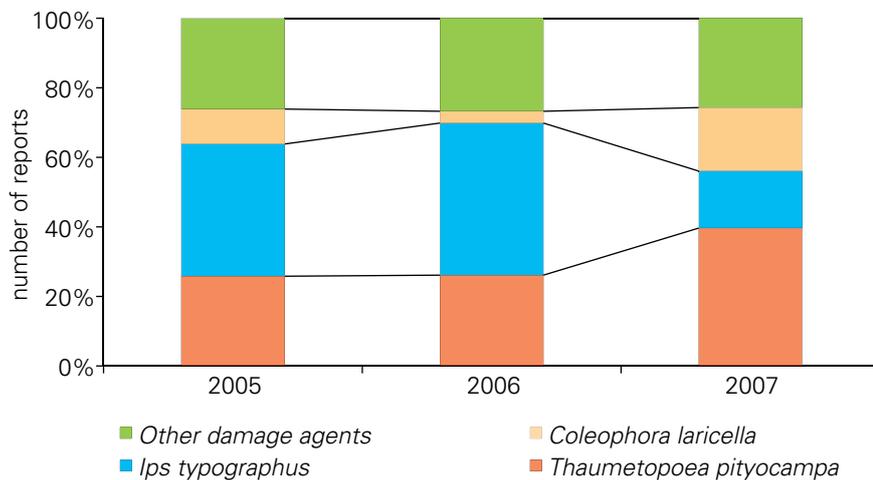


Figure 1: Main damage agents reported by Forest Tree Damages Monitoring in Trentino (2005-2007)

Abbildung 1: Hauptschadursachen, die sich aus dem Monitoring von Forstschäden der Provinz Trentino (2005-2007) ablesen lassen

Table 1: Number of damage notifications recorded in the last three years (1 record = 1 forest compartment)

Tabelle 1: Anzahl der Schadensmeldungen der letzten drei Jahre (1 Datensatz = 1 Forstabteilung)

Main kinds of damage agents	2005	2006	2007	% 2005-07
Broadleaves defoliators	15	9	7	1,6
Conifer defoliators	252	165	508	46,8
Sucking insects	0	1	50	2,6
Broadleaves bark and wood borers	1	2	1	0,2
Conifer bark and wood borers	266	228	145	32,3
Root diseases	1	0	0	0,1
Crown diseases	32	23	56	5,6
Mammals (game, rodents)	23	24	1	2,4
Abiotic factors	57	19	92	8,5
<b>Total records</b>	<b>647</b>	<b>471</b>	<b>860</b>	<b>100,0</b>

2008 may cause heavier problems in the affected stands that had already experienced a strong stress before due to the intense defoliation.

In June 2007, two foci of *Dryocosmus kuriphilus*, the Chinese chestnut wasp, were reported for the first time in Trentino. Both foci were caused by the plantation of affected Euro-Asiatic chestnut hybrids that were immediately removed and burned. The wasp adults were not yet emerged from galls at the moment of the finding. Hopefully, this feature will allow an easier control of this invasive pest.

In general fungal damages were not frequent in the last years. *Sphaeropsis sapinea* was still the main cause of tree loss, inducing the forced felling of more than 2500 m<sup>3</sup>. The fungus is an endophyte and it is observed in all *Pinus nigra* stands of the province. Its pathogenic behaviour is strictly related to drought stress periods that frequently occurred in the last years, either in winter or in summer.

The Norway spruce rusts, *Chrysomyxa* spp., are the most widespread diseases, even if data showed wide

oscillations due to weather behaviour during the infection period. *C. rhododendri* shows a constant presence at the timberline and it could affect spruce regeneration growth.

Dutch elm disease is still present but damages seemed to be reduced for the almost complete disappearance of host. Chestnut blight is endemic and ubiquitous in chestnut stands, but the clear prevalence of healing and healed cankers, due to hypovirulence, is stable and reassuring (Turchetti & Maresi 2005). *Botryosphaeria dothidea* was recognised as causal agent of target cankers on hornbeam. In 2001, this pathogen produced evident wilting of branches and small stems but since then only target cankers were observed in several stands. Till now, the pathogen seems not to be involved in extensive dieback phenomena on *Ostrya carpinifolia* as observed in other countries (Jurc et al. 2006).

Green alder decline is widespread in the province as on the rest of the Alps. Causes of this complex phenomenon have not yet been defined but this damage is going to modify vegetation cover and to influence stand evolution.

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