

# Forest Protection Situation in Trentino (Northeastern Italy) in 2008-2009

CRISTINA SALVADORI, GIORGIO MARESI, FEDERICO PEDRAZZOLI AND DARIO BITUSSI

## Abstract

The forest health of Trentino was strongly conditioned by rainfall in 2008 and snowfall in the winter 2008/09. Heavy attacks by insects (larch casebearer, aphids and larch bud moth) and foliar pathogens occurred on larch in 2008. The abundant precipitations favoured also rust infections on other species, while hampered insects such as bark beetles and pine processionary moth. The heavy snowfalls in winter 2008/09 caused several tree breakages, with high losses of timber. Few pests and diseases were recorded in 2009 vegetative season, with the exception of brown headed ash sawfly, pine processionary moth and chestnut gall wasp.

**Keywords** | forest health, monitoring, Northeastern Italy, pests, diseases

## Kurzfassung

### Waldschutzsituation im Trentino (Nordostitalien) in 2008-2009

Der Gesundheitszustand der Wälder im Trentino wurde stark von Regenfällen im Jahre 2008 und von Schneefällen im Jahre 2009 beeinflusst. Lärchen wurden von Insekten (Lärchennadel-Miniermotte, Blattläuse und Lärchenwickler) massiv angegriffen, und auch Pilzkrankheiten kamen an den Nadeln vor. Die reichlichen Niederschläge förderten die Infektion durch Rostpilze auch bei anderen Baumarten, sie behinderten jedoch die Entwicklung von Insekten, wie Borkenkäfer und Kiefernprozessionsspinner. Der starke Schneefall im Winter 2008/09 verursachte viele Bruchschäden mit einer großen Menge Schadholz. Wenige Insektenschäden und Krankheiten wurden während der Wachstumsperiode 2009 registriert; Ausnahme waren die Schwarze Eschenblattwespe, der Pinienprozessionsspinner und die Kastaniengallwespe.

**Schlüsselwörter** | Forstschutz, Monitoring, Nordostitalien, Schädlinge, Krankheiten

The Forest Tree Damages Monitoring (FTDM) is applied by FEM-IASMA and the Forest and Fauna Service in the woodland of the Autonomous Province of Trento (NE-Italy) since 1990. The data, collected by forest personnel following a standard methodology, are stored and transmitted by a WebGIS system that allows geo-referencing (Valentinotti et al. 2004; Salvadori and Maresi 2008). This continuous survey of the forest health allows the management of either emerging new problems or "traditional" ones.

In 2008 and 2009, the weather pattern strongly conditioned the forest health situation. The mean temperature in Trentino in these years was higher than the climatic average related to the period 1961-1990. Winter season 2007/08 was particularly warm, as well as the months of May and June. However, precipitation was the most interesting aspect: the year 2008 was definitely rainier than average (between +25 % and +50 % depending on the month considered), with rainfall in about one third of the days. Peaks of rainfall occurred in April and May and during fall. Winter 2008/09 was characterized by an unusually high snow cover, never recorded in the last two decades. The rainfall was regularly distributed in spring and summer 2009, but not as abundant as in the previous year. A warm fall protracted the vegetative season until the end of November.

From a phytopathological point of view, 2008 can be definitely defined as "the larch year", because of the numerous problems signalled on this species, in analogy to 2007 that was considered "the Norway spruce year", due to the damages caused by *Elatobium abietinum*, *Ips typographus* and other phytopathies. Many larch forests at middle and high altitudes showed heavy attacks by the larch casebearer (*Coleophora laricella*) in June 2008, while other ones showed aphid (*Adelges* sp. and *Sacchiphantes* sp.) damages. In these forests, also owing to local late frost events, widespread crown yellowing appeared due to *Meria laricis* infections. In the late summer, larch woods were affected by reddening caused by *Mycosphaerella laricina*. These fungi were favoured by abundant precipitation, which created optimal conditions for foliar pathogens almost everywhere. Moreover, in some high altitude larch forests, the larch bud moth (*Zeiraphera diniana*) appeared exactly ten years after its previous gradation.

Among the foliar pathogens, rust attacks were reported on many different species. In 2008, a new rust was observed in a grey alder thicket: microscopic investigations allowed to detect *Melampsorium hiratsukanum* for the first time in Italy (Moricca and Maresi 2010).

On the other hand, weather hampered many insects and opportunistic pathogens related to the hydric stress



Figure 1: Larvae of *Tomostethus nigritus* (Hym. Tenthredinidae) on common ash.

Abbildung 1: Larven von *Tomostethus nigritus* (Hym. Tenthredinidae) auf Gemeiner Esche.

of their host plants, such as the spruce bark beetle (*Ips typographus*). After some years, characterised by heavy outbreaks, the damages caused by this insect diminished to usual levels in 2008. After two years of intense pullulation, also the population density of pine processionary moth (*Thaumetopoea pityocampa*) began their natural decline almost everywhere.

Because of the heavy snowfall in winter 2008/09, several tree breakages occurred with a timber amount higher than 110,000 m<sup>3</sup>. *Pinus sylvestris* and *Fagus sylvatica* were the most affected species. On the other hand, *Picea abies* and *Abies alba* were the species most

affected by windthrows, which was less than 30,000 m<sup>3</sup> in the two years. In the vegetative season of 2009, no heavy infestations of ambrosia beetles were reported, even where high amounts of coarse woody debris were still present in the forests. This is probably related to the unfavourable weather conditions. In fact, a relatively low number of pest and disease attacks were recorded; one of these was a severe defoliation of *Fraxinus excelsior* caused by the ash sawfly *Tomostethus nigritus* (Figure 1), which has never been observed in Trentino up to now.

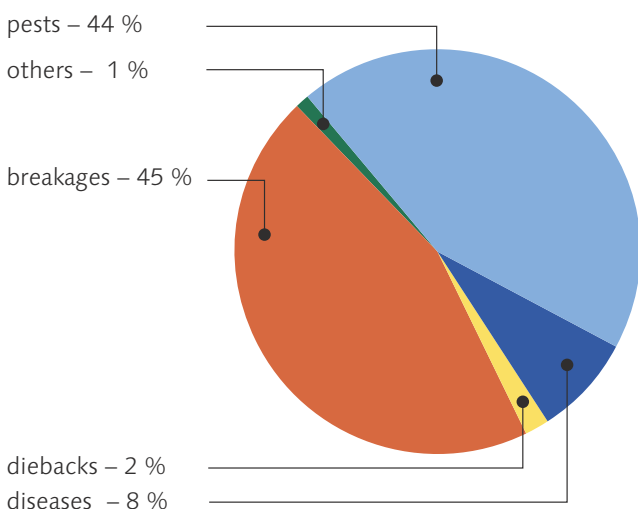
Perhaps because of the severe winter, *Z. diniana* was no more present on larch in 2009. On the

other hand, an unexpected increase of pine processionary population level appeared in some districts during the fall 2009. This was probably due to the very favourable weather conditions of September and October.

New foci of the chestnut gall wasp (*Dryocosmus kuriphilus*) occurred either in 2008 or in 2009. It has to be noticed that the eradication attempts carried out against this invasive insect have remained fruitless due to its rapid expansion.

In conclusion, weather anomalies (rainfall in 2008 and snowfall in winter 2008/09) were very effective in

### Forest damages - 2008



### Forest damages - 2009

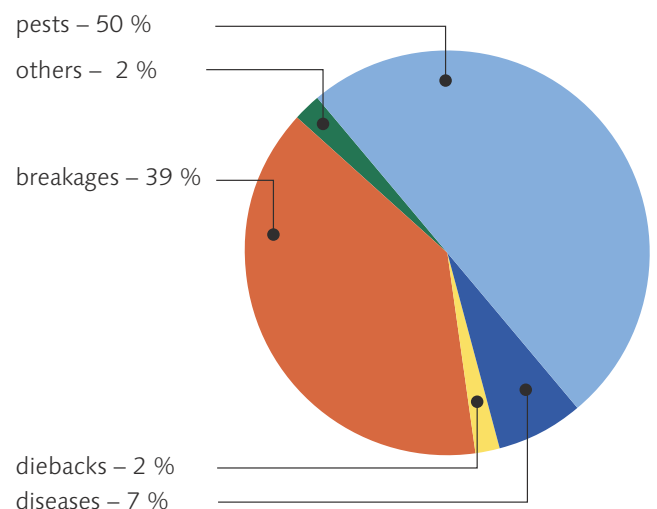


Figure 2: Percentage distribution of main damage causes recorded by mean of the Forest Tree Damages Monitoring in Trentino (2008-2009).

Abbildung 2: Anteil der Hauptschädigungsfaktoren, gemeldet durch das Waldschadensmonitoring im Trentino (2008-2009).

Table 1: Number of damage notifications collected in the Forest Tree Damages Monitoring database in the last five years.

Tabelle 1: Anzahl der Schädigungsmeldungen laut Waldschadensmonitoring-Datenbank in den vergangenen fünf Jahren.

Main kinds of damage agents	2005	2006	2007	2008	2009	average % 2005-09
<b>insects</b>						
leaf-eating insects on conifers	251	165	508	361	222	43.1
leaf-eating insects on broadleaves	15	9	7	17	40	2.5
sucking insects	0	1	50	4	0	1.6
bark and wood borers on conifers	266	228	145	42	19	20.0
bark and wood borers on broadleaves	1	2	1	1	0	0.1
<b>fungi</b>						
root diseases	1	0	1	1	0	0.1
crown diseases	24	11	29	81	38	5.2
<b>other</b>						
declines	8	12	27	19	9	2.1
mammals (game + rodents)	23	24	1	0	0	1.4
abiotic damages	57	20	89	442	228	23.9
<b>Total records</b>	<b>646</b>	<b>472</b>	<b>858</b>	<b>968</b>	<b>556</b>	<b>100</b>

affecting forest health (Figure 2). As reported in Table 1, the number of damage notifications in 2008-2009 markedly differ from the previous years (2005-2007): damage by pests decreased from 83 % to 46 %, while fungi damage varied from 3 % to 8 % and abiotic ones increased from 4 % to 44 %.

Cristina Salvadori, Giorgio Maresi and Federico Pedrazzoli, FEM-IASMA Research Centre, Unità Fitoiatria, Centre for Technological Transfer, via E. Mach 1, 38010 San Michele all'Adige (TN), Italy, Phone: +39-0461-615398, Fax: +39-0461-615500, E-Mail: cristina.salvadori@iasma.it

Dario Bitussi, Forest and Wildlife Service, Autonomous Province of Trento, Italy

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