

SANITARY STATE OF PINE FORESTS DAMAGED BY *Dendrolimus pini* L. IN SOUTH LITHUANIA

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Dendrolimus pini had an outbreak in southern Lithuania in Dzūkijos National Park, Druskininkai and Varena Forest Enterprises and damage was recorded in the area of 10800 ha in 1994, 28000 ha in 1995 and 3500 ha in 1996. 39 permanent plots have been established (31 in the outbreak area with intensive damage and 8 control) in spring 1997 and pine trees were assessed using forest monitoring methodologies used in Lithuanian Forest Institute (Ozolinčius, Stakenas 1997). This reflected tree condition in 1996. Assessment was repeated in late summer 1997 and 1998 when outbreak was completely over.

Table 1. Pine tree parameters

Parameter	1997			1998		
	control	outbreak	p*	control	outbreak	p*
Tree perimeter, cm	76.55±1.21	68.18±1.11	***	76.55±1.21	68.18±1.11	***
Class by Kraft	2.11±0.03	2.17±0.02	n	2.20±0.04	2.24±0.02	n
Damage category	1.98±0.05	2.15±0.03	***	2.16±0.09	2.58±0.01	***
The top state	0.08±0.02	0.12±0.01	**	0.09±0.03	0.14±0.02	n
Top defoliation, %	27.27±1.06	30.36±0.60	***	28.52±1.04	29.41±0.65	n
Crown defoliation, %	35.42±1.11	38.27±0.67	**	35.16±1.20	33.63±0.64	n
Age of needles, years	1.89±0.04	1.70±0.02	***	1.73±0.04	1.59±0.02	***
Fitness	0.24±0.03	0.12±0.01	***	0.29±0.04	0.28±0.02	n
Number of dry branches	0.34±0.04	0.31±0.02	n	0.28±0.04	0.27±0.02	n

p - significance of difference (Student t): * p > 0,90, ** p > 0,95, *** p > 0,99, n - non significant

Bigger part of trees were found to belong to the second class of Kraft - 57% of all trees. There were no significant difference in outbreak and control plots in regard to this parameter, as short term incidents does not influence tree rank. Tree sanitary condition index (Voroncov e.a. 1991) was 0.2 point higher in 1997, and 0.4 point higher in 1998 if compared to 1996, showing weakened tree situation (table 1).

Outbreak of *Dendrolimus pini* has ceased in 1997 and there were no significant difference in average crown defoliation in 1996. There were 18% of trees with slight defoliation (0-25%), 75% with moderate defoliation (26-50%), 5 % of trees with strong (51-75%) defoliation and 3% of trees with very heavy defoliation (76-100%). In 1997 these numbers were 32, 51, 12, 4% and 48, 43, 7, 2% in 1998, respectively (figure 1).

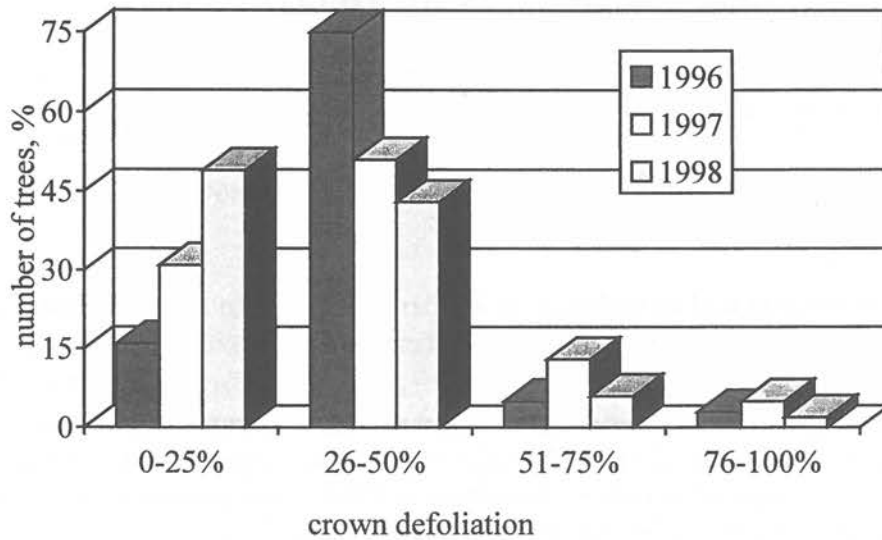


Fig 1. Crown defoliation categories

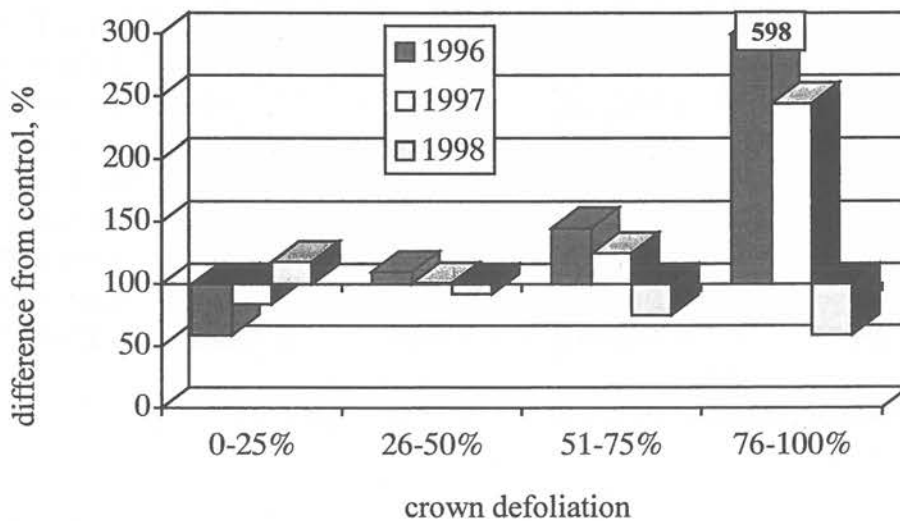


Fig 2. Pine tree defoliation in the outbreak of *Dendrolimus pini*

Number of pine trees with slight defoliation in outbreak areas increased was higher by 18% from 1997 to 98, with slight defoliation - lower by 7%, with strong defoliation - lower by 7%, with very heavy defoliaton - lower by 2%. Since 1996 number of slightly defoliated pine trees in former *Dendrolimus pini* outbreak area increased by 33% showing improving tree situation (figure 2).

References

- Ozolincius R., Stakenas V. 1996. Forest condition monitoring in Lithuania 1988-1995. Kaunas, 64 p. (in Lithuanian)
- Voroncov A.I., Mozolevskaja E.T., Sokolova E.S. 1991. Technology of forest protection, M.: Ecology, 304 p. (in Russian)