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Phoretic mites associated with spruce bark beetle *Ips typographus* L. (Curculionidae: Scolytinae) from Bulgaria

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Abstract: A total of 818 specimens of *Ips typographus* L. were investigated for the presence of phoretic mites. They were collected from 4 localities in Vitosha Mountain, near Sofia. Five phoretic mites were found: *Dendrolaelaps quadrisetus, Trichouropoda polytricha, Histiostoma piceae, Uroobovella ipidis and Proctolaelaps fiseri*. 11.1% from all investigated specimens of *Ips typographus* had phoretic mites, but local percentages varied from 5.2% in Zlatni Mostove to 51.1% in Yavorova polyana. This is the first report of phoretic mites associated with *I. typographus* in Bulgaria.

Key words: phoretic mites, *Ips typographus*, Bulgaria

Introduction

The spruce bark beetle, *Ips typographus* L., is one of the most important insect pests of spruce trees (*Picea* spp.) in Europe (Dajoz 2000). It attacks mainly Norway spruce, *Picea abies* (L.) H. Karst. The population density of *I. typographus* increases rapidly after storms, and may result in strong outbreaks of mature spruce stands. In the 20th century, between 1.2 and 22.0 million m³ of spruce trees were regularly killed by this pest during outbreaks in various parts of Europe (CAB International 2004).

In Bulgaria, *I. typographus* is widely distributed but has rarely been important in managed spruce stands. However, extensive wind throws sometimes give rise to severe outbreaks of the pest in Biosphere Reserves. For example in the period 2003-2005 200 ha of spruce forest in Bistrishko Branishte Biosphere Reserve were attacked and 50 000 m³ of trees were killed (Rossnev *et al.* 2005).

Ips typographus is normally managed by clearing wind throws and sanitation measures of infestation spots. In unmanaged spruce forests the dynamics of outbreaks depends on weather conditions and large number of natural enemies, including beetle-associated mites. The number of mite species associated with *I. typographus* is unknown, although Kielczewski *et al.* (1983) listed 181 species taken from a large number of bark beetles in Poland, from which 25 species were recorded in *I. typographus*. Moser, Bogenschütz (1984) provided keys for the determination of 32 mite species associated with *I. typographus* from South Germany. Until now, there has been no information regarding the phoretic mites of *Ips typographus* in Bulgaria. Here we first report five species of phoretic mites on this pest for Bulgaria.

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Table 2. Occurrence of associated phoretic mites in *Ips typographus* from different localities.

Locality	Collection Date	Altitude (m)	Bark beetles specimens investigated	Bark beetles specimens with mites	% of bark beetles with mites
Bistrishko branishte	19. 05. 2003	1400	51	12	23.5
	10. 07. 2003	1550	34	2	5.9
	30. 06. 2004	1550	165	10	6.1
	12. 10. 2004	1550	190	12	6.3
Yavorova poljana	16. 07. 2003	1510	76	7	9.2
	28. 05. 2004	1510	47	24	51.1
Zlatni Mostove	3. 07. 2003	1400	40	11	27.5
	28. 05. 2004	1350	135	7	5.2
Elitsa	5. 12. 2003	1470	80	6	7.5
Total			**818**	**91**	**11.1**

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