

## ERIOPHYOID MITES (ACARI: ERIOPHYOIDEA) LIVING ON ORNAMENTAL CONIFEROUS PLANTS IN POLAND

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Abstract. The paper presents the descriptions as well as drawings of three species of eriophyid mites found on coniferous plants as new in Poland: *Trisetacus juniperinus* (Nalepa) from *Juniperus procumbens*, *Eriophyes junipereti* Keifer from *Juniperus communis* L. 'Hibernica' and *Cecidophyopsis psilaspis* (Nalepa) from *Taxus baccata* L. Additionally, eriophyoid mites collected from *Thuja occidentalis* and *Tsuga canadensis* are discussed in this paper.

Key words: coniferous trees, *Cecidophyopsis psilaspis*, *Eriophyes junipereti*, *Nalepella tsugae*, *Trisetacus cupressi*, *Trisetacus juniperinus*

### I. INTRODUCTION

In Poland up to the present time 17 species of eriophyoid mites were recorded on coniferous trees belonging to *Cupressaceae*, *Pinaceae* and *Taxodiaceae* families (Boczek and Chyczewski 1970; Boczek 1997; Soika and Łabanowski 1999). These species belong to genera: *Eptrimerus*, *Keiferella*, *Phyllocoptes*, *Platyphytoptus*, *Nalepella* and *Trisetacus*. Many of them live as vagrants on needles causing no visible damages or only slight discolouration of the needles except *Trisetacus pini* (Nal.), which produces galls on twigs of *Pinus* spp. (Boczek 1964b; Boczek and Chyczewski 1970).

This paper presents the data on the occurrence of eriophyoid mites on coniferous trees in ornamental nurseries and in botanical gardens, collected from plants belonging to genera: *Juniperus*, *Taxus*, *Thuja* and *Tsuga*, in 1998-1999. Eriophyoid mites collected from plants belonging to genera: *Abies*, *Picea*, *Pinus* and *Pseudotsuga*, in 1997-1998 were presented in earlier paper (Soika and Łabanowski 1999).

### II. MATERIAL AND METHODS

Samples of shoots were collected by the authors in 1998-1999 in ornamental nurseries and botanical gardens located in different parts of Poland. In the laboratory, they were examined for eriophyoid mites presence and were mounted in Heinze medium then studied under phase contrast microscope. All measurements are given in micrometers and were made at 1000 magnification.

Type materials have been deposited at the Research Institute of Pomology and Floriculture, Skierniewice and at the Department of Applied Entomology, Warsaw Agricultural University.

### III. RESULTS AND DISCUSSION

#### 1. Eriophyoid mites on *Juniperus* spp.

In Poland up to the present time three species of eriophyoid mites on *Juniperus communis* were described: *Trisetacus quadrisetus* (Thomas 1872) found in 1960 by Szulc (1966), *Acaricalus juniperi* by Szulc (1967) and *Keiferella juniperici* by Boczek (1964a). Two further species were found for the first time in Poland on *Juniperus* spp. in ornamental nurseries: *Eriophyes junipereti* Keifer and *Trisetacus juniperinus* (Nalepa 1910).

*Trisetacus juniperinus* (Nalepa, 1910) (Fig. 1)

Locality and date: Kórnik n/Poznań, August 6, 1998; Piaseczno n/Warszawa, May 24, 1999; Dobrzyca n/Koszalin, June 9, 1999.

Host plant: *Juniperus procumbens* (Endl.) Miq. (*Cupressaceae*).

Relation to host: mites live on needles of terminal shoots and cause shorting internodes or destroy terminal buds. Infested needles are basally swollen and have horny galls.

This species was described from *Juniperus communis* L. in Austria (Nalepa 1910) and was collected in Italy (Nuzzaci and Monaco 1977) and in Czech Republic (Vaněčková-Skuhravá 1996) from *J. communis*, and was found in Hungary as living on *Thuja orientalis* L. (Ripka and de Lillo 1997). This species was figured and diagnosed by Keifer, but measurements are not available (Jeppson et al. 1975). Redescription of that species is presented below by the authors.

Female: 242 (217,5-295) long; 63 (60-70) wide; 62 thick; wormlike in shape, milk-whitish in color. Gnathosoma 28 long with antapical seta 11 (8-14) long. Chelicerae 23 long, almost straight. Prodorsal shield nearly semicircular with two admedian longitudinal lines forked anteriorly and two short submedian lines on each side and a small gland pit at the rear central shield margin, 28 (27-30) long without lobe over rostrum, 50 (45-55) wide; dorsal tubercles 11 (10-13) long cylindrical in shape set well ahead of rear margin of shield 28 (26-29) apart; dorsal setae 48 (36-60) long, projecting forward; anterior shield seta above base of rostrum 9 (10-13) long. Leg I 30 (28-32) long; tibia 5 long with seta 7 long; tarsus 6 long, solenidion 8 long slightly knobbed; empodium 10 long 7-rayed. Leg II 27 (24-30) long; tibia 5 long; tarsus 6 long; solenidion 8 long; empodium 10 long; coxae smooth not forming sternum. First forecoxal tubercles 16 apart, setae 20 (12-29) long; second forecoxal tubercles 13 apart, setae 26 (20-30) long; hindcoxal tubercles 29 apart, setae 43 (35-51) long. Opisthosoma with 74-82 dorsal microtuberculate annuli and 63-75 ventral microtuberculate annuli; microtubercles small tear-like, denser on dorsal side than on ventral one, lacking microtubercles on 8-10 first annuli on dorsal side up to subdorsal setae. Subdorsal setae 9 long on 10-13th dorsal annuli; lateral setae 41 (33-45) long on 8-11th ventral annulus; first ventral setae 38 (31-40) long on 18-22nd ventral annulus; second ventral setae 22

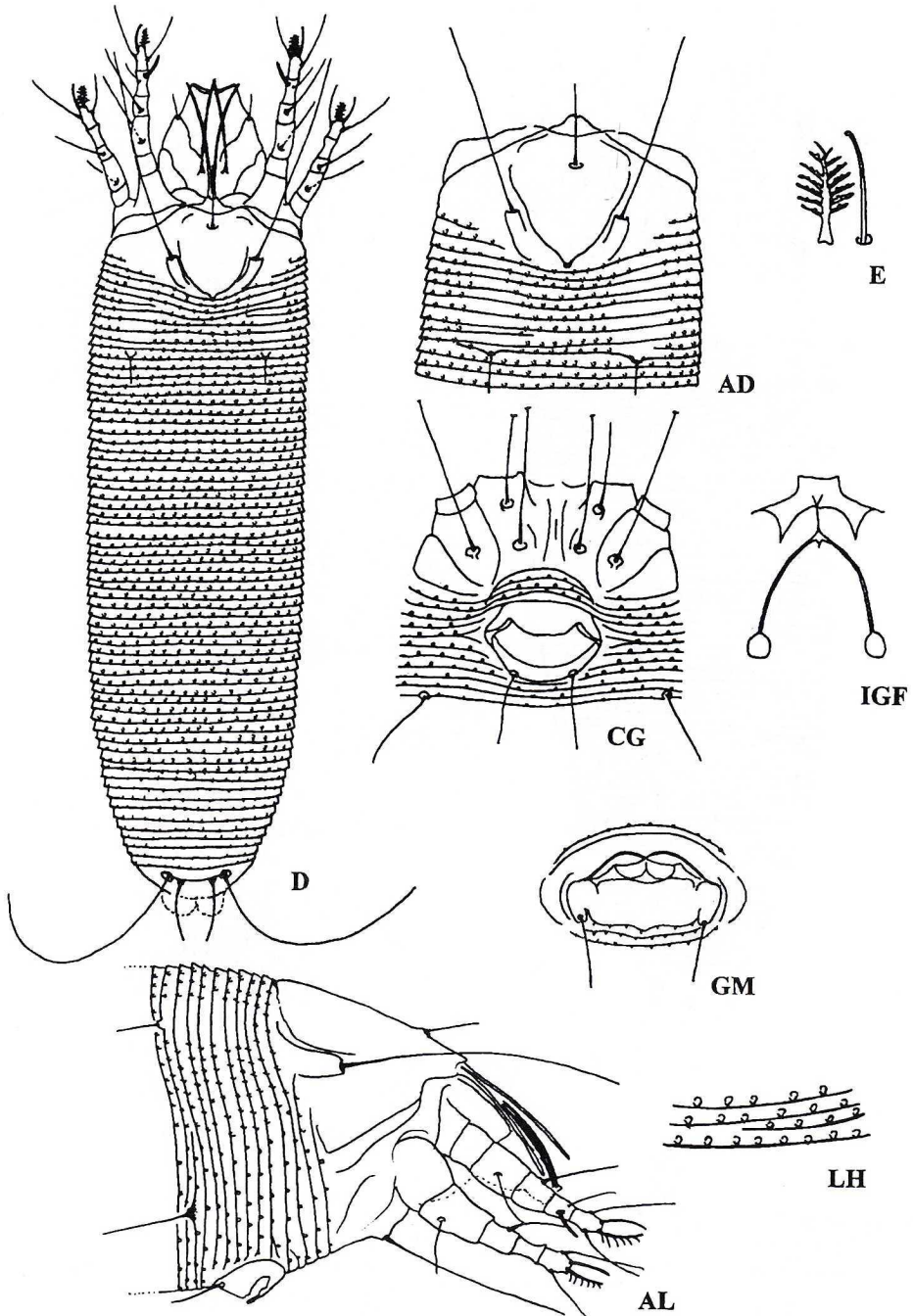


Fig. 1. *Trisetacus juniperinus* (Nalepa, 1910)

Designations on figures: AD – anterior dorsal body region; D – dorsal mite; AL – anterior lateral body region; CG – coxal-genital region, female; GM – genital region, male; E – empodium; IGF – internal genitalia, female; LH – lateral opisthosomal annuli

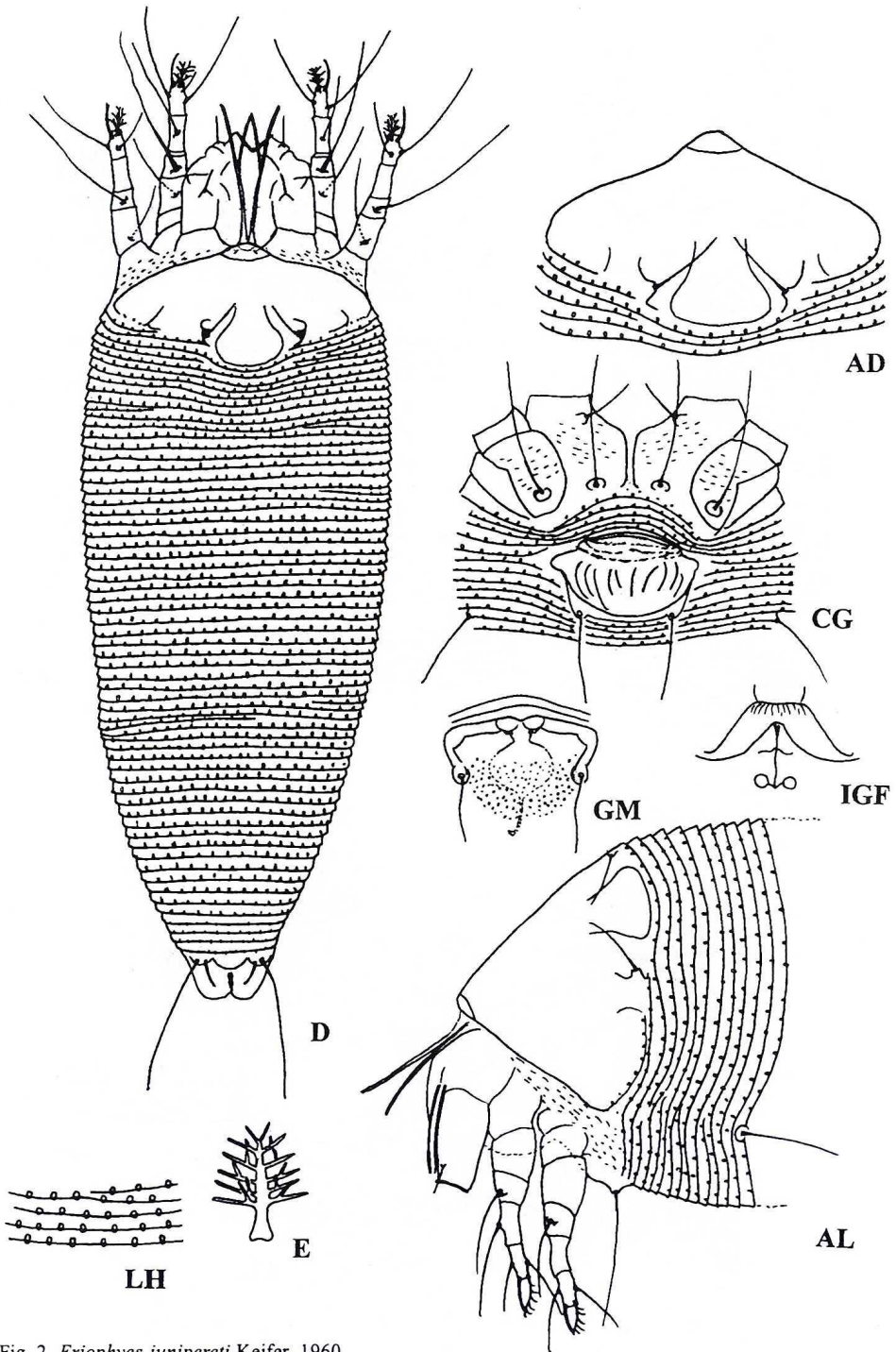


Fig. 2. *Eriophyes junipereti* Keifer, 1960  
For designations see Fig. 1.

(15-40) long on 31-36th ventral annulus; third ventral setae 42 (40-45) long on 6-7th annulus from the rear. Accessory setae 21 (20-23) long. Female genitalia 17 long and 21 (19-23) wide; epigynium smooth; genital setae 17 (13-20) long, tubercles 14 apart.

Male 170-217,5 long; 64-69 wide; prodorsal shield 28-32 long and 48 wide without lobe over rostrum; dorsal tubercles 28-30 apart, dorsal setae 40 long, anterior shield seta 13 long; subdorsal setae 10-11; opisthosoma with 71-73 dorsal annuli and 64-66 ventral annuli; genitalia 20-21 wide; genital setae 15 long, tubercles 17-18 apart.

Discussion: females collected on August 6, 1998 differs distinctly in many features from *Trisetacus quadrisetus* (Morgan and Hendlin 1960), *T. batonrougei* Smith, 1978 and *T. neoquadrisetus* Smith, 1978 (Smith 1978). *Trisetacus juniperinus* has a shorter shield and differs in the microtubercle pattern on the front part of the abdominal dorsum. These microtubercles are absent from two subdorsal areas that extend longitudinally back from the rear shield margin, and it has a gland pit at the rear central shield margin and its number of rays on empodium is different (Fig. 1).

*Eriophyes junipereti* Keifer, 1960 (Fig. 2)

Locality and date: Skierniewice on July 23 and November 9, 1997; March 9 and November 9, 1998; September 24, 1999.

Host plant: *Juniperus communis* L. 'Hibernica' (*Cupressaceae*).

Relation to host plant: these mites were living as vagrants in the crevices on green tips causing growth inhibition of the youngest shoots.

This eriophyoid mite was described by Keifer (1960) from *Juniperus phoenicea* L. from Algeria and never was reported from Europe. Morphological differences between populations from the USA and Poland were shown in Tab. 1. Females collected on November 9, 1998 differed from those described by Keifer (1960) in few characters. Body of specimens from Poland is larger and amber in color, pattern of prodorsal shield differs from specimens collected from Algeria (Tab. 1 and Fig. 2). Keifer (1960) did not describe males and the data are presented below by the authors.

Male: 139 (132,5-150) long; 52 wide; prodorsal shield 28 long, 43 (40-47) wide; dorsal tubercles 18 (15-20) apart; dorsal setae 10 long; opisthosoma with 47-55 dorsal annuli and 53-58 ventral annuli; male genitalia 20 wide, genital setae 18 (15-22) long, tubercles 16 apart.

## 2. Eriophyoid mites on *Taxus* spp.

*Cecidophyopsis psilaspis* (Nalepa, 1895) (Fig. 3)

Locality and date: Kórnik n/Poznań, June 3, 1998; May 5 and October 7, 1999.

Host plant: *Taxus baccata* L. (*Taxaceae*).

Relation to host plant: these mites were found inside buds, causing "big buds" and malforming of needles.

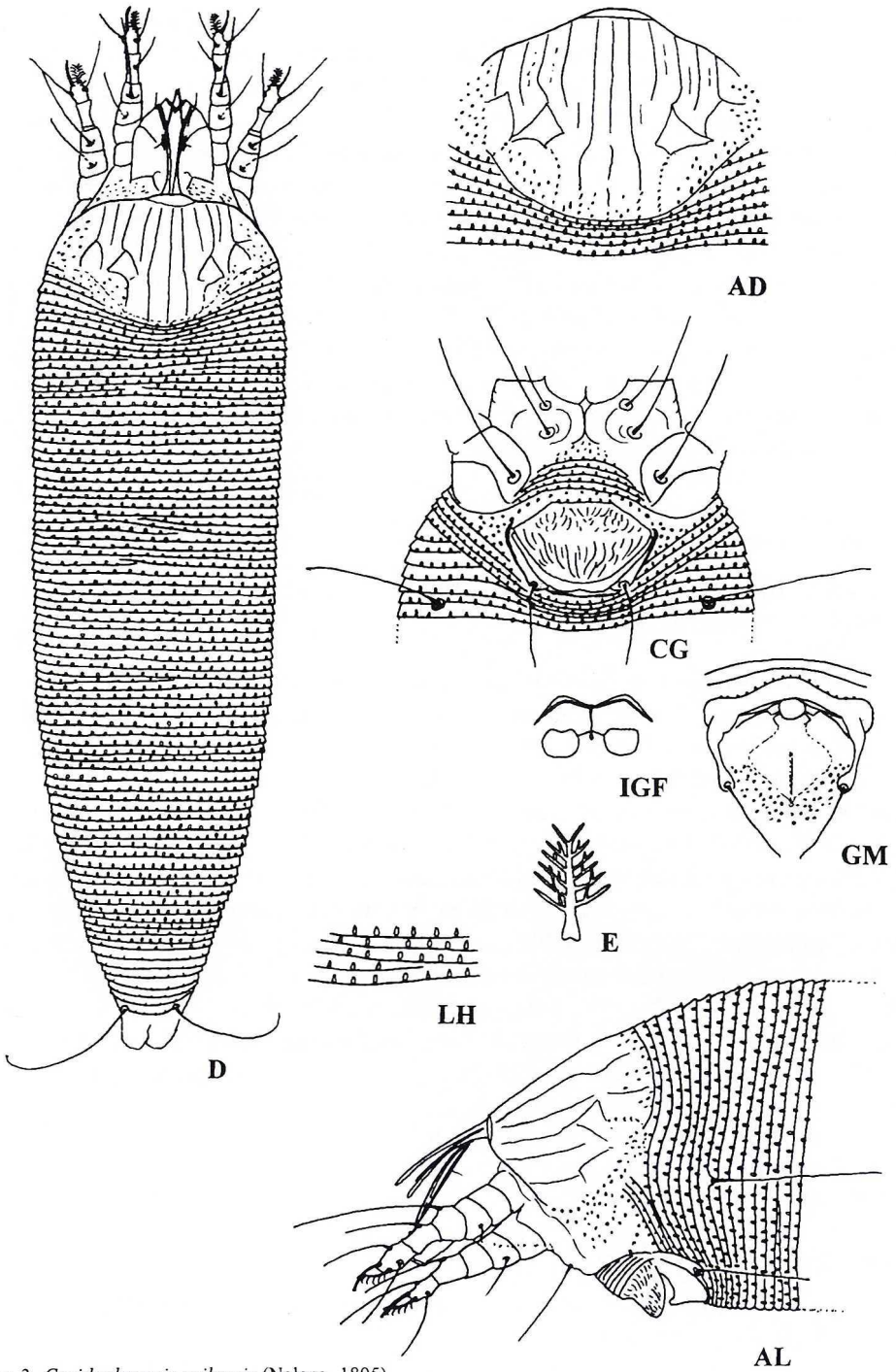


Fig. 3. *Cecidophyopsis psilaspsis* (Nalepa, 1895)  
For designations see Fig. 1.

Table 1

Comparison of *Eriophyes junipereti* females collected in Poland and Algeria

Characters	from Poland (Range of 12 females)	from Algeria [Keifer, 1960]
Length of body	145-195	150-160
Width of body	60-64	–
Length of chelicerae	20-22	–
Length of prodorsal shield	29-34	–
Length of lobe over rostrum	3-5	–
Width of prodorsal shield	47-55	–
Length of dorsal setae	8-10	6.5
Dorsal tubercles apart	18-25	16
Forecoxal tubercles I apart	14-15	–
Length of forecoxal I setae	5-8	–
Forecoxal tubercles II apart	10-12	–
Length of forecoxal II setae	19-30	–
Hindcoxal tubercles apart	23-28	–
Length of hindcoxal setae	26-40	–
Length of I leg	27-31	23
Length of I tibia	6-7	4.5
Length of II leg	24-27	21
Length of II tibia	5-6	3
No. of dorsal annuli	55-60	–
No. of ventral annuli	58-69	–
Length of female genitalia	14-17	12.5
Width of female genitalia	22-25	20
Genital tubercles apart	14-16	–
Length of genital setae	10-13	4

This mite is common on *Taxus baccata* in Europe (Farkas 1966; Ripka & de Lillo 1997; Roivainen 1947; Vaněčkova-Skühravá 1996) and was introduced to USA (Keifer 1959). In Poland up to present time this mite never was recorded (Boczek 1997), however the bud damages known as “big buds” were observed (Schnaider 1976). Morphometric data of females, males, nymphs and larvae from British Columbia and England are given by Marshall, Clayton and Newsom (1998). Females collected on October 7, 1999 in Poland

Table 2

Comparison *Cecidophyopsis psilaspsis* females collected in Poland and England

Characters	from Poland (Average for 10 females)	from England [Marshall et al.] (Average for 10 females)
Length of body	223,3	140,6
Width of body	62,0	42,3
Length of prodorsal shield	31,9	25,3
Length of hindcoxal setae	21,2	36,2
Length of I tibia	5,5	3,7
Length of I tibial setae	6,9	8,8
Length of II tibia	4,5	3,3

are very close to mites of *Cecidophyopsis psilaspis* (Nal.) from England, but some characters are significantly different. Bodies of mites from Poland are generally larger, but length of hindcoxal setae, length of I and II tibia and tibial setae are shorter than that of mites collected from England (Tab. 2).

### 3. Eriophyoid mites on *Thuja* spp.

Up till now two species of eriophyoid mites: *Epitrimerus insons* Boczek, 1961 and *Trisetacus cupressi* (Keifer 1944) were known as living on *Thuja occidentalis* L. in Poland (Boczek 1961; 1997). We confirmed the occurrence of one of them.

*Trisetacus cupressi* (Keifer, 1944)

Locality and date: Kórnik n/Poznań, May 5, 1998.

Host plant: *Thuja occidentalis* L. 'Bodneri' (*Cupressaceae*)

Relation to host plant: the mites are needle vagrants. At high level of population discolouration of needles were observed.

In Poland this species for the first time was recorded in 1958 on *Thuja occidentalis* (Puławy) together with *Epitrimerus insons* B. and no visible damages were observed (Boczek 1961). No differences in comparison to original description were found.

### 4. Eriophyoid mites on *Tsuga* spp.

Up till now in Poland one species of eriophyoid mite – *Nalepella tsugae* Keifer, 1951 (Keifer 1951) was known as living on *Tsuga canadensis* Carr. in Poland (Boczek 1964b; 1997). We confirmed the occurrence of this species.

*Nalepella tsugae* Keifer, 1951

Locality and date: Wola Mrokowska n/Warszawa, May 22 and June 19, 1999; Piaseczno n/Warszawa, Warszawa, June 24, 1999.

Host plant: *Tsuga canadensis* Carr. (*Pinaceae*).

Relation to host plant: the mites are needle vagrants. No damages were found on the needles.

In Poland this species for the first time was recorded in 1961 on *Tsuga canadensis* Carr. (Rogów – arboretum) and no damage has been observed (Boczek 1964b). No differences in comparison to original description were found.

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## SZPECIELE (*ACARI: ERIOPHYOIDEA*) WYSTĘPUJĄCE NA ROŚLINACH IGLASTYCH W POLSCE

### STRESZCZENIE

Na podstawie obserwacji prowadzonych w latach 1998-1999 dokonano przeglądu szpecielei występujących na roślinach iglastych z rodzaju *Juniperus*, *Taxus*, *Thuja* i *Tsuga*. Dla wykrytych po raz pierwszy w Polsce trzech gatunków szpecielei: *Trisetacus juniperinus* (Nalepa) na *Juniperus chinensis* ssp. *procumbens*, *Eriophyes junipereti* Keifer na *Juniperus communis* 'Hibernica' oraz *Cecidophyopsis psilaspis* (Nalepa) na *Taxus baccata*, wykonano pomiary i rysunki. Potwierdzono także występowanie dwóch gatunków szpecielei: *Trisetacus cupressi* (Keifer) na *Thuja occidentalis* 'Bodneri' i *Nalepella tsugae* Keifer, 1951 na *Tsuga canadensis*.