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Some species of mites (Acari) from house dust in Upper Silesia (Poland)

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Abstract. A survey was made of house dust mites from dwellings, hospitals and some public utilities (libraries, research laboratories) in several Upper Silesian towns. More than 30 mite species were found of which the most abundant and common were pyroglyphids, *Dermatophagoides farinae* and *D. pteronyssinus*. The majority of mites (97.65%) were found in samples from dwellings, especially in dust from upholstery furniture, couches, sofas and beds.

Key words: Acari, Pyroglyphidae, *Dermatophagoides*, *Euroglyphus*, house dust mites, allergenic mites, Poland, Upper Silesia.

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I. INTRODUCTION

Mites occuring in house dust, besides the ticks (Acari: Ixodida), are one of the most medically important group of mites. These mites, especially several species from the family Pyroglyphidae (Acaridida), are considered a main cause of house dust atopy (VOORHORST et al. 1964, 1969; WHARTON 1976; BOCZEK 1980b; ROUESSART 1981).

Three mite species, namely *Dermatophagoides pteronyssinus* (TROUESSART, 1897), *D. farinae* HUGHES, 1961 and *Euroglyphus maynei* (COOREMAN, 1950) are most common and most abundantly found in house dust throughout the world (ARLIAN 1989; HALLAS 1991; PLATTS-MILLS et al. 1992; POPE et al. 1993). These mites have been shown to produce allergens causing atopic allergies in humans, known in medicine as house-dust-mite atopy (MOSBECH 1985; ABE & ISHII 1987; ARLIAN 1991; ARLIAN et al. 1993a, b; HALLAS 1991; COLLOFF et al. 1992; FAIN et al. 1990; SCHOU & LIND 1991; PLATTS-MILLS et al. 1992; TOVEY 1992; TOVEY et al. 1981; TOVEY & BALDO 1990; POPE et al. 1993).

In Poland, knowledge of their prevalence is still poor (CHMIELEWSKI 1995b; SOLARZ 1995b, 1996b, 1998) and the number of faunistic publications is meager. These publications include surveys on pyroglyphid mites in house dust in Bydgoszcz (ROMAŃSKI et al. 1977), Warsaw (SAMOLIŃSKI et al. 1989), Poznań (DZIĘCIOŁOWSKI 1994, CHMIELEWSKI 1995 b), Lublin (GIERYNG et al. 1995) and Upper Silesia (HORAK 1987; HORAK et al. 1996; SOLARZ 1983, 1986, 1989, 1996a, 1997, 1998; ŚPIEWAK et al. 1995), in dust from nursery schools in Lublin (GIERYNG et al. 1995), in dust

from hospitals in Katowice and Sosnowiec (SOLARZ 1986, 1998), in dust from harbour buildings in Gdynia (WIĘCKO 1986), from ocean-going ships (WEGNER 1980), in sweepings from mills and warehouses (BOCZEK & DUTKIEWICZ1972), in farming environments (SOLARZ et al. 1994, 1997), in dried herbs and flour (BOCZEK & DUTKIEWICZ1972; BOCZEK & CZAJKOWSKA 1973; KARNKOWSKI 1990), and in nests of domestic sparrows, tree sparrows, barn swallows, house-martins, common starlings, thrushes, warblers, marsh tits and blue tits (CHMIELEWSKI 1975, 1977, 1980, 1982; ANDRZEJEWSKA 1979; SOLARZ et al. 1995, 1996, 1998, 1999).

Certain species of Collembola have been reported as infesting man or causing a pruritic dermatitis in human beings (SCOTT et al. 1962). Also, some Psocoptera, Blattodea, Anobiidae and Dermestidae (Coleoptera), and other "domestic" insects, are important sources of indoor dust allergens in dwellings and houses (VAN BRONSWIJK 1981, POPE et al. 1993).

The aim of this work was to study the occurrence, prevalence and species composition of house dust acarofauna in dwellings, hospitals and other public localities (libraries, research laboratories), and an assessment of main habitats and sources of house dust mites in these places. Part of the mite collection actually presented (mites collected in years 1981-1986) was previously published as the subject of phenological analysis in medical aspect (SOLARZ 1998).

A c k n o w l e d g e m e n t s. This study was made possible thanks to the kind advice and great help of the late Professor Jan RAFALSKI, to whom this paper is dedicated. I owe to his kindness the identification of all mites from the orders Gamasida and Oribatida, and from the family Cheyletidae (Actinedida). I am very grateful to Professor Andrzej SZEPTYCKI from Kraków for the identification of both species of Collembola, and for his critical review of the manuscript, and to Professor Antoni DERYŁO and Dr Krzysztof SIUDA from Katowice for helpful discussion. I am also grateful to Dr Grażyna MADEJ from Katowice for information on an occurrence of the Gamasida in Poland, and to Dr Ziemowit OLSZANOWSKI from Poznań, and Dr Piotr SKUBAŁA from Katowice for information on the prevalence of the Oribatida in our country.

II. MATERIALS AND METHODS

The study was carried out from 30 December 1981 to 6 July 1992 in Upper Silesia (Poland). A total of 443 house dust samples were examined, including 266 samples from dwellings, 122 from hospitals, 27 from libraries and 28 from research laboratories.

The samples were taken with a portable car vacuum cleaner Predom Zelmer (Rzeszów, Poland), Model #126. Next, samples of dust were weighed in a 150 ml beaker and analysed for mites as proposed by ARLIAN et al. (1983), with some modifications. This method has been previously described in details (SOLARZ 1997, 1998).

The weight of samples ranged from 0.20 to 1.00 gram.

The samples of dust from hospitals were vacuumed in 8 hospitals located in Katowice (6 hospitals) and Sosnowiec (2 hospitals), always from 2 sites – floor and patients' mattresses. Dust from dwellings was taken from floors, carpets, couches, beds and upholstery furniture, in 64 dwellings situated in Katowice, Sosnowiec, Tarnowskie Góry, Bytom, Zabrze, Chorzów, Gliwice, Ruda Śląska, Mysłowice, Opole, Dąbrowa Górnicza and Ogrodzieniec. In 2 libraries from Sosnowiec samples were taken by vacuuming from floors (coverings, carpets), upholstery chairs, arm-chairs, blinds, desks, book-shelves and books. In the case of research laboratories, dust samples were obtained from floors in Departments of Medicine Theory and Central Experimental Husbandry of the Silesian Medical Academy in Katowice-Ligota.

Analyzing the relative abundance and occurrence of mite species collected, categories of dominance and frequency were calculated according to RAJSKI (1961). The following levels of dominance and frequency were adopted:

D: 1. eudominant, species forming more than 10% of the total mite population;
2. dominant, species forming between 5.1% and 10% of the total mite population;
3. subdominant, species forming between 2.1% and 5% of the total mite population;
4. recedent, species forming between 1.1% and 2% of the total mite population;
5. subrecedent, species forming less than 1.1% of the total mite population.

F: 1. euconstant, occurring in more than 25% of samples;
2. constant, occurring in 11-25% of samples;
3. accessory species, occurring in 1-10% of samples;
4. accidental species, occurring in less than 1% of samples examined.

III. RESULTS AND DISCUSSION

List of isolated mites and results of the analysis of mite dominance and frequency are presented in Table I. The dominance and frequency is also divided into D_1, F_1, D_2, F_2, D_3, F_3, D_4 and F_4, for dust samples from dwellings, hospitals, libraries and research laboratories, respectively.

Among insects, Collembola and Copeognatha (Psocoptera) most commonly occurred. From the Collembola only 2 species were found in dust samples from dwellings: *Xenylla grisea* AXELSON, 1900 (Arthropleona: Hypogastruridae) and *Entomobryides myrmecophilus* (REUTER, 1886) (Arthropleona: Entomobryidae).

Of a total of 443 dust samples examined, 189 (42.7%) were positive for mites. These mites most frequently occurred in dwellings (54.13% of samples) and libraries (51.85%), and more rarely in hospitals (21.31%) and research laboratories (17.86%). A total of 4,089 mite specimens were found in dust samples, from which about 98% (97.65%) were found in samples collected in dwellings, whereas only 0.98% in hospitals. The remaining 1.37% of the total mite population was found in libraries (0.91%) and research laboratories or offices (0.46%). These mites belong to 4 orders, 15 families, 27 genera and 31 species (which are identified to the species level), excluding unidentified specimens of Oribatida, Tarsonemida, Gamasida and Cheyletidae (Actinedida). Pyroglyphidae were the dominants (3,822 specimens) and constituted 93.47% of the total count of mites obtained in this study [Tab.].

IV. REVIEW OF THE MITE FAUNA

This review includes only the species from families Pyroglyphidae, Acaridae, Glycyphagidae, Suidasiidae, Saproglyphidae and Psoroptidae from order Acaridida; Haplochthoniidae, Cosmochthoniidae and Oppidae from Oribatida; Cheyletidae from Actinedida; Laelapidae, Ascidae, Phytoseiidae, Ameroseiidae and Macrochelidae from Gamasida. Among these taxa, only several species, members of the families Pyroglyphidae, Acaridae, Glycyphagidae, and Cheyletidae, are considered as the typical domestic mites (COLLOFF 1991c; COLLOFF & SPIEKSMA 1992; POPE et al. 1993). The finding of *Cheyletia papillifera* in Poland has been previously reported (SOLARZ 1989) [Tab.].

Ordo: **Acaridida**

Family: **Pyroglyphidae**

1. *Dermatophagoides farinae* HUGHES, 1961

It is the true house dust mite species, probably cosmopolitan, occurring in house dust almost world-wide, especially on drier, and moreover in stored plant products, poultry houses, beehives, in

Table

Mites found in dust samples examined from dwellings, hospitals, libraries and research laboratories or offices in Upper Silesia

Mite taxa	Dwellings		Hospitals		Libraries		Research laboratories		Total	
	Dominance $[D_1]$ (%) [N=3993]	Frequency $[F_1]$ (%) [n=266]	Dominance $[D_2]$ (%) [N=40]	Frequency $[F_2]$ (%) [n=28]	Dominance $[D_3]$ (%) [n=37]	Frequency $[F_3]$ (%) [n=27]	Dominance $[D_4]$ (%) [n=19]	Frequency $[F_4]$ (%) [n=28]	Dominance [D] (%) [n=4089]	Frequency [F] (%) [n=443]
	1	2	3	4	5	6	7	8	9	10
ACARI	100.0	54.13	100.0	21.3	100.0	51.85	100.0	17.9	100.0	42.66
ACARIDIDA										
Pyroglyphidae	94.46	47.74	57.5	15.6	73.0	44.4	0.0	0.0	93.47	38.83
Dermatophagoides farinae	68.77	37.22	10.0	3.3	13.5	18.5	0.0	0.0	67.38	24.38
D. pteronyssinus	22.665	36.09	42.5	12.3	59.5	40.7	0.0	0.0	23.09	27.54
Dermatophagoides (unidentified)	0.60	4.51	0.0	0.0	0.0	0.0	0.0	0.0	0.59	2.71
Euroglyphus maynei	2.40	4.13	5.0	1.6	0.0	0.0	0.0	0.0	2.4	2.93
Gymnoglyphus longior	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Acaridae	0.805	8.65	15.0	3.3	10.81	14.8	21.05	10.7	1.15	7.67
Tyrophagus putrescentiae	0.55	4.89	5.0	1.6	5.4	7.4	5.26	3.6	0.66	4.06
T. perniciosus	0.0	0.0	5.0	0.8	0.0	0.0	0.0	0.0	0.05	0.23
T. palmarum	0.0	0.0	0.0	0.0	2.7	3.7	0.0	0.0	0.02	0.23
T. longior	0.0	0.0	0.0	0.0	0.0	0.0	5.26	3.6	0.02	0.23
Acarus siro	0.15	2.26	2.5	0.8	0.0	0.0	5.26	3.6	0.2	1.81
A. siro complex (unidentified)	0.08	0.75	0.0	0.0	0.0	0.0	0.0	0.0	0.07	0.45
Caloglyphus berlesei	0.0	0.0	2.5	0.8	0.0	0.0	0.0	0.0	0.02	0.23
Rhizoglyphus robini	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Kuzinia laevis (hypopus)	0.0	0.0	0.0	0.0	0.0	0.0	5.26	3.6	0.02	0.23
Acaridae (unidentified)	0.0	0.0	0.0	0.0	5.4	7.4	0.0	0.0	0.05	0.45
Glycyphagidae	0.65	4.89	2.5	0.8	0.0	0.0	0.0	0.0	0.66	3.16
Gohieria fusca	0.30	3.01	2.5	0.8	0.0	0.0	0.0	0.0	0.32	2.03
G. privatus	0.08	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.07	0.23
Glycyphagus domesticus	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Glycyphagus spp. (unidentified)	0.10	0.75	0.0	0.0	0.0	0.0	0.0	0.0	0.10	0.45
Lepidoglyphus destructor	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Lepidoglyphus sp. (hypopi)	0.12	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.12	0.23
Saproglyphidae	0.08	0.75	0.0	0.0	0.0	0.0	0.0	0.0	0.07	0.45
Nanacarus minutus	0.08	0.75	0.0	0.0	0.0	0.0	0.0	0.0	0.07	0.45

	1	2	3	4	5	6	7	8	9	10
Suidasiidae	0.0	0.0	5.0	1.6	0.0	0.0	0.0	0.0	0.05	0.45
Suidasia pontifica	0.0	0.0	5.0	1.6	0.0	0.0	0.0	0.0	0.05	0.45
Psoroptidae	0.0	0.0	2.5	0.8	0.0	0.0	0.0	0.0	0.02	0.23
Otodectes cynotis	0.0	0.0	2.5	0.8	0.0	0.0	0.0	0.0	0.02	0.23
Anoetidae (hypopi)	0.05	0.75	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.45
TARSONEMIDA										
Tarsonemidae	1.17	4.51	5.0	0.8	0.0	0.0	0.0	0.0	1.2	2.93
Pygmephoridae	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
ACTINEDIDA										
Cheyletidae	1.50	9.02	2.5	0.8	0.0	0.0	26.32	3.6	1.61	5.87
Cheyletus eruditus	0.27	2.63	0.0	0.0	0.0	0.0	0.0	0.0	0.27	1.58
Ch. schneideri	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Cheyletus spp.	0.78	5.26	0.0	0.0	0.0	0.0	0.0	0.0	0.76	3.16
Cheyletia papillifera	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Cheyletidae (unidentified)	0.04	4.13	2.5	0.8	0.0	0.0	26.32	3.6	0.54	2.71
ORIBATIDA										
Haplochthoniidae	0.10	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.23
Haplochthonius simplex	0.10	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.23
Cosmochthoniidae	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Cosmochthonius sp.	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Oppiidae	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Ramusella (R.) clavipectinata	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Oribatida (unidentified)	0.05	0.75	0.0	0.0	13.5	11.1	0.0	0.0	0.17	1.13
GAMASIDA										
Laelapidae	0.18	1.50	2.5	0.8	0.0	0.0	15.78	3.6	0.27	1.35
Hypoaspis aculeifer	0.08	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.07	0.23
Hypoaspis sp. (unidentified)	0.0	0.0	0.0	0.0	0.0	0.0	5.26	3.6	0.02	0.23
Androlaelaps casalis	0.1	1.13	2.5	0.8	0.0	0.0	10.52	3.6	0.2	1.13
Ascidae	0.13	1.88	2.5	0.8	0.0	0.0	0.0	0.0	0.15	1.35
Blattisocius keegani	0.08	1.13	2.5	0.8	0.0	0.0	0.0	0.0	0.1	0.9
Lasioseius berlesei	0.05	0.75	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.45
Ameroseiidae	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Ameroseius plumosus	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Macrochelidae	0.05	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.23
Macrocheles glaber	0.05	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.2
Phytoseiidae	0.225	1.13	0.0	0.0	0.0	0.0	5.26	3.6	0.24	0.9
Phytoseius macrophilis	0.025	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.23
Phytoseiidae (unidentified)	0.20	0.75	0.0	0.0	0.0	0.0	5.26	3.6	0.22	0.68
Gamasida (unidentified)	0.45	4.13	5.0	0.8	0.0	0.0	31.6	7.1	0.64	3.16

Explanations: N=number of mites collected; n=number of samples examined.

associations with mammals. It was also found on city pavements, and occasionally on the lesional skin of patients with atopic dermatitis (DUSBÁBEK 1975, 1995; HUGHES 1976; VAN BRONSWIJK 1981; DUBININA 1985; SAMŠINÁK & VOBRÁZKOVÁ 1985; COLLOFF 1987; MUMCUOGLU & LUTSKY 1990; HALLAS 1991). In Poland, it was found in samples of house dust in Warsaw (SAMOLIŃSKI et al. 1989), in Poznań and vicinity (DZIĘCIOŁOWSKI 1994), in Upper Silesia (HORAK 1987; HORAK et al. 1996; SOLARZ 1983, 1986, 1996a, 1997, 1998), in dust from harbour buildings in Gdynia (WIĘCKO 1986), from cabins on 5 ocean-going ships (WEGNER 1980), in sweepings from mills and warehouses (BOCZEK & DUTKIEWICZ1972; BOCZEK & CZAJKOWSKA 1973; CHMIELEWSKI 1975), and in a marsh tit's brood shelter (Niepołomicka Forest) (SOLARZ et al. 1999).

In fact, it was found in 99 samples from dwellings [Tab.] (beds, upholstery furniture, carpets; in Sosnowiec, Katowice, Bytom, Tarnowskie Góry, Ogrodzieniec, Chorzów, Ruda Śląska, Gliwice), in 4 samples from hospitals (patents' beds; Katowice) and in 3 samples from libraries (floor, book-shelves, arm-chairs). Generally, 2,755 specimens were collected, including:

- 2,746 (536 males, 280 females, 124 larvae, 2 larvae moulting into protonymphs, 1,334 protonymphs, 18 protonymphs moulting into tritonymphs, 318 tritonymphs, 129 unidentified nymphs and 5 tritonymphs moulting into males) from dwellings;
- 2 males, 1 protonymph and 1 tritonymph from hospitals;
- 2 females, 1 heteromorphic male and 2 protonymphs from libraries.

2. *Dermatophagoides pteronyssinus* (TROUESSART, 1897)

The cosmopolitan house dust mite species, particularly common in mattress-dust samples in Europe and in the tropics. It was found also on mammals and birds, in nests of domestic sparrows, barn swallows, house-martins and in beehives (VAN BRONSWIJK 1981; SAMŠINÁK & VOBRÁZKOVÁ 1983; COLLOFF 1987; FAIN et al. 1990; DUSBÁBEK 1995). In Poland, it was isolated from house dust in Bydgoszcz (ROMAŃSKI et al. 1977), Warsaw (SAMOLIŃSKI et al 1989), Poznań (DZIĘCIOŁOWSKI 1994; CHMIELEWSKI 1995b) and Upper Silesia (HORAK 1987; HORAK et al. 1996; SOLARZ 1983, 1986, 1996a, 1997, 1998; ŚPIEWAK et al. 1995), in dust from harbour buildings in Gdynia (WIĘCKO 1986) and from ocean-going ships (WEGNER 1980), in nests of domestic sparrows (CHMIELEWSKI 1975, 1977, 1982) and in stored herbs in Grudziądz (KARNKOWSKI 1990).

It was detected in 96 samples from dwellings [Tab.] (mainly in beds; Sosnowiec, Katowice, Bytom, Tarnowskie Góry, Ogrodzieniec, Chorzów, Gliwice), in 15 samples of dust from hospitals (patients' beds; Katowice, Sosnowiec) and in 11 samples from libraries (book-shelves, desk, upholstery chairs, floor). A total of 944 specimens were isolated including:

- 905 specimens (284 males, 285 females, 10 larvae, 100 protonymphs, 1 protonymph moulting into tritonymph, 216 tritonymphs, 9 unidentified nymphs) from dwellings;
- 17 specimens (5 males, 3 females, 1 larva, 2 protonymphs, 6 tritonymphs) from hospitals;
- 22 specimens (6 males, 8 females, 2 protonymphs, 6 tritonymphs) from libraries..

3. *Euroglyphus maynei* (COOREMAN, 1950)

The mite species commonly occurring in mattress-dust throughout the world (COLLOFF 1991a, b; ARLIAN et al. 1992; FAIN et al. 1990; DUSBÁBEK 1995). It was also found in stored food (e.g. chorizo – Spanish salami), on skin of small pets and humans, and in dust from city pavements (ROSICKÝ et al. 1979; VAN BRONSWIJK 1981; SAMŠINÁK & VOBRÁZKOVÁ 1985; COLLOFF 1987; HALLAS 1991; ARMENTIA et al. 1994). In Poland, it was found in house dust in Poznań (CHMIELEWSKI 1995b), Warsaw (SAMOLIŃSKI et al. 1989), Upper Silesia (HORAK 1987; HORAK et al. 1996; SOLARZ 1986, 1996a, 1997, 1998), in dust samples from harbour buildings in Gdynia (stores and production areas) (WIĘCKO 1986) and in stored herbs in Grudziądz (KARNKOWSKI 1990).

It was found in 7 bed dust samples from dwellings (Sosnowiec, Chorzów, Gliwice), in 2 samples from 2 hospitals located in Katowice (patients' beds). A total of 98 specimens were collected including: 96 specimens (22 males, 64 females, 9 tritonymphs and 1 protonymph) from dwellings and 2 females in samples from hospitals [Tab.].

4. *Gymnoglyphus longior* (TROUESSART, 1897)

The cosmopolitan species, occasionally occurring in house dust. It was noted from grain dust, stored food, bird nests, dust from pigeon and chicken houses, dust from primate cages in a ZOO, dust from an attic (inhabited by *Myotis dasycneme*) and in dust from mammal skins (VAN BRONSWIJK 1981; ROSICKÝ et al. 1979; DUBININA 1985; FAIN et al. 1990). In Poland, it was found in nests of domestic sparrows and barn swallows (CHMIELEWSKI 1975, 1977, 1980, 1982; ANDRZEJEWSKA 1979; SOLARZ et al. 1999), in debris from a byre in Lesko, in barn litter in Solarnia near Lubliniec (SOLARZ et al. 1997), and in house dust from a basement flat in Poznań (CHMIELEWSKI 1995b). \

One tritonymph was found in a floor dust sample from an old flat located in Tarnowskie Góry [Tab.].

Family: **Acaridae**

5. *Acarus siro* LINNAEUS, 1758

Cosmopolitan mite species, often numerously occurring in many types of stored food products (mainly cereal products), also in Poland. Also common and abundant in dust from warehouses and grain elevators, in nests of birds (including poultry houses) and small mammals, in straw, hay and in byres (HUGHES 1976; ROSICKÝ et al. 1979; VAN BRONSWIJK 1981; TERHO et al. 1982; DUBININA 1985; KORSGAARD et al. 1985; REVSBECH & ANDERSEN 1987; COLLOFF 1987; MUMCUOGLU & LUTSKY 1990; HALLAS et al. 1991; CHMIELEWSKI 1995a; HALLAS & IVERSEN 1996). In Poland, it occurs all over the country in granaries and warehouses, in food products (BOCZEK & GOŁĘBIOWSKA 1959; KLIMASZEWSKA & KWIATKOWSKA 1959; JANICKI et al. 1959; BOCZEK 1966, 1980a; BOCZEK et al. 1960, 1961; CHMIELEWSKI 1971c, 1972; WIĘCKO 1986; SOLARZ 1986; KARNKOWSKI 1990), in farming environments (cow-shed, pigsty, stable) near Turek (ANDRZEJEWSKA 1979), on small mammals (neighbourhood of Kartuzy) (LACHMAJER & WEGNER 1959), in nests of domestic sparrows, tree sparrows and barn swallows (CHMIELEWSKI 1982; SANDNER & WASYLIK 1973; WASYLIK 1959, 1964, 1971, 1973; SOLARZ et al. 1999), in beehives and honey (CHMIELEWSKI 1971a, c, 1977, 1983a, b, 1995a; BANASZAK 1980), in coal-mine dust (Upper Silesia; SOLARZ & SOLARZ 1996), in house dust samples (in Upper Silesia and in Poznań and vicinity; SOLARZ 1986, 1998; DZIĘCIOŁOWSKI 1994; CHMIELEWSKI 1995b), and in dust from ocean-going ships (WEGNER 1980).

In actual fact 1 male, 3 females and 2 protonymphs were found in 6 samples from dwellings in Katowice and Sosnowiec (2 samples each from carpets, upholstery furniture and beds), 1 male in a sample of floor dust from a ward of a hospital in Katowice, and 1 male in a floor dust sample from a kitchen of the Central Husbandry of the Silesian Medical Academy in Katowice [Tab.].

6. *Tyrophagus putrescentiae* (SCHRANK, 1781)

Cosmopolitan species, common on different stored products, and also in soil, litter, haystacks, grain stacks, mushroom-growing cellars, poultry houses, nests of birds and rodents, insect cultures, zoological collections, on city pavements and in dust from dwellings (BOCZEK 1966; BOCZEK & DUTKIEWICZ1972; HUGHES 1976; ROSICKÝ et al.1979; VAN BRONSWIJK 1981; SAMŠINÁK & VOBRÁZKOVÁ 1985; DUBININA 1985; COLLOFF 1987; MUMCUOGLU & LUTSKY 1990; CHMIELEW-

SKI 1995a; DUSBÁBEK 1995). In Poland, it is common both in natural environments (bird and rodent nests, beehives, honey, plants, manure) and in warehouses, stables or mushroom-growing cellars, on different items of food (e. g. in stored herbs, corn-meal products, fruit-vegetable products, spices and grocery items for consumption) (LACHMAJER & WEGNER 1959; KLLIMASZEWSKA & KWIATKOWSKA 1959; WASYLIK 1959, 1963, 1964; BOCZEK et al. 1960, 1961; CHMIELEWSKI 1971a, c, 1972, 1977, 1982, 1983b, 1995a; ANDRZEJEWSKA 1979; BANASZAK 1980; BOCZEK 1980a; KARNKOWKI 1990; SOLARZ et al. 1999), in samples of dust, residues and transported products (wheat, fodder) from railway wagons (SOLARZ 1995a), in dust from harbour warehouses in Gdynia (WIĘCKO 1986), in house dust in Upper Silesia and Poznań (SOLARZ 1986, 1997, 1998; HORAK 1987; HORAK et al. 1996; DZIĘCIOŁOWSKI 1994; CHMIELEWSKI 1995b), in coal-mine dust (SOLARZ & SOLARZ 1996) and in dust samples from kitchens on ocean-going ships (WEGNER 1980).

It was found in 13 samples of dust from dwellings (couches, beds, upholstery furniture, floor, carpets; Sosnowiec), in 2 samples from 2 hospitals (floor-dust; Katowice), in 2 samples from libraries (book-shelves and upholstery chairs; Sosnowiec), and in 1 sample from a kitchen of the Central Experimental Husbandry of the Silesian Medical Academy in Katowice [Tab.]. A total of 27 specimens were collected, including:

– 22 specimens (2 larvae, 1 protonymph, 11 tritonymphs, 6 females and 2 males) from dwellings;

– 1 male and 1 tritonymph in hospitals;

– male and 1 female from husbandry.

7. *Tyrophagus longior* (GERVAIS, 1844)

Common mite species, occurring mainly in byres, in stacks of hay, straw and grain in a field, in products in storage (hay, straw, grain), in honey, bird nests, poultry houses and beehives (BOCZEK 1966; CHMIELEWSKI 1995a, HUGHES 1976; ROSICKÝ et al. 1979; TERHO et al. 1982; HALLAS & SOLBERG 1989; HALLAS et al. 1991). It also was found in house dust samples (DUBININA 1985; COLLOFF 1987). In Poland, it was noted from warehouses (BOCZEK 1980a) and from certain farming environments (barn, pigsty, cow-shed) (ANDRZEJEWSKA 1979; SOLARZ et al. 1997), from honey (CHMIELEWSKI 1995a), beehives (CHMIELEWSKI 1971a) and bees (CHMIELEWSKI 1983b), from fruit-vegetable food products, from spices and grocery items (CHMIELEWSKI 1971c), sugar beet seeds (CHMIELEWSKI 1969b), stored herbs (BOCZEK et al. 1961; CHMIELEWSKI 1972; KARNKOWSKI 1990), nests of domestic sparrows and tree sparrows (near Warsaw and Poznań) (WASYLIK 1959, 1963, 1964, 1971, 1973; CHMIELEWSKI 1977), nests of common blackbirds, great titmouses and common starlings (Upper Silesia) (SOLARZ et al. 1999), from a swallow's nest (cow-shed in Grabieniec near Turek) (ANDRZEJEWSKA 1979), from house dust in Poznań (CHMIELEWSKI 1995b), and dust samples from ocean-going ships (WEGNER 1980).

One protonymph was found found in a sample of floor dust collected from an operating-theatre of the husbandry in Katowice [Tab.].

8. *Tyrophagus palmarum* OUDEMANS 1924

The cosmopolitan species, occurring in stored products (e.g. herbs), beehives, bird nests, soil samples, litter and debris from a cow-shed, in stacks of grain and hay in an open field, and on plants (HUGHES 1976; BOCZEK 1980a; KARNKOWSKI 1990). It was also found in house dust samples (VAN BRONSWIJK 1981). In Poland, it occurred in nests of tree sparrows (near Warsaw) (WASYLIK 1971, 1973; SANDNER & WASYLIK 1973), domestic sparrows, barn swallows, common blackbirds, icterine warbles and marsh tits (Upper Silesia) (SOLARZ et al. 1999), in stored herbs (in Grudziądz) (KARNKOWSKI 1990), on the communal refuse dump in Bielsko-Biała (MADEJ & SOLARZ 1998) and in cowsheds (southern Poland) (SOLARZ et al. 1997).

One male was found in a dust sample from a desk in a library in Sosnowiec [Tab.].

9. *Tyrophagus perniciosus* ZACHVATKIN, 1941

Mite species known from Poland, former USSR, Bulgaria, England and Australia; occurred in oats, barley, on cheese, and in the dust from granaries and warehouses (HUGHES 1976). In Poland, it was found in dust from warehouses, in stored grain and herbs, flax seeds and hemp seeds (KLIMASZEWSKA & KWIATKOWSKA 1959; BOCZEK et al. 1960, 1961), in nests of tree sparrows (near Warsaw) (WASYLIK 1963, 1964, 1971; SANDNER & WASYLIK 1973), and common blackbirds (Upper Silesia) (SOLARZ et al. 1999).

Two males were found in a floor-dust sample from the Children's Hospital in Sosnowiec [Tab.].

10. *Rhizoglyphus robini* CLAPAREDE, 1869

Cosmopolitan species, occurring on bulbs of bulbous plants, on potato bulbs (HUGHES 1976; BIELSKA 1983) and in dust from poultry houses (Israel) (MUMCUOGLU & LUTSKY 1990). In Poland, it is common in soil, compost, resting plants and rarely in warehouses (on decaying bulbs, etc., sporadically in a damp grain and onion) (BOCZEK et al. 1960; BOCZEK 1966, 1980a; BIELSKA 1983; CHMIELEWSKI 1977). It was also found in coal mine dust in Upper Silesia (SOLARZ & SOLARZ 1996), and on the communal refuse dump and adjacent meadow in Bielsko-Biała (MADEJ & SOLARZ 1998).

One female was found in a floor-dust sample from a dwelling in Katowice [Tab.].

11. *Caloglyphus berlesei* (MICHAEL, 1903) s. BERLESE, 1923

Species widely distributed, probably cosmopolitan, occurring in insect cultures, poultry houses, house dust samples and sporadically in stored food. It was also detected in dust from city pavements (SAMŠINÁK & VOBRÁZKOVÁ 1985). In granaries and warehouses this species requires extremely high moisture (HUGHES 1976; VAN BRONSWIJK 1981; MUMCUOGLU & LUTSKY 1990). In Poland, it was also found in dust from vegetable stores on ocean-going ships (WEGNER 1980) and in an industrial chicken battery farm (RAJSKI & STASZEWSKA 1976).

A mass population was found on the surface of leaves of a common fig (hall of a hospital in Katowice) [leg. Lucyna MAŚLANKA] and 1 protonymph in floor-dust sample from a cloak-room of a hospital in Sosnowiec [Tab.].

12. *Kuzinia laevis* (DUJARDIN, 1849)

The Holarctic species; adult mites occurred in bumble-bee nests, and hypopi on the same bumble bees (GILYAROV & KRIVOLUTSKIJ 1975, CHMIELEWSKI 1969a, 1983b). Recorded in Poland by CHMIELEWSKI (1969a, 1971b, 1983b).

One hypopus (heteromorphic deutonymphal stage) was found in a sample of floor-dust from a biological laboratory in Katowice [Tab.].

Family: **Glycyphagidae**

13. *Gohieria fusca* (OUDEMANS, 1902)

This species is widely distributed, probably cosmopolitan. It was found in stored food products, especially fine-grained, such as flour (where it is the most abundant and frequent species). It was also found on rice, corn, bran, pollards and poppy seeds, in sugar, poultry protein mixture, in dust from grain stores, poultry houses and mills (HUGHES 1976; ROSICKÝ et al. 1979; VAN BRONSWIJK 1981; DUBININA 1985; REVSBECH & ANNDERSEN 1987; MUMCUOGLU & LUTSKY 1990), and in house dust samples (HUGHES 1976; COLLOFF 1987; DUSBÁBEK 1995). In Poland, it occurs most fre-

quently in finegrained and loose food products, and also in grain seeds, oleiferous seeds, honey and dried herbs (BOCZEK & GOŁĘBIOWSKA 1959; KLIMASZEWSKA & KWIATKOWSKA 1959; BOCZEK et al. 1960, 1961; BOCZEK 1966, 1980a; CHMIELEWSKI 1971a, c; SOLARZ 1986; KARNKOWSKI 1990). It was also found in dust from harbour warehouses in Gdynia (WIĘCKO 1986), in cow-shed litter in Grabieniec (ANDRZEJEWSKA 1979), in house dust in Upper Silesia (HORAK 1987; HORAK et al. 1996; ŚPIEWAK et al. 1995; SOLARZ 1997, 1998), Poznań and vicinity (DZIĘCIOŁOWSKI 1994), in Warsaw (SAMOLIŃSKI et al. 1989), and in dust from ocean-going ships (WEGNER 1980).

It was found in 8 dust samples from dwellings (beds, carpet, upholstery furniture; Sosnowiec, Bytom, Katowice) and in 1 sample of dust from a ward in a hospital in Katowice-Ochojec [Tab.]. A total of 12 specimens (9 males, 1 female, 2 nymphs unidentified) were found in dwellings and 1 male in the hospital.

14. *Glycyphagus domesticus* (DE GEER, 1778)

A cosmopolitan species, but is more frequently reported from Europe than from North America, Japan or Australia (HUGHES 1979; FAIN et al. 1990). It occurs mainly on both plant and animal residues in food stores, in pigsties, stables, barns and houses. It has been also found in different sorts of animal and plant food materials (flour, wheat, cheese, ham, linseed, dried meat) as well as in tobacco, hay, sugarbeet seed, in bee, mammal and bird nests, in stacks of hay in an open field, in byres, hay and grain storages, in natural museum exhibits (herbarium) (HUGHES 1976; ROSICKÝ et al. 1979; TERHO et al. 1982; HALLAS & SOLBERG 1989; HALLAS & IVERSEN 1996), and in damp houses – on mattresses, upholstery furniture (with rush, sea grass fibre or green fibre), on wallpapers or in other house dust samples (HUGHES 1976; VAN BRONSWIJK 1981; DUBININA 1985; COLLOFF 1987; DUSBÁBEK 1995). *G. domesticus* also occurs in Poland in warehouses and different home-food products, in debris from cow-sheds, barns, rabbit hutches and lofts, and in an open field – in hay, on bees and in beehives, in domestic sparrow nests (ANDRZEJEWSKA 1979; BANASZAK 1980; BOCZEK & GOŁĘBIOWSKA 1959; JANICKI et al. 1959; BOCZEK et al. 1960, 1961; KLIMASZEWSKA & KWIATKOWSKA 1959, BOCZEK 1966, 1980a; CHMIELEWSKI 1969b, 1971a, c, 1972, 1982, 1983b; BOCZEK & DUTKIEWICZ1972; SANDNER & WASYLIK 1973; WASYLIK 1959, 1964, 1971, 1973; BANASZAK 1980; KARNKOWSKI 1990; SOLARZ et al. 1994, 1997, 1998, 1999), in house dust samples in Bydgoszcz (ROMAŃSKI et al. 1977), Upper Silesia (HORAK et al. 1996) and Poznań (CHMIELEWSKI 1995b), in coal-mine dust (SOLARZ & SOLARZ 1996), and in dust from ocean-going ships (WEGNER 1980).

One tritonymph of *G. domesticus* was actually found in a carpet-dust sample from a room of a dwelling in Sosnowiec [Tab.].

15. *Glycyphagus privatus* OUDEMANS, 1903

This mite has been found in wheat, barley, grass seed, clover, hemp and flax seed, in stored herbs, in dust from cows-heds, barns, silos and warehouses, in open fields, in debris left after winnowing, in nests of tree and domestic sparrows and in house dust samples (WASYLIK 1959, 1964, 1971, 1973; BOCZEK et al. 1960; CHMIELEWSKI 1972; HUGHES 1976; VAN BRONSWIJK 1981; DUSBÁBEK 1995; SOLARZ et al. 1997). In Poland *G. privatus* was found in stored herbs (CHMIELEWSKI 1972; BOCZEK et al. 1961), in hemp seeds and flax seeds in warehouses (BOCZEK et al. 1960), in nests of domestic sparrows (WASYLIK 1959) and tree sparrows near Warsaw (WASYLIK 1964, 1971, 1973; SANDNER & WASYLIK 1973), in dust and debris from cow-sheds, barns and lofts (farming environment, southern Poland) (SOLARZ et al. 1997), and in house dust samples in Poznań (DZIĘCIOŁOWSKI 1994).

Two protonymphs and one female were found in 1 sample of bed-dust from a dwelling in Katowice-Ligota [Tab.].

16. *Lepidoglyphus destructor* (SCHRANK, 1781)

The cosmopolitan and one of the commonest species among storage mites; most often occurs in different stored products, particularly in stored grain, linseed, cereals, dried fruits, sugar beet seed, meal (CHMIELEWSKI 1969b; BOCZEK 1966, 1980a; HUGHES 1976; ROSICKÝ et al. 1979; FAIN et al. 1990). It also was found in stacks of grain, straw and hay (in a field or in farm-houses, storages and barns), in floor debris samples from granaries, byres and stables, in grain dust from grain storages (HALLAS 1981; TERHO et al. 1982, 1985; HALLAS & GUDMUNDSSON 1985; FAIN et al. 1990), in soil samples (old grassland, agricultural zones), in nests of rodents, birds, bees and bumble-bees, on zoological exhibits (insects, mammals), in poultry houses, and moreover in damp dwellings – under wallpapers, in mattress stuffing or in house dust (BOCZEK 1966, 1980a; HUGHES 1976; ROSICKÝ et al. 1979; BANASZAK 1980; VAN BRONSWIJK 1981; CHMIELEWSKI 1982; DUBININA 1985; COLLOFF 1987; HALLAS & SOLBERG 1989; HALLAS et al. 1991; DUSBÁBEK 1995). In Poland, *L. destructor* was the mite most often found in stored food products (grain, dried herbs, grinding products, linseeds, sugar-beet seeds, corn-meal products, spices and grocery items, fruit-vegetable products, natural honey) and in sweepings from warehouses and granaries (BOCZEK & GOŁĘBIOWSKA 1959; BOCZEK et al. 1960, 1961; BOCZEK 1966, 1980a; BOCZEK & DUTKIEWICZ1972; CHMIELEWSKI 1969b, 1971a, c, 1972, 1977; JANICKI et al. 1959; KLIMASZEWSKA & KWIATKOWSKA 1959; KARNKOWSKI 1990; SOLARZ 1986). Moreover, it was found in farming environments (sweepings and litter or debris from barns, poultry houses, cow-sheds) (ANDRZEJEWSKA 1979; SOLARZ et al. 1994, 1997), in sparrow nests (SANDNER & WASYLIK 1973; WASYLIK 1963, 1964, 1971, 1973; CHMIELEWSKI 1982), in beehives (BANASZAK 1980), in house dust in Bydgoszcz and Poznań (ROMAŃSKI et al. 1977, DZIĘCIOŁOWSKI 1994; CHMIELEWSKI 1995b), in dust from warehouses and harbour buildings in Gdynia (WIĘCKO 1986), in dust from ocean-going ships (WEGNER 1980), and in coal-mine dust samples (SOLARZ & SOLARZ 1996).

One protonymph of *L. destructor* was found in a sample of bed-mattress dust from a dwelling located in Gliwice [Tab.].

Family: **Suidasiidae**

17. *Suidasia pontifica* OUDEMANS, 1905

The mite species known from England, Germany, Poland, North and Central Africa, Sumatra, India, Pakistan, New Zealand, New Guinea, Puerto Rico, tropical part of America and Angola. Also known from Poland (HUGHES 1976; FAIN & PHILIPS 1978; CHMIELEWSKI 1971c, 1977; WIĘCKO 1986). It has been noted from bee's nests (most possibly its natural habitat), mosquitoes, rice bran, groundnuts, cowpeas, copra and dust from dwellings and livestock habitations (HUGHES 1976; VAN BRONSWIJK 1981; FAIN & PHILIPS 1978). In Poland, it was found in spices and grocery items for consumption from warehouses (mainly in Poznań district) (CHMIELEWSKI 1971c).

Two males were noted in 2 samples of dust taken in the same hospital in Sosnowiec – from the mattress of a patient's bed and from a cloak-room floor [Tab.].

Family: **Winterschmidtiidae** (= Saproglyphidae)

18. *Nanacarus minutus* OUDEMANS, 1903

The mite species known from Europe; it was found on shrews (*Sorex* sp.), in timothy grass seeds (*Phleum*), in small farm granaries and in hay (GILYAROV & KRIVOLUTSKIJ 1975). For the first time in Poland it was reported from a barn dust (SOLARZ et al. 1994, 1997).

Two tritonymphs and 1 male were collected from 2 samples of mattress dust from a dwelling in Sosnowiec [Tab.].

Family: **Psoroptidae**

19. *Otodectes cynotis* (HERING, 1838)

The parasite of ears of dogs, cats, foxes, minks and ferrets (polecat ferrets); disease unit -*otodectosis* (PIOTROWSKI 1982). In Poland and many other countries it is considered as the most common ectoparasite of dogs and cats (PIOTROWSKI 1979, 1982; DUBININA 1997). This mite was also found in house dust samples (VAN BRONSWIJK 1981).

One male of *O. cynotis* was found in a floor-dust sample from a staff cloak-room located in an attic of a hospital in Sosnowiec [Tab.].

Ordo: **Actinedida**

Family: **Cheyletidae**

20. *Cheyletus eruditus* (SCHRANK, 1781)

The cosmopolitan cheyletid species and the most common member of this family. This predator mite occurs in the same habitats as storage mites, most frequently in home stored food and in warehouses, in dust from grain stores, in stables, in stored hay, straw and grain, in farming detritus, in bird and mammal nests, beehives, in libraries (BOCZEK 1966, 1980a; BANASZAK 1980; VAN BRONSWIJK 1981; DUBININA 1985; HALLAS 1981; HALLAS et al. 1991; HALLAS & GUDMUNDSSON 1985; HALLAS & SOLBERG 1989; HUGHES 1976; REVSBECH & ANDERSEN 1987; TERHO et al. 1982, 1985), in house dust (HUGHES 1976; VAN BRONSWIJK 1981; DUBININA 1985, COLLOFF 1987; FAIN et al. 1990). It was also found in dust from city pavements (SAMŠINÁK & VOBRÁZKOVÁ 1985). In Poland, it was found in nests of domestic sparrows (CHMIELEWSKI 1982), in stored herbs (Białystok, Bydgoszcz, Gdansk, Katowice, Kielce, Kraków, Lublin, Olsztyn, Opole, Kutno, Łódź, Poznań, Warszawa, Wrocław, Grudziądz) (BOCZEK et al. 1961; CHMIELEWSKI 1972; KARNKOWSKI 1990), in grain, grinding products, hemp and linseeds (BOCZEK & GOŁĘBIOWSKA 1959), in beehives (Poznań, Olsztyn, other localities) (CHMIELEWSKI 1971a; BANASZAK 1980), in corn-meal products, honey, spices and grocery items for consumption, and other food products from shops, warehouses or home pantries (mainly Poznań vicinity) (CHMIELEWSKI 1971c), in dust from ocean-going ships (WEGNER 1980), and in house dust samples (Upper Silesia and Poznań) (HORAK 1987; HORAK et al. 1996; DZIĘCIOŁOWSKI 1994; CHMIELEWSKI 1995b).

Eleven specimens were found in 7 dust samples from dwellings [Tab.].

21. *Cheyletus schneideri* OUDEMANS, 1902

The mite species described from Italy (San Remo) and found in dry leaves (VOLGIN 1969). New to the fauna of Poland.

Only a single specimen of this mite species was found in a sample of carpet dust from a room of a dwelling in Sosnowiec [Tab.].

22. *Cheyletia papillifera* (OUDEMANS, 1897)

The mite described from Holland (Utrecht, Arnhem) and found in dirt (rubbish-dust sample) at home (VOLGIN 1969).

One protonymph of *Ch. papillifera* was found in mattress-dust sample from a children's bed in a room of a dwelling in Sosnowiec [Tab.].

Ordo: **Oribatida**

Family: **Haplochthoniidae**

23. *Haplochthonius simplex* (WILLMANN, 1930)

Holarctic, xerophilous species, widely distributed in Europe (J. RAFALSKI, personal communication; OLSZANOWSKI et al. 1996). Already found in dust samples (GRIDELET & LEBRUN 1973; VAN BRONSWIJK 1981). In Poland, found in Poznań and Śrem vicinity (Wielkopolsko-Kujawska Lowland) (OLSZANOWSKI et al. 1996).

Four specimens have been found in a dust sample from a couch located in a bedroom of the flat in Sosnowiec [Tab.].

Family: **Cosmochthoniidae**

24. *Cosmochthonius lanatus* (MICHAEL, 1885)

C. lanatus is the widely distributed Holarctic species, xerophilous, and also has already been isolated from house dust samples (GRIDELET & LEBRUN 1973; VAN BRONSWIJK 1981; OLSZANOWSKI et al. 1996; J. RAFALSKI, personal communication). In Poland, found in Wielkopolsko-Kujawska Lowland (vicinity of Poznań, Kzpno and Śrem, Wielkopolski National Park) and the Białowieća Primeval Forest (OLSZANOWSKI et al. 1996).

Single specimen of *C. lanatus* have been found in dust sample from a couch located in a bedroom of the dwelling in Katowice [Tab.].

Family: **Oppidae**

25. *Ramusella (Ramusella) clavipectinata* (MICHAEL, 1885)

Holarctic mite species, panphytophagous, widely distributed (J.RAFALSKI, personal communication; Z. OLSZANOWSKI, personal communication). The mites of the genus *Ramusella* (as *Oppia* spp.) have already been isolated from house dust (SAMŠINÁK et al. 1978; VAN BRONSWIJK 1981; DUSBÁBEK 1995). On the territory of Poland, noted from Wielkopolsko-Kujawska Lowland (Ciechocinek, Poznań and vicinity, Pleszew vicinity, Gołuchów), Pomeranian Lake District ("Bielinek nad Odrą" Reservation), West Sudeten Mountains (Kłodzko vicinity) (OLSZANOWSKI et al. 1996).

One specimen has been found in floor dust sample from a bathroom of a dwelling in Sosnowiec [Tab.].

Ordo: **Gamasida**

Family: **Laelapidae**

26. *Androlaelaps casalis* (BERLESE, 1887) s. TILL, 1963

The cosmopolitan, mainly Holarctic species, very common in various habitats (straw, hay, nests of mammals and birds) (HUGHES 1976; J. RAFALSKI, personal communication); also has been isolated from dust samples (WEGNER 1980; VAN BRONSWIJK 1981). In Poland is common in bird nests and brood-shelters, and on small mammals (PATAN 1969; BŁASZAK & MADEJ 1997).

Seven females have been found in 5 dust samples, including 4 females in 3 dust samples from dwellings, 1 female in floor dust sample from a hospital ward in Katowice-Szopienice, and 2 females in floor dust sample from a husbandry kitchen in Katowice-Ligota [Tąb.].

27. *Hypoaspis (Geolaelaps) aculeifer* (CANESTRINI, 1883)

The Holarctic species widely distributed, common in many European countries, in the former USSR, Israel, Algiers and North America (Eastern Canada) (HUGHES 1976; GILYAROV & BREGETOVA 1977). It occurs in soil of fields and meadows but rarely in forests, in litter, compost, nests of many species of rodents; also found in flour, on daffodil bulbs and in dust samples (PATAN 1969; HUGHES 1976; SAMŠINÁK et al. 1978; WEGNER 1980, VAN BRONSWIJK 1981; J. RAFALSKI, personal communication). In Poland, also common in many different localities throughout the country (BŁAZSZAK & MADEJ 1997; MADEJ & SOLARZ; SKORUPSKI & BŁAZSZCZAK 1998; STODÓŁKA 1998; SZYMKOWIAK 1998).

One male and 2 females have been found in a floor-dust sample from a bathroom of a dwelling in Sosnowiec. Moreover, 1 unidentified specimen of *Hypoaspis* sp. was found in floor dust from the kitchen of the husbandry [Tab.].

Family: **Ascidae**

28. *Blattisocius keegani* FOX, 1947

Widely distributed – England, Poland, Mexico, South America, USA (Hawaii), Malaya, West Africa; occurred in stored products infested with insects, in insect cultures and has also been found in a sparrow nest, on rats, in house dust, on machinery in a flour mill, on nutmegs, citrus trees and roses (HUGHES 1976; SAMŠINÁK et al. 1978; ROSICKÝ et al. 1979; VAN BRONSWIJK 1981). From Poland, noted by CHMIELEWSKI (1969 b), and BŁAZSZAK & MADEJ (1997).

Three females have been found in 3 dust samples from dwellings (2 samples of floor dust from 2 dwellings located in Sosnowiec and Katowice, and 1 sample of dust from upholstery furniture in a dwelling in Sosnowiec). Moreover, 1 female was isolated from a dust sample from a cloak-room in Children Public Hospital in Sosnowiec [Tab.].

29. *Lasioseius berlesei* OUDEMANS, 1938 s. KARG, 1971

Widely distributed in Europe (especially western part), on the territory of the former USSR and in the USA; occurs in soil, litter, moss, straw, under bark of trees and in rodent nests (GILYAROV & BREGETOVA 1977; J. RAFALSKI, personal communication). It has also been found in house dust samples (SAMŠINÁK et al. 1978). In Poland, occurred in salt pans (soils impregnated with salts) (Ciechocinek), in ecotone zones (Rogaczew near Turwia), in the green belt of the Wrocław agglomeration, on waste lands and refuse dumps (Upper Silesia: Czeladź, Murcki, Bytom), halophytes (Janikowo), on field-voles (*Microtus arvalis*, *Microtus* sp.) (Błotnica near Niemcza) (HAITLINGER 1981; BŁAZSZAK & MADEJ 1997).

Two specimens (stages unidentified) were found in 2 floor-dust samples from an ante-room and a toilet located in the same dwelling in Sosnowiec [Tab.].

Family: **Phytoseiidae**

30. *Phytoseius macrophilis* (BANKS, 1909)

Predator mite species, widely distributed, commonly occurring in Europe, North America and former USSR; on deciduous trees, especially on fruit trees, and shrubs; common also in Poland and occurred all over the country (BOCZEK 1980a, BŁASZAK & MADEJ 1997; J. RAFALSKI, personal communication).

One male was found in a floor dust sample from a dwelling in Katowice. Moreover, 9 specimens of unidentified phytoseiid mites were found: 1 male in a sample of upholstery furniture dust from a dwelling in Sosnowiec, 3 females, 1 male and 3 unidentified specimens in a sample of floor dust

from the same dwelling in Sosnowiec, and 1 female in a floor dust sample from a kitchen of the husbandry [Tab.].

Family: **Ameroseiidae**

31. *Ameroseius plumosus* (OUDEMANS, 1902)

European species, actually widely distributed (Europe, former USSR, Israel, Central Asia, Japan, Canada, Australia) occurring in grain, straw, haystacks, manure, detritus from warehouse floors, in damp vegetable materials, in poultry houses, dust of damp houses (supporting a growth of moulds), nests of small mammals and bumble bees (HUGHES 1976; GILYAROV & BREGETOVA 1977; ROSICKÝ et al. 1979; J. RAFALSKI, personal communication). In our country, for example, it was found in dust samples from cabins, dry food stores and vegetable stores on ocean-going ships (WEEGNER 1980), in warehouses in spices and grocery items (CHMIELEWSKI 1971c), in bumblebee nests, in beehives (CHMIELEWSKI 1971a, 1977, 1995a), on insects and in a dumping ground (G. MADEJ, personal communication).

One female has been found in a mattress dust sample from a child's bed in a dwelling located in Sosnowiec [Tab.].

Family: **Macrochelidae**

32. *Macrocheles glaber* (MÜLLER, 1860)

Palearctic predator mite species, widely distributed, commonly occurring in compost heaps, dung and soil (GILYAROV & BREGETOVA 1977; J. RAFALSKI, personal communication). Moreover, the mites of this genus have been isolated from house dust (VAN BRONSWIJK 1981). In Poland, has also been found in beehives (BANASZAK 1980; CHMIELEWSKI 1971a), and on small mammals (BŁAZSZAK & MADEJ 1997).

Two females were found in a sample of floor dust from a bedroom of a dwelling in Zabrze [Tab.].

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