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A morphological analysis of *Polyplax serrata* (Burmeister, 1839)
(*Arthropoda*, *Anoplura*)

Analiza morfologiczna *Polyplax serrata* (Burmeister, 1839)
(*Arthropoda*, *Anoplura*)

Abstract

Wegner Z. 1974. A morphological analysis of *Polyplax serrata* (Burmeister, 1839) (*Arthropoda*, *Anoplura*). Acta parasit. pol., 22, 203-217.

Ten fundamental morphological features of lice were analysed from a material composed of 92 specimens obtained from *Apodemus agrarius*, 47 from *A. flavicollis*, 216 from *A. sylvaticus*, and 36 from *Mus musculus*, caught in Poland, Rumania and the Soviet Union. It was found that all the lice belonged to *Polyplax serrata* (Burm.). It was also demonstrated that all the mentioned groups of lice, irrespective of the host species on which they parasitized, contained specimens (sometimes their percentage being high) characterized by distinguished variability of certain examined morphological features. This fact points to the advanced intraspecific variability in *P. serrata* (Burm.), and this makes it difficult to distinguish taxa that could serve to differentiate typical host patterns.

The species considered in this study was first described from the house mouse *Mus musculus* L., under the name *Pediculus serratus* Burmeister, 1839. In the early 20th century, Fahrenholz 1912, being in the possession of specimens of the just mentioned species from *Apodemus sylvaticus* (L.), erroneously determined them as *Polyplax affinis* (Burm.). Later Ferris 1921, 1923, pointed out that Fahrenholz was wrong in his interpretation and he demonstrated that the name *Polyplax affinis* (Burm.) was a synonym of a different species of genus *Hoplopleura* Enderl., viz., *Hoplopleura affinis* (Burm.). Fahrenholz 1938, agreed that Ferris was right but at the same time he came out with the statement that the lice found on European *A. sylvaticus* (L.) belonged to a new distinct species which he called *Polyplax affinis* Fahrenholz. Fahrenholz's interpretations 1912, 1938, caused a great confusion in the taxonomy of the genus *Polyplax* Enderl., because some authors, among them Jancke 1938, classified lice from *A. sylvaticus* (L.) and from *M. musculus* L. in

the genus *Polyplax affinis* (Burm.), and others, to mention Freund 1935 and Zunker 1930, ranked the lice recorded from the same host species to *Polyplax serrata* (Burm.). Ferris 1951, in his monographic study of the lice, when describing *Polyplax serrata* (Burm.) mentioned that this species was recorded on *A. sylvaticus* (L.) in Switzerland, Czechoslovakia and England; on *A. agrarius* (Pall.) in Manchuria and China; on *A. speciosus* Temm. in China and on *M. musculus* L. in Spain, Scotland and England, and he included the names *Polyplax affinis* (Burm.) and *Polyplax affinis* Fahrenholz in the list of synonymus of *Polyplax serrata* (Burm.).

Beginning with the fifties of the present century, more and more often reports were made on *Polyplax serrata* (Burm.) specimens found on representatives of the genera *Apodemus* Kaup. and *Mus* L. They were found on *A. sylvaticus* (L.), *A. agrarius* (Pall.), *A. flavicollis* (Melch.), and *M. musculus* L. either wild or laboratory bred white mice (e.g. Beaucournu 1968, Blagoveščenskij 1964, Gerwel 1954, Kim and Emerson 1971, Mrciak 1967, Piotrowski 1970, Scanlon 1955, Smetana 1965, Smetana and Daniel 1970, Szczęśniak 1963, Wegner 1957, 1959, 1970, Zwolski 1960).

Phyllis T. Johnson 1960, who investigated lice of African rodents, found *P. serrata* (Burm.) only on laboratory-bred white mice. This fact induced her to express the opinion that the species *P. serrata* (Burm.), although it was first described from *M. musculus* L., seems to originate from host representatives of the genus *Apodemus* Kaup. and, together with those hosts, spread over the world and only later, in the Palearctic, it most probably invaded wild *M. musculus* L. She supported her suggestion (loc. cit.) with the argument that, as was observed, reports on the occurrence of *P. serrata* (Burm.) on *M. musculus* L. outside Europe and Asia were limited to the white mice.

Eichler 1960, on the other hand, following in Fahrenholz's trails, suggested that *M. musculus* L. was the specific host of the louse *P. serrata* (Burm.) and only its subspecies were found on the various species of the genus *Apodemus* Kaup, namely: *Polyplax serrata affinis* Fahrenholz on *A. sylvaticus* (L.); *P. serrata paxi* Eichler on *A. agrarius* (Pall.); and *Polyplax serrata* subsp. (aff. *affinis*) Eichler on *A. flavicollis* (Melch.) It appears that the latter subspecies has not been finally determined by the mentioned author.

The controversial opinions the taxonomical rank of lice parasitizing various mouse species of genera *Apodemus* Kaup. and *Mus* L. have induced the present author to carry out a morphological analysis based on a comprehensive material.

Material and methods

The morphological analysis was carried out on the basis of examination of 391 louse specimens of the genus *Polyplax* Enderl. obtained from: *Mus musculus* L. (wild and laboratory white mice), *Apodemus agrarius* (Pall.), *A. flavicollis* (Melch.) and *A. sylvaticus* (L.), caught in Poland, Rumania and the Soviet Union (Table I).

Table I

Numbers of lice collected in various countries and host species

Country	<i>M. musculus</i> L.		<i>A. agrarius</i> (Pall.)		<i>A. flavicollis</i> (Melch.)		<i>A. sylvaticus</i> (L.)		Total No. of lice
	No. of hosts	No. of lice	No. of hosts	No. of lice	No. of hosts	No. of lice	No. of hosts	No. of lice	
Poland	10	31	1	3	5	11	1	1	46
Rumania	—	—	12	56	2	9	45	212	277
USSR	2	5	24	33	23	27	3	3	68
Total	12	36	37	92	30	47	49	216	391

The following features were analysed: (1) shape of abdominal paratergal plates, (2) chaetotaxy of paratergal plates of the abdomen, (3) shape of the first abdominal sternal plate, (4) chaetotaxy of the first abdominal sternal plate, (5) chaetotaxy of the ventral side of the abdomen, (6) chaetotaxy of the dorsal side of the abdomen, (7) shape of the sternal plate of the thorax, (8) size of the sternal plate of the thorax, (9) external genitalia and (10) body length of lice. The material for analysis was fixed, cleared in 10% KOH solution and mounted in Faure-Berlese fluid.

Results

Shape and chaetotaxy of abdominal paratergal plates

The shape and chaetotaxy of paratergal plates of the abdomen belong to the main taxonomical features of the species-group within the genus *Polyplax* Enderl. It results from keys to species of lice (Ferris 1923, 1951, Beaucournu 1968, Wegner 1972) that in *Polyplax serrata* (Burm.) paratergal plates are elongate, significantly narrowed at the base, and their shape resembles something of a triangle. The apical edge of the plates of segments III–VI is finely fringed and the lateral angles from small teeth with sharp points. Paratergal plates of segments II, III, V and VI are equipped with two short bristles, much shorter than the length of the plate, and paratergal plates of segment IV have one short bristle (latero-ventral), whose length is only half of the length of the plate, and another, latero-dorsal long bristle, which can be as long as the plate and

even a little longer. The plates of segments VII nad VIII have two long bristles.

Practice has proved that in the mentioned species the chaetotaxy of paratergal plates does not always correspond to the above pattern: in some specimens various patterns of bristle length were observed on the plates of segments IV, V and VI. For instance, Eichler 1960, who described a sole specimen of *Polyplax serrata* (Burm.) from *M. musculus* L. he had in his collection observed that it was the feature of that specimen that no long bristle was present on the right side of the abdomen on the paratergal plate of segment IV; on the left side, on the other hand, there were two bristles, viz., on plates on segments IV and V.

The present author observed that out of the total of 391 specimens of the lice genus *Polyplax* Enderl. obtained from the four host species mentioned earlier, only 330 (84.4%) showed typical chaetotaxy of paratergal plates in segments IV-VI on both sides of the abdomen, and corresponded to the described pattern. In the remaining 61 specimens (15.6%), chaetotaxy deviated from the standard pattern (Table II). Most often, viz., in 57 specimens, apart from the typical bristle pattern in segment IV, also plates of segments V or VI had one bristle as long as the plate, either on the right or the left side of the abdomen. There were 4 individuals (2 found in *M. musculus* and 2 in *A. sylvaticus*) in which bristles of paratergal plates were regular on the one side of the abdomen, and on the other side the paratergal plate of segment IV had either two short or two long bristles.

The differences in the chaetotaxy of paratergal plates of the abdomen found in the major part of irregularly haired lice are seen in Table III, as exemplified by 47 specimens found on *A. sylvaticus* (L.) from Rumania. To make the illustration clearer, the lice have been arranged in the following four groups depending on the presence of a long bristle on paratergal plates of segments IV, V and VI:

Group I: specimens with regular chaetotaxy of paratergal plates on one side of the abdomen (right or left), i.e. a long bristle only appearing in plate of the segment IV, but, on the other side of the abdomen a long bristle was found on the paratergal plate of segment V, or IV and V, or V and VI, or even IV, V and VI.

Group II: specimens in which two paratergal plates, viz., on segments IV and V or IV and VI, have a long bristle on both sides of the abdomen (right and left).

Group III: specimens in which two plates, on segments IV and V on the one side of the abdomen, and three plates, on segments IV, V and VI on the other side, have a long bristle.

Group IV: specimens which, like those of *P. reclinata* (Nitz.), have

Table II
Chaetotaxy of paratergal plates of the abdomen, as recorded in lice under examination

Host species	Host's origin	No. of lice exam.	No. of lice showing regular chaetotaxy			No. of lice showing irregular chaetotaxy		
			♀	♂	total	♀	♂	total
<i>Mus musculus</i> L.	Poland	31	22	6	28	2	1	3
	Rumania	—	—	—	—	—	—	—
	USSR	5	2	3	5	—	—	—
	total	36	24	9	33	2	1	3
	%	100			91.7			8.3
<i>Apodemus agrarius</i> (Pall.)	Poland	3	2	—	2	—	1	1
	Rumania	56	40	16	56	—	—	—
	USSR	33	27	5	32	1	—	1
	total	92	69	21	90	1	1	2
	%	100			97.8			2.2
<i>Apodemus flavicollis</i> (Melch.)	Poland	11	8	2	10	1	—	1
	Rumania	9	7	—	7	2	—	2
	USSR	27	20	3	23	4	—	4
	total	47	35	5	40	7	—	7
	%	100			85.1			14.9
<i>Apodemus sylvaticus</i> (L.)	Poland	1	1	—	1	—	—	—
	Rumania	212	135	28	163	43	6	49
	USSR	3	2	1	3	—	—	—
	total	216	138	29	167	43	6	49
	%	100			77.3			22.7
Total		391	266	64	330	53	8	61
	%	100			84.4			15.6
			(80.6)	(19.4)	(100)	(86.9)	(13.1)	(100)

three paratergal plates, viz., on segments IV, V and VI, with long bristles on both sides of the abdomen (right and left).

Table III

Irregular chaetotaxy of paratergal plates of the abdomen in segments IV, V and VI, of lice of the genus *Polyplax* Enderl. from *Apodemus sylvaticus*

Lice Group*	No. of lice	Paratergal plates bearing single long bristle					
		left side of abdomen			right side of abdomen		
		IV	V	VI	IV	V	VI
I	10	+	+		+		
	1	+	+	+	+		
	7	+				+	
	4	+			+	+	
	1	+				+	+
II	18	+	+		+	+	
	1	+		+	+	+	
III	3	+	+	+	+	+	
	1	+	+		+	+	+
IV	1	+	+	+	+	+	+

* Cf. text.

It results from Table III that out of the 47 examined lice with irregular chaetotaxy of paratergal plates, as many as 23 belong to Group I, and 19 to Group II, while only 4 are ranked into Group III, and a single specimen which, apart from chaetotaxy of abdominal paratergal plates revealed other feature characteristic of *P. serrata* (Burm.), (which is worth) noting belong to Group IV.

The analysis of lice from different host species has revealed that in the investigated material on the average every 46th specimen found on *A. agrarius*, every 12th on *M. musculus*, every 7th from *A. flavicollis* and

Table IV

Chaetotaxy of paratergal plates of the abdomen, as demonstrated in lice (arranged according to the origin)

Country	Total No. of lice examined	Lice showing regular chaetotaxy		Lice showing irregular chaetotaxy	
		No.	%	No.	%
Poland	46	41	89.1	5	10.9
Rumania	277	226	81.6	51	18.4
USSR	68	63	92.6	5	7.4
Total	391	330	84.4	61	15.6

nearly every 5th from *A. sylvaticus* had atypical chaetotaxy of abdominal paratergal plates (Table II).

Taking into account the geographical areas in which the lice were found, it may be stated that collections obtained from the three countries mentioned earlier contained specimens with atypical chaetotaxy of abdominal paratergal plates (Tables II and IV), and the example of numerous material obtained from Rumania has proved that the percentage of atypical specimens can be relatively high (Table IV).

Contrary to irregularities in chaetotaxy, the shape of paratergal plates of the abdomen did not depart from normal and in all the examined lice obtained from four host species it corresponded to the typical shape of *P. serrata* (Burm.) (Fig. 1).

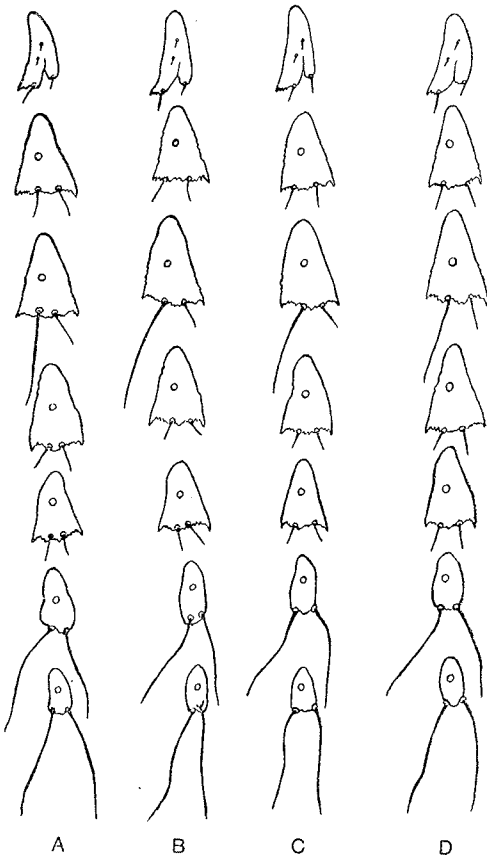


Fig. 1. Paratergal plates of the louse abdomen. A — in lice from *M. musculus*, B — *A. agrarius*, C — *A. flavicollis*, D — *A. sylvaticus*.

The first abdominal sternal plate

Deviations in the shape and chaetotaxy of the first abdominal sternal plate were also observed in the examined lice, both those found in *M. musculus* and those from the three species of the genus *Apodemus*. Alongside specimens with plates specific of *P. serrata* (Burm.) which, in accordance with the descriptions made by respective authors, are more or less arched, and had lateral parts rounded or rightly cut, and are equipped with a transversal row of five bristles, also specimens with somewhat differently arranged first sternal plate were found: one or both sides are strongly narrowed, the proximal edge approximately parallel to the distal or slightly bent inward. Also plates with atypical number of bristles were found (4 or 6 bristles). It happened that lice specimens found on the same host specimen had the first abdominal sternal plate of different shapes and different number of bristles. (Fig. 2 B: plates 4 and 5 from the left side).

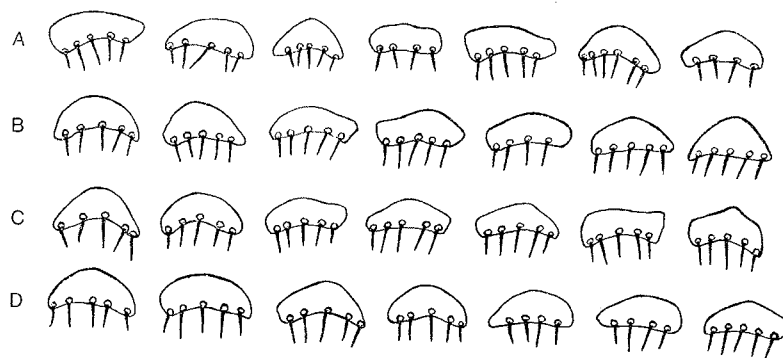


Fig. 2. Sternal plates of the first segment of the louse abdomen (from left to right) found: A—on *M. musculus*: six from Poland, one from the Soviet Union; B—on *A. agrarius*: two from Rumania, five from the Soviet Union; C—on *A. flavicollis*: two from Poland, four from the Soviet Union, one from Rumania; D—on *A. sylvaticus*: four from Rumania, three from the Soviet Union.

Chaetotaxy of the dorsal and ventral sides of the abdomen

Out of the material placed at the present author's disposal, and obtained from the four host species mentioned earlier, two male and two female specimens from each host species were taken at random and the number and arrangement of bristles on the dorsal and ventral parts of their abdomens were determined. The results of observation are shown in Table V. It appeared that even in such small number of specimens found on different host species there were considerable differences, and also in this case differences were noted in lice obtained from the same host individual. This is seen in detail on the example of chaetotaxy of

Fig. 3. Thoracal sternite: a male and a female of *A. agrarius*; two females of *A. flavicollis* (Rumania); a male and a female of *A. sylvaticus*.

Table V

Ventral and dorsal chaetotaxies of the abdomen in female and male lice collected on four host species

Abdominal segments	Host species															
	<i>Mus musculus</i> L.				<i>Apodemus agrarius</i> (Pall.)				<i>Apodemus flavicollis</i> (Melch.)				<i>Apodemus sylvaticus</i> (L.)			
	female I 1/L Poland		female II 1/L Poland		female I 312-318 — Rumania		female II 1000 — Rumania		female I 30/I — Poland		female II 493 — Rumania		female I 450/A — Rumania		female II 450/B — Rumania	
	V	D	V	D	V	D	V	D	V	D	V	D	V	D	V	D
I	—	2	—	2	—	2	—	2	—	2	—	2	—	2	—	2
II	5	2	5	2	5	2	6	2	5	2	5	2	5	2	5	2
	4	8	4	6	6	6	6	6	4	6	4	6	4	6	5	6
III	1-6-1	6	1-5-1	6	1-6-1	6	1-5-1	6	1-5-1	6	1-5-1	6	1-5-1	6	1-5-1	6
	5		6		6		6		6		6		6		6	
IV	1-8-1	8	1-7-1	8	1-7-1	7	1-6-1	7	1-7-1	7	1-7-1	7	1-7-1	7	1-7-1	7
	6	6	6	6	6	6	6	6	6	5	6	6	6	6	6	6
V	1-7-1	7	1-7-1	7	1-7-1	7	1-7-1	7	1-7-1	5	1-5-1	7	1-7-1	7	1-7-1	7
	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
VI	1-7-1	7	1-7-1	6	1-7-1	7	1-7-1	7	1-8-1	7	1-7-1	8	1-8-1	7	1-7-1	8
	6	6	6	6	6	6	6	6	5	6	6	6	6	6	1-6-1	6
VII	1-7-1	7	1-5-1	7	1-5-1	7	1-5-1	5	1-6-1	6	1-6-1	7	1-7-1	6	1-6-1	6
	6	4	5	4	6	4	6	4	6	4	7	4	6	4	6	4
VIII	—	4	—	4	—	4	—	4	—	4	—	4	—	4	—	4
Total	83	73	79	70	83	70	82	68	81	66	80	71	83	69	82	70
	male I 21/A — Poland		male II 21/B — Poland		male I 312-318 — Rumania		male II 948 — Rumania		male I 14/I-2 — Poland		male II 14/I-11 — Poland		male I 523/6 — Rumania		male II 397 — Rumania	
I	—	2	—	2	—	2	—	2	—	2	—	2	—	2	—	2
II	5	2	5	2	4	2	5	2	5	2	5	2	5	2	5	2
	4	7	4	8	5	7	6	8	4	8	4	8	4	7	4	8
III	5	8	5	8	5	10	5	10	5	10	5	10	5	10	5	10
	6		5		5		6		6		6		6		6	
IV	7	10	8	10	6	10	6	10	6	10	7	8	6	10	7	10
V	6	10	6	10	7	10	6	10	6	10	6	9	6	10	6	10
VI	4	9	6	10	6	10	7	10	7	9	6	10	6	9	7	8
VII	3	6	5	6	4	8	4	8	4	6	4	6	4	6	4	6
VIII	2	4	2	4	2	4	2	4	2	4	2	4	2	4	2	5
Total	42	58	46	60	44	63	47	64	45	61	45	59	44	60	46	61

Fig. 3. Thoracal sternal plates of the lice (from left to right) found: A — on *M. musculus*: a male and three females (Poland), a female (Soviet Union); B — on *A. agrarius*: two females (Rumania), three females (Soviet Union); C — on *A. flavicollis*: two females (Rumania), a female (Poland), two females (Soviet Union); D — on *A. syl-*

the abdomen of males and females found on *Mus musculus*, males from *A. flavicollis* and females from *A. sylvaticus*, shown in Table V. Differences are most significant in the number of bristles in the single transverse rows and the total number of bristles covering the ventral and dorsal sides of the abdomen. In the examined females the total number of bristles on the ventral side ranged from 79 to 83, and on the dorsal side from 66 to 73; in males, the numbers were 42–47 on the ventral side and 58–64 on the dorsal side (Table V). The comparison of the total number of bristles on the abdomen of lice specimens obtained from a single host species or host specimen, has proved that the difference was 3–4 bristles in females, and 2–4 in males found on *M. musculus*; 1–2 in females and 1–3 in males from *A. agrarius*, 1–5 in females and 0–2 in males from *A. flavicollis*, and one bristle in females and 1–2 in males found on *A. sylvaticus* (Table V).

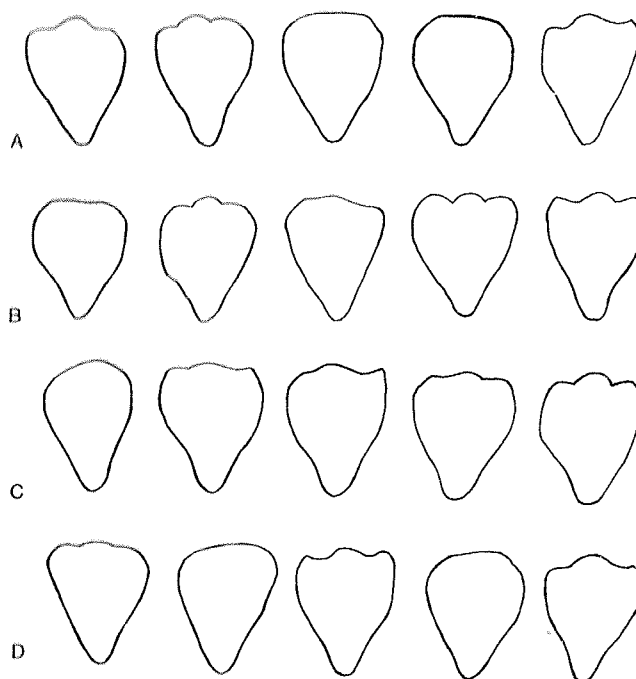


Fig. 3. Thoracic sternal plates of the lice (from left to right) found: A — on *M. musculus*: a male and three females (Poland), a female (Soviet Union); B — on *A. agrarius*: two females (Rumania), three females (Soviet Union); C — on *A. flavicollis*: two females (Rumania), a female (Poland), two females (Soviet Union); D — on *A. sylvaticus*: a male and two females (Rumania), a female and a male (Soviet Union).

The sternal plate of the thorax

The sternal plate of the thorax is regarded as one of the main features distinguishing the species of the genus *Polyplax* Enderl. It results from the descriptions of *P. serrata* (Burm.) that its shape is heart-like, with rounded lateral angles, without or with a little arched protuberance in the centre of the proximal end and with a slightly narrowed and rounded distal end. The lateral edges of the distal-narrowed part of the plate are often a little concave (Ferris 1923, 1951, Beaucournu 1968, Wegner 1972).

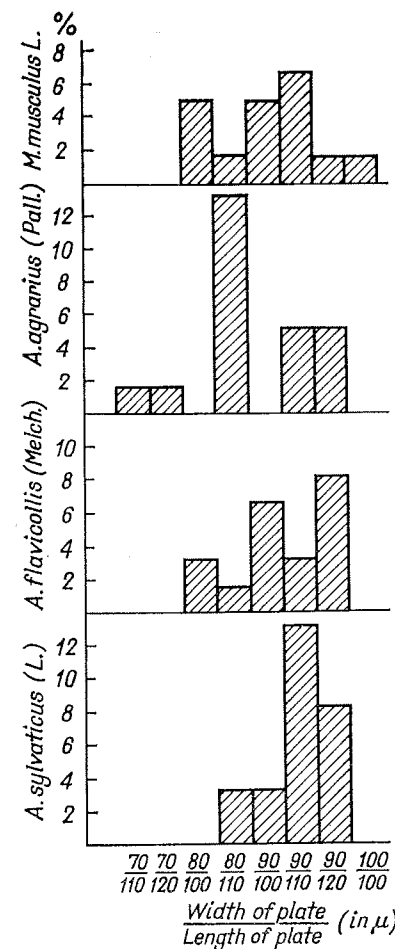


Fig. 4. The sizes of thoracic sternal plates in louse females from the four host species. Nos. of lice showing particular size ranges of plates are given in percentages (%).

Figure 3 shows sets of thoracic sternal plates found in lice specimens obtained from the four examined host species caught in three different countries. Already at first glance it is evident that the plates, even in lice

of the same host species, are not identical in the shape. This applies first of all to the proximal end which is more or less evenly rounded or has a slight arched protuberance in the centre. It appears from Fig. 3, that plates of the same shape were found in lice specimens obtained from all the four host species. Nevertheless it is worth emphasizing that despite the just mentioned differences, all the plates have without doubt the same silhouette corresponding to that of sternal plate of *P. serrata* (Burm.) and clearly distinct from the silhouettes of thoracic sternal plates of other species of the genus *Polyplax* Enderl.

In order to obtain more precise data which could serve as a material for making comparisons between morphological features of the examined lice, the length and width of the sternal plate of the thorax in 60 females was measured. The material included 13 females obtained from *M. mus-*

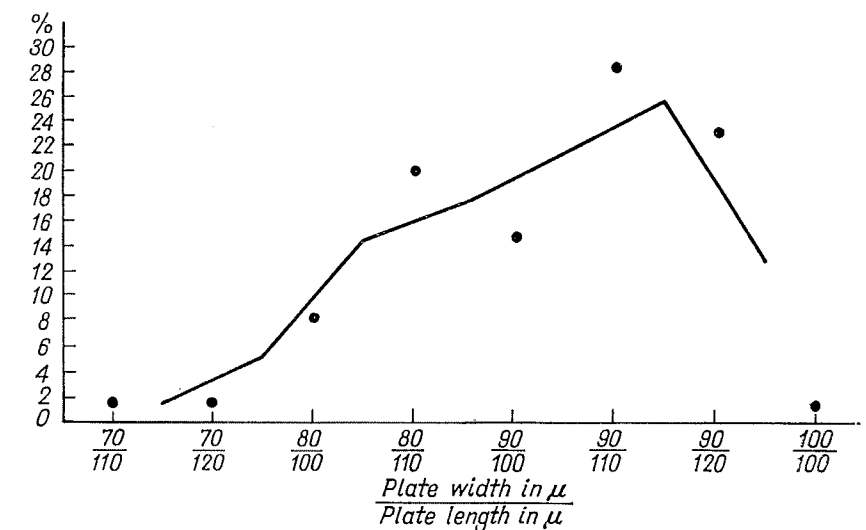


Fig. 5. The frequency of thoracic sternal plates of defined size ranges, as recorded in lice examined. Nos. of lice with particular size ranges of plates are given in percentages (%).

culus (Poland), 16 females from *A. agrarius* (five from Poland and 11 from Rumania), 14 females found on *A. flavicollis* (7 from Poland and 7 from Rumania), and 17 females from *A. sylvaticus* (Rumania). As a result of measurements differences were recorded in the size of the thoracic sternal plate, and, as is seen in Fig. 4, these differences occurred irrespective of the host species. All in all, 8 different sizes were noted. The most frequent dimensions were included within the limits: 80-90 × 100-120 μ. Plates with parameters exceeding the above limits were only recorded

in single specimens. Three dimensions: 80/110, 90/110 and 90/120 μ were found in lice obtained from all the four host species (Fig. 4). Approaching the examined females as one group, without taking into consideration the host species from which they were obtained, it was noted that specimens with plate dimensions 90 μ (width) and 110 or 120 μ (length) accounted for the major part of all (Fig. 5). So the thoracal sternal plates of the above dimensions seem to be typical of the examined lice.

External genitalia

The male external genitalia and the parts of the genital region of the abdomen in the female lice examined were typical of *P. serrata* (Burm.): no essential differences in their structure were found. This refers both to lice found on *M. musculus* and those representing the three species of the genus *Apodemus*. The males' basal plate was always slightly narrowing in the half of its length, parameres were short, arched, and pseudopenis, compared to parameres, was relatively long, well developed and narrowing to the end (Fig. 6).

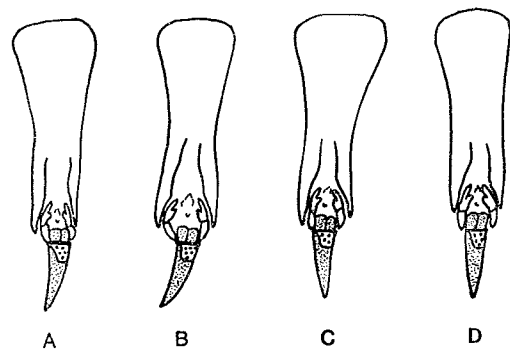


Fig. 6. The male external genitalia in the lice from: A — *M. musculus*, B — *A. agrarius*, C — *A. flavicollis*, D — *A. sylvaticus*.

In females the gonopods had the shape of rather small triangles with more or less rounded tops shifted a little to the right or to the left. The apical edge of each gonopod was equipped with three bristles: two short and delicate and one, situated externally, and considerably longer. The apical lobes had one short, well developed, spined and sharply pointed bristle.

Body length

According to different authors, the length of *P. serrata* (Burm.) females is from 1.0 to 1.3 mm, and of males from 0.6 to 0.8 mm (Beaucournu 1968, Blagoveščensij 1964, Brink 1950, Ferris 1923). According to Eichler 1960, louse specimens of the genus *Polyplax* Endel.

found on *M. musculus* are clearly longer than representatives of the same species parasitizing on specimens of the three species of the genus *Apodemus*, and in the latter group, the longest lice are found on *A. agrarius* specimens: this can be best seen on males. But it should be added that the above conclusions were drawn on the basis of a very modest material: only 1–7 specimens from every host species (Table VI).

Table VI

Body length of lice of the genus *Polyplax* Enderl. from four host species (all measurements in mm)

Host species	Present data		After Eichler 1960	
	females	males	females	males
<i>M. musculus</i> L.	1.08* (0.98–1.29)** (18)***	0.75 (0.75–0.81) (5)	1.35 (1)	—
<i>A. agrarius</i> (Pall.)	1.09 (0.94–1.27) (34)	0.74 (0.60–0.82) (13)	1.23 (1.10–1.36) (7)	0.83 (0.78–0.86) (5)
<i>A. flavicollis</i> (Melch.)	1.01 (0.87–1.08) (9)	0.68 (0.62–0.74) (2)	1.1 (1.02–1.18) (2)	—
<i>A. sylvaticus</i> (L.)	1.06 (0.87–1.29) (119)	0.69 (0.62–0.75) (17)	1.16 (1.10–1.25) (3)	0.72 (0.70–0.75) (3)
Total number of specimens examined	180	37	13	8

* Arithmetical mean.

** Minimum and maximum size.

*** No. of lice specimens examined.

To compare the body length of lice belonging to the examined collection, 217 specimens were measured. It appeared that females collected from *M. musculus* had almost the same body length as those obtained from *A. agrarius* and those from *A. sylvaticus*. Only specimens obtained from *A. flavicollis* appeared to be insignificantly smaller than the former ones, and it must be emphasized that their number was also smaller than that of the previous ones (Table VI). Also males from *A. agrarius* were not longer than those obtained from the remaining three host species, and even, as is seen in Table VI, the smallest specimens, only 0.60 mm long, were found exactly on *A. agrarius*. It should be emphasized that all the body lengths of the measured males and females, irrespective of the host species on which they were found, were included the limits of body length given by many researches for *Polyplax serrata* (Burm.).

Conclusions

It results from the above study that *Polyplax serrata* (Burm.) a parasite remarkable for its wide intraspecific variability parasitizes representatives of *Mus musculus* L., *Apodemus agrarius* (Pall.), *A. flavicollis* (Melch.) and *A. sylvaticus* (L.). This variability must be judged by the fact that in the examined material, alongside lice possessing all morphological features typical of *P. serrata* (Burm.), a certain (sometimes quite significant) percentage of lice was found, characterized by a distinct variability of certain basic morphological features, e.g. the shape of the thorax sternal plate, the shape and chaetotaxy of the first abdominal sternal plate, the chaetotaxy of paratergal abdominal plates, and the chaetotaxy of the ventral and dorsal sides of the abdomen.

Such variability was observed not solely in lice parasitizing different host species, but also in specimens obtained from the same host species, and even — what deserves particular emphasis — in specimens obtained from the same host individual. In this situation it is difficult to distinguish in *P. serrata* (Burm.) taxa that could unambiguously determine the typical host patterns.

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STRESZCZENIE

Dysponując materiałem składającym się z 92 okazów wszy z *Apodemus agrarius* (Pall.), 47 z *A. flavicollis* (Melch.), 216 z *A. sylvaticus* (L.) i z 36 wszy z *Mus musculus* L., pochodzącym z obszarów Polski, Rumunii i Związku Radzieckiego, autorka poddała analizie 10 podstawowych cech morfologicznych. Stwierdziła ona, że badane wszy należały do gatunku *Polyplax serrata* (Burm.), wykazując również, że wszystkie wyżej wymienione zespoły wszy, niezależnie od gatunku żywiciela na którym pasożytowały, zawierały okazy (niekiedy w wysokim odsetku) charakteryzujące się wyraźną zmiennością niektórych badanych cech morfologicznych. Fakt ten wskazuje na istnienie u *P. serrata* (Burm.) dość rozległej zmienności wewnątrzgatunkowej, co utrudnia wyodrębnienie taksonów, które mogłyby zdecydowanie określać typowe żywicielskie wzory.