

Jerzy PRÓSZYŃSKI

Revision of the spider genus *Sitticus* SIMON, 1901 (*Aranei*, *Salticidae*),  
IV. *Sitticus floricola* (C. L. Koch) group

[With 98 figures in the text]

The time of publication of the complete revision of the genus *Sitticus* SIMON, 1901 has extended more than I expected, since publication of its I part in 1968, especially that both the present part and the next one, now in preparation, contain some drawings and descriptions made as early as in 1961. The excellent paper on Central European *Sitticus* published in the meantime by HARM, 1973, has removed from me the burden of very detailed descriptions of some species, in case of which I limit myself now to some remarks only. On the other hand, I decided to add some more general remarks on usefulness of some taxonomic characters.

The paper is based on study specimens made available during last 18 years by the following institutions: Természettudományi Múzeum Állattára – Budapest; Zoologisches Museum der Humboldt Universität – Berlin; Museum of Comparative Zoology, Harvard University – Cambridge, Mass.; Zoologisches Museum Senckenberg – Frankfurt a. M.; Museo Civico di Storia Naturale – Genoa; Institute of Zoology AN USSR – Leningrad; the American Museum of Natural History – New York; Museum National d'Histoire Naturelle – Paris; University of Minnesota – St. Paul, Minn.; Institute of Zoology, Polish Academy of Sciences – Warsaw. I am particularly indebted to the following persons which assisted me in my research by useful advices and help in my research: B. CUTLER, C. D. DONDALE, H. FARKAS, M. HUBERT, W. J. GERTSCH, M. GRASSHOFF, H. W. LEVI, R. LIECH, O. KRAUS, F. MILLER, M. MORITZ, N. J. PLATNICK, F. REBIERE-SAUNIER, W. STAJEŃKA, M. VACHON, A. VILBASTE, L. A. ZHILCOVA. I wish to express my warm and sincere thanks to those persons and institutions.

Biometrics of *Sitticus caricis*, *S. floricola floricola*, *S. floricola palustris*, *S. rupicola*  
and its taxonomic importance

Since beginning of my research on *Salticidae* I have been taking conventional 25 measurements and have been calculating 4 various ratios from them. I was not able to decide whether they are really useful as long as I handled

small samples of unrelated species, but assumed that they may appear useful when the number of species and specimens in each sample would become larger. The study of four closely related species, of which I have got larger series, have provided an opportunity to check that assumption.

I have measured (with assistance of Mrs. T. BUSZKO, for whom I wish to express by best thanks) the following specimens.

*Sitticus rupicola*: 52 ♀♀, 18 ♂♂ from Switzerland; *S. floricola floricola*: 50 ♀♀, 2 ♂♂ from Poland; *S. floricola palustris*: 21 ♀♀, 25 ♂♂ from various localities in Canada and the USA; *S. caricis*: 7 ♀♀ from Voralberg (Austria) (2) and Poland (5) and 2 ♂♂ from Poland. For larger series, apart from smallest and largest measurements, also the mean of measurements were calculated, as well as one standard deviation (SD). The measurement of the smallest and largest specimen and in some case also the mean of all measurements is added also for small samples of some of these species for comparative purpose. The results are given in the following table, arranged in the way permitting the best and widest comparison.

The measured part of spider body or ratio, also species name	♀♀	♂♂
Length of cephalothorax		
<i>S. rupicola</i>	1.98–2.29(±0.17)–2.95	1.68–2.01(±0.18)–2.29
<i>S. f. floricola</i>	2.18–2.42(±0.12)–2.67	1.71–1.75
<i>S. f. palustris</i>	2.07–2.32(±0.29)–2.69	1.80–1.98(±0.14)–2.24
<i>S. caricis</i>	1.62–1.57–1.87	1.60–2.02
Length of eye field		
<i>S. rupicola</i>	0.76–0.85(±0.06)–1.03	0.73–0.81(±0.05)–0.89
<i>S. f. floricola</i>	0.81–0.96(±0.06)–1.09	0.72–0.76
<i>S. f. palustris</i>	0.73–0.91(±0.07)–1.04	0.67–0.77(±0.06)–0.87
<i>S. caricis</i>	0.70–0.77–0.84	0.62–0.73
Width of eye field I		
<i>S. rupicola</i>	1.26–1.40(±0.05)–1.48	1.12–1.29(±0.05)–1.39
<i>S. f. floricola</i>	1.40–1.53(±0.07)–1.68	1.21–1.21
<i>S. f. palustris</i>	1.32–1.47(±0.08)–1.62	1.13–1.27(±0.08)–1.40
<i>S. caricis</i>	1.12–1.19–1.26	1.06–1.26
Width of eye field III		
<i>S. rupicola</i>	1.30–1.40(±0.05)–1.53	1.06–1.26(±0.08)–1.39
<i>S. f. floricola</i>	1.40–1.58(±0.08)–1.76	1.17–1.21
<i>S. f. palustris</i>	1.35–1.54(±0.10)–1.71	1.16–1.30(±0.09)–1.43
<i>S. caricis</i>	1.17–1.23–1.29	1.06–1.23
Height of cephalothorax		
<i>S. rupicola</i>	0.90–1.03(±0.05)–1.12	0.78–0.95(±0.07)–1.04
<i>S. f. floricola</i>	1.01–1.15(±0.06)–1.29	0.81–0.94
<i>S. f. palustris</i>	0.89–1.06(±0.09)–1.23	0.92–0.97(±0.05)–1.06
<i>S. caricis</i>	0.75–0.79–0.84	0.78–0.95

The measured part of spider body or ratio, also species name	♀	♂
Length of abdomen		
<i>S. rupicola</i>	2.25-3.10(±0.62)-4.41	1.90-2.10(±0.16)-2.37
<i>S. f. floricola</i>	2.80-3.20(±0.37)-4.81	1.57-1.80
<i>S. f. palustris</i>	2.10-2.98(±0.41)-4.06	1.54-1.96(±0.17)-2.27
<i>S. caricis</i>	1.62-2.20-2.65	1.62-2.16
Length of segments of legs		
Tarsus I		
<i>S. rupicola</i>	0.49-0.60(±0.04)-0.67	0.56-0.63(±0.05)-0.73
<i>S. f. floricola</i>	0.53-0.61(±0.03)-0.70	0.45-0.54
<i>S. f. palustris</i>	0.43-0.54(±0.05)-0.67	0.43-0.54(±0.05)-0.67
<i>S. caricis</i>	0.42-0.43-0.48	0.48-0.56
Metatarsus I		
<i>S. rupicola</i>	0.54-0.66(±0.05)-0.76	0.64-0.63(±0.13)-1.12
<i>S. f. floricola</i>	0.58-0.72(±0.06)-0.81	0.58-0.63
<i>S. f. palustris</i>	0.59-0.65(±0.07)-0.76	0.57-0.75(±0.11)-0.97
<i>S. caricis</i>	0.42-0.48-0.53	0.56-0.78
Tibia I		
<i>S. rupicola</i>	0.67-0.77(±0.05)-0.90	0.67-1.04(±0.22)-1.45
<i>S. f. floricola</i>	0.70-0.85(±0.06)-1.01	0.67-0.67
<i>S. f. palustris</i>	0.57-0.77(±0.08)-0.90	0.67-0.89(±0.14)-1.21
<i>S. caricis</i>	0.54-0.59-0.64	0.70-1.01
Patella I		
<i>S. rupicola</i>	0.72-0.81(±0.06)-1.03	0.67-0.89(±0.13)-1.12
<i>S. f. floricola</i>	0.70-0.87(±0.08)-1.01	0.63-0.67
<i>S. f. palustris</i>	0.65-0.83(±0.08)-0.98	0.65-0.84(±0.11)-1.04
<i>S. caricis</i>	0.54-0.60-0.64	0.64-0.90
Femur I		
<i>S. rupicola</i>	0.99-1.14(±0.08)-1.26	1.03-1.29(±0.20)-1.68
<i>S. f. floricola</i>	1.12-1.26(±0.08)-1.46	1.03-1.03
<i>S. f. palustris</i>	0.89-1.16(±0.12)-1.34	0.94-1.19(±0.15)-1.48
<i>S. caricis</i>	0.84-0.89-0.95	0.92-1.29
Tarsus II		
<i>S. rupicola</i>	0.45-0.56(±0.02)-0.67	0.39-0.52(±0.04)-0.61
<i>S. f. floricola</i>	0.48-0.58(±0.05)-0.70	0.45-0.45
<i>S. f. palustris</i>	0.40-0.52(±0.05)-0.62	0.38-0.47(±0.05)-0.59
<i>S. caricis</i>	0.33-0.37-0.47	0.39-0.48
Metatarsus II		
<i>S. rupicola</i>	0.49-0.59(±0.04)-0.76	0.50-0.64(±0.06)-0.75
<i>S. f. floricola</i>	0.59-0.68(±0.04)-0.76	0.49-0.54
<i>S. f. palustris</i>	0.50-0.60(±0.06)-0.70	0.49-0.59(±0.06)-0.70
<i>S. caricis</i>	0.36-0.43-0.50	0.45-0.62

The measured part of spider body or ratio, also species name	♀♀	♂♂
Tibia II		
<i>S. rupicola</i>	0.54–0.64(±0.05)–0.76	0.50–0.65(±0.09)–0.84
<i>S. f. floricola</i>	0.59–0.72(±0.05)–0.84	0.54–0.58
<i>S. f. palustris</i>	0.51–0.64(±0.07)–0.76	0.54–0.63(±0.15)–0.81
<i>S. caricis</i>	0.42–0.47–0.54	0.48–0.64
Patella II		
<i>S. rupicola</i>	0.63–0.71(±0.04)–0.81	0.53–0.65(±0.05)–0.75
<i>S. f. floricola</i>	0.64–0.77(±0.08)–0.87	0.54–0.54
<i>S. f. palustris</i>	0.59–0.74(±0.07)–0.84	0.54–0.65(±0.08)–0.78
<i>S. caricis</i>	0.30–0.49–0.59	0.42–0.62
Femur II		
<i>S. rupicola</i>	0.99–1.14(±0.07)–1.26	0.78–0.99(±0.08)–1.17
<i>S. f. floricola</i>	1.12–1.26(±0.08)–1.46	0.67–0.90
<i>S. f. palustris</i>	0.89–1.16(±0.12)–1.34	0.81–0.98(±0.12)–1.23
<i>S. caricis</i>	0.72–0.79–0.84	0.73–0.95
Tarsus III		
<i>S. rupicola</i>	0.49–0.59(±0.05)–0.72	0.47–0.52(±0.04)–0.59
<i>S. f. floricola</i>	0.50–0.61(±0.04)–0.70	0.49–0.49
<i>S. f. palustris</i>	0.43–0.53(±0.05)–0.62	0.38–0.45(±0.12)–0.54
<i>S. caricis</i>	0.36–0.42–0.48	0.39–0.48
Metatarsus III		
<i>S. rupicola</i>	0.54–0.66(±0.05)–0.76	0.50–0.64(±0.03)–0.78
<i>S. f. floricola</i>	0.62–0.74(±0.05)–0.76	0.49–0.54
<i>S. f. palustris</i>	0.53–0.68(±0.07)–0.84	0.46–0.58(±0.07)–0.67
<i>S. caricis</i>	0.42–0.46–0.53	0.45–0.64
Tibia III		
<i>S. rupicola</i>	0.54–0.60(±0.04)–0.67	0.45–0.53(±0.04)–0.64
<i>S. f. floricola</i>	0.53–0.66(±0.05)–0.76	0.45–0.49
<i>S. f. palustris</i>	0.49–0.59(±0.06)–0.70	0.40–0.49(±0.06)–0.59
<i>S. caricis</i>	0.42–0.45–0.49	0.34–0.53
Patella III		
<i>S. rupicola</i>	0.54–0.60(±0.04)–0.75	0.42–0.52(±0.05)–0.64
<i>S. f. floricola</i>	0.50–0.65(±0.06)–0.84	0.45–0.54
<i>S. f. palustris</i>	0.53–0.60(±0.07)–0.70	0.40–0.50(±0.05)–0.59
<i>S. caricis</i>	0.30–0.41–0.48	0.36–0.50
Femur III		
<i>S. rupicola</i>	0.94–1.08(±0.08)–1.26	0.78–0.99(±0.09)–1.17
<i>S. f. floricola</i>	0.84–1.15(±0.08)–1.26	0.81–0.81
<i>S. f. palustris</i>	0.81–1.08(±0.11)–1.26	0.81–0.92(±0.10)–1.12
<i>S. caricis</i>	0.70–0.74–0.81	0.70–0.90

The measured part of spider body or ratio, also species name	♀♀	♂♂
<b>Tarsus IV</b>		
<i>S. rupicola</i>	0.58-0.71(±0.06)-0.85	0.53-0.61(±0.05)-0.67
<i>S. f. floricola</i>	0.64-0.73(±0.04)-0.81	0.54-0.58
<i>S. f. palustris</i>	0.54-0.69(±0.05)-0.76	0.48-0.56(±0.06)-0.67
<i>S. caricis</i>	0.45-0.53-0.59	0.42-0.60
<b>Metatarsus IV</b>		
<i>S. rupicola</i>	0.72-1.00(±0.08)-1.21	0.64-0.85(±0.10)-0.98
<i>S. f. floricola</i>	0.92-1.10(±0.08)-1.23	0.63-0.67
<i>S. f. palustris</i>	0.73-1.02(±0.12)-1.20	0.67-0.81(±0.12)-1.00
<i>S. caricis</i>	0.59-0.65-0.78	0.56-0.87
<b>Tibia IV</b>		
<i>S. rupicola</i>	0.99-1.13(±0.08)-1.35	0.70-0.90(±0.10)-1.01
<i>S. f. floricola</i>	0.84-1.19(±0.10)-1.32	0.72-0.76
<i>S. f. palustris</i>	0.89-1.15(±0.13)-1.34	0.73-0.87(±0.12)-1.04
<i>S. caricis</i>	0.70-0.59-0.87	0.62-0.84
<b>Patella IV</b>		
<i>S. rupicola</i>	0.72-0.80(±0.06)-0.90	0.53-0.65(±0.06)-0.75
<i>S. f. floricola</i>	0.70-0.85(±0.08)-1.15	0.58-0.54
<i>S. f. palustris</i>	0.59-0.81(±0.09)-0.95	0.51-0.64(±0.07)-0.78
<i>S. caricis</i>	0.53-0.58-0.64	0.50-0.67
<b>Femur IV</b>		
<i>S. rupicola</i>	1.53-1.73(±0.10)-2.02	1.12-1.43(±0.11)-1.59
<i>S. f. floricola</i>	1.62-1.82(±0.10)-2.10	1.21-1.21
<i>S. f. palustris</i>	1.35-1.77(±0.14)-2.10	1.19-1.42(±0.16)-1.76
<i>S. caricis</i>	1.03-1.24-1.29	1.01-1.54
<b>Total length of leg I</b>		
<i>S. rupicola</i>	3.41-3.97(±0.21)-4.26	3.62-4.74(±0.23)-5.70
<i>S. f. floricola</i>	3.58-4.32(±0.26)-4.93	3.36-3.50
<i>S. f. palustris</i>	3.36-4.00(±0.40)-4.59	3.35-4.17(±0.51)-5.15
<i>S. caricis</i>	2.76-2.99-3.24	3.30-4.54
<b>Total length of leg II</b>		
<i>S. rupicola</i>	3.18-3.57(±0.20)-4.26	2.70-3.45(±0.21)-3.97
<i>S. f. floricola</i>	3.25-3.92(±0.23)-4.42	2.78-2.92
<i>S. f. palustris</i>	2.81-3.55(±0.66)-4.17	2.78-3.32(±0.35)-4.08
<i>S. caricis</i>	2.13-2.55-2.94	2.46-3.30
<b>Total length of leg III</b>		
<i>S. rupicola</i>	3.09-3.54(±0.19)-3.95	2.65-3.19(±0.09)-3.66
<i>S. f. floricola</i>	3.14-3.81(±0.23)-4.23	2.74-2.78
<i>S. f. palustris</i>	2.73-3.48(±0.32)-3.95	2.43-2.95(±0.30)-3.48
<i>S. caricis</i>	2.20-2.48-2.73	2.24-3.05

The measured part of spider body or ratio, also species name	♀	♂
Total length of leg IV		
<i>S. rupicola</i>	4.35-5.40(±0.32)-6.60	3.55-4.44(±0.38)-4.95
<i>S. f. floricola</i>	4.49-5.70(±0.12)-6.33	3.72-3.72
<i>S. f. palustris</i>	3.35-5.92(±0.86)-6.27	3.59-4.34(±0.51)-5.71
<i>S. caricis</i>	3.30-3.59-4.17	3.11-4.54
Ratio a: length of eye field to length of cephalothorax		
<i>S. rupicola</i>	0.32-0.37(±0.02)-0.43	0.33-0.40(±0.04)-0.52
<i>S. f. floricola</i>	0.35-0.39(±0.03)-0.46	0.41-0.45
<i>S. f. palustris</i>	0.35-0.39(±0.02)-0.45	0.35-0.39(±0.03)-0.47
<i>S. caricis</i>	0.37-0.42-0.45	0.36-0.38
Ratio b: width of eye field I to III		
<i>S. rupicola</i>	0.93-1.00(±0.02)-1.03	0.97-1.02(±0.02)-1.06
<i>S. f. floricola</i>	0.94-0.96(±0.01)-1.00	1.00-1.10
<i>S. f. palustris</i>	0.91-0.95(±0.02)-0.98	0.94-0.98(±0.02)-1.00
<i>S. caricis</i>	0.95-0.96-0.98	1.00-1.02
Ratio c: length of eye field to width of eye field I		
<i>S. rupicola</i>	0.54-0.60(±0.03)-0.70	—
<i>S. f. floricola</i>	0.57-0.62(±0.03)-0.75	0.59-0.64
<i>S. f. palustris</i>	0.55-0.62(±0.03)-0.68	0.53-0.60(±0.05)-0.71
<i>S. caricis</i>	0.56-0.64-0.69	0.57-0.58
Ratio d: length of tibia IV to III		
<i>S. rupicola</i>	1.71-1.86(±0.12)-2.50	1.30-1.68(±0.17)-1.89
<i>S. f. floricola</i>	1.30-1.75(±0.12)-2.00	1.45-1.70
<i>S. f. palustris</i>	1.71-1.94(±0.08)-2.16	1.55-1.76(±0.10)-1.93
<i>S. caricis</i>	1.45-1.62-1.82	1.58-1.83
Ratio h: height to length of cephalothorax		
<i>S. rupicola</i>	0.42-0.46(±0.02)-0.52	0.42-0.47(±0.02)-0.51
<i>S. f. floricola</i>	0.41-0.47(±0.03)-0.54	0.46-0.55
<i>S. f. palustris</i>	0.34-0.44(±0.01)-0.49	0.45-0.47(±0.02)-0.51
<i>S. caricis</i>	0.37-0.43-0.46	0.47-0.49

The above table gives then good biometrical characteristics of the studied species, which complements descriptions of particular species quoted in this paper. It also allows some more general inferences. It appears that individual variability in each phenon is so extensive, that there almost always is a partial overlap of measurements between studied species. While the means of measure-

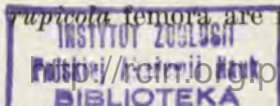
ments are different for each species and each sex, there are also individuals which on the biometrics alone could be placed into other species. It is true that the smallest species, *S. caricis*, is distinctly smaller, but even there some measurements are confusing. The calculated ratios also do not separate species. For instance the ratio of Tibia IV to Tibia III once considered by DAHL, 1926, and others as key character separating genera in *Sitticinae*, is so variable that its utility appears to be rather doubtful.

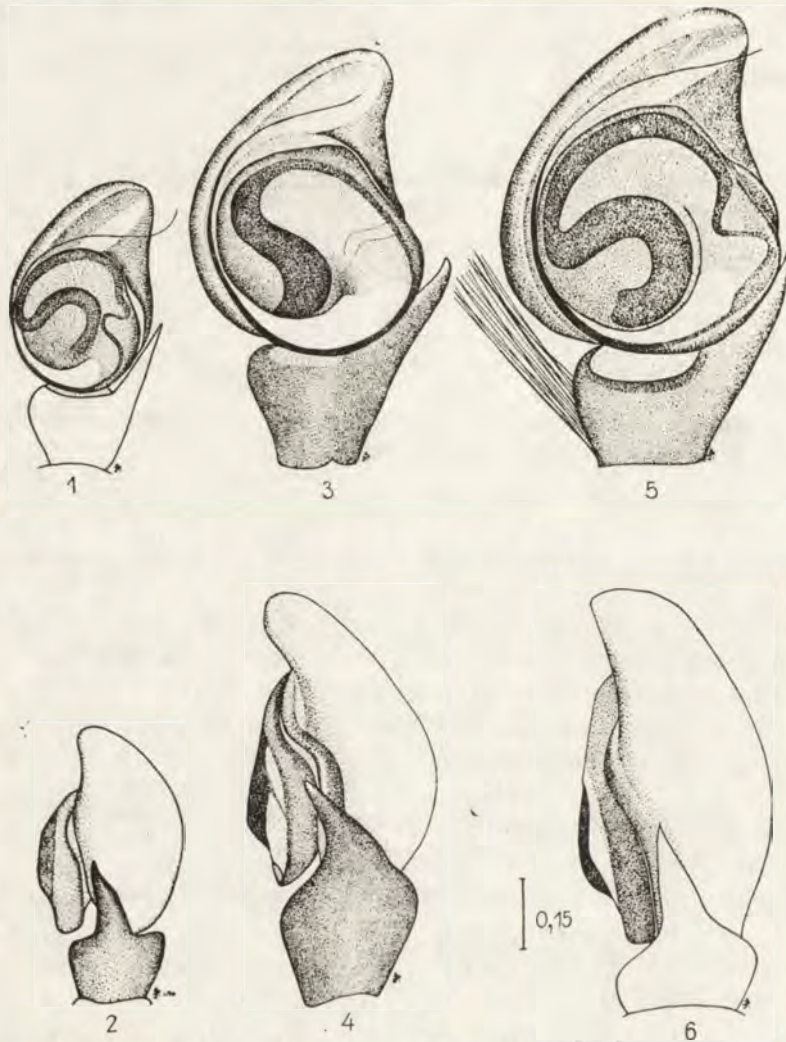
It looks like, that these measurements and ratios could be used to describe populational variability within the species. They can be also used to add more precision to morphological descriptions like: "leg 4th shorter than the 3rd one". But their utility as an easy taxonomical character is rather doubtful. Also measurements taken from single specimen give little idea on the measurements of the larger sample. The above does not mean that the measurements should not be taken, but brings down to earth the hopes on their particular validity.

#### Separation of *Sitticus caricis*, *S. floricola* and *S. rupicola*

The problem of separation of these 3 species is quite difficult and caused apparently a lot of misunderstandings. The females can be best identified by difference in internal structure of epigyne. In *S. floricola* (fig. 14) the copulatory canals arise from the anteriormost or near anteriormost point of the spermathecae and run originally anteriorwards — with a small dorsal bent on the way, then turn back and end by the copulatory opening in the anterior part of the epigyne. In *S. caricis* (figs. 60–63) and *S. rupicola* (figs. 44–47) the copulatory canals arise from the lateral surface of the spermathecae and make a loop — a small one in a case of *S. caricis* and much longer (but not so long as in some other species) in a case of *S. rupicola*. Then the canals run anteriorwards, turn back and end by the copulatory openings in the anterior part, or antero-lateral part of epigyne. The shape of male copulatory organs (figs. 1–13) are very similar and are often mistaken. *S. floricola* can be separated from the two remaining by the shape of its sperm canal which resembles the letter "S" with loosely written upper half. In *S. caricis* and *rupicola* the middle angle of that "letter S" is deep and drawn laterally. *S. caricis* differs from *S. rupicola* by much smaller size. In external coloration *S. caricis* differs from *S. floricola* and *rupicola* by dull greyish fawn coloration and lack of any distinct colour pattern. Both *S. floricola* and *rupicola* have 2 larger white spots on the darker background, with some other small white spots on the abdomen in both sexes. The surrounding of white spots is often darker than remaining background and form a complicated changeable pattern.

Males of *S. floricola* differ from *S. rupicola* by darker legs — the femora uniformly blackish-brown, patellae and tibiae blackish brown with white setae making an indistinct paler ring, metatarsi dark brown with paler brown ring, tarsi pale-brown. In *S. rupicola* femora are fawn with only apical parts



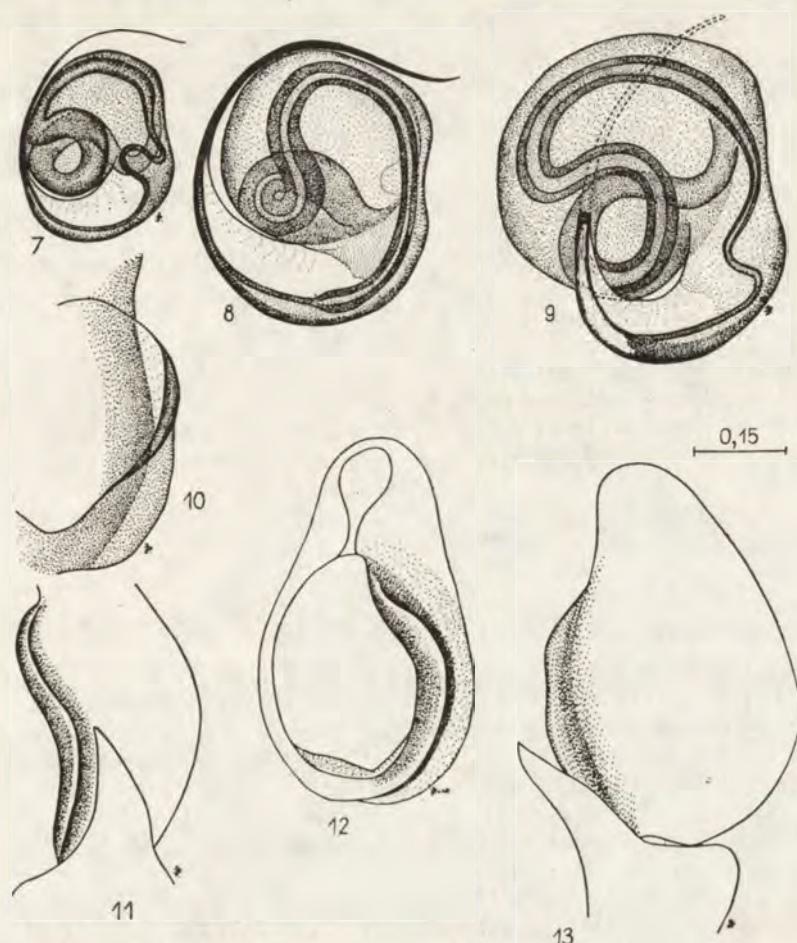


Figs. 1-6. Comparison of palpal organ structure, ventral and lateral views. 1-2 — *Sitticus caricis*, 3-4 — *S. floricola floricola*, 5-6 *S. rupicola*.

black, patellae and tibiae — brown with pale fawn rings with white setae, metatarsi pale brown with darkened apical and basal ends, metatarsus I somewhat darker, tarsi pale brown with sparse darker setae, tarsi I and II somewhat darker. Legs in *S. caricis* are uniformly fawn, with femur I fawn brownish. There are white lines on the cephalothorax of both *S. floricola* and *S. rupicola*, absent in *S. caricis*.

The three species differ distinctly in their biology and ecological requirements. *S. rupicola* is a mountain dweller living on rocks and making nest under small stones lying on surface of rocks or larger stones. The nests form quite





Figs. 7-13. Further structures of palpal organ. 7-9 — macerated bulbus with embolus and a sperm storage canal in *Sitticus caricis*, *S. floricola* and *S. rupicola* respectively, 10-13 — details of cymbium structure in *S. floricola floricola* (bulbus removed).

often small groupings under the single stone, sometimes as more as ten of them, separate or touching one another. They may be intermixed with some other spiders, especially *Heliophanus*.

*S. floricola* and *S. caricis* are meadow and waterside vegetation dwellers. *Sitticus floricola* makes characteristic white nids on the bent tops of grasses, *Juncus* (fig. 21) or, sometimes, also *Phragmites*. I happened to see it also on low young pine tree planted in a very wet place closely to pond side; this unusual occurrence on pine was apparently due to the humidity of the environment.

According to information from Dr. A. KAJAK, *S. caricis* occurs just above

the roots of tall grasses (*Carex* sp.) on wet meadows — it is quite common and makes nids there.

The separation of *S. floricola floricola* from *S. floricola palustris* is a problem I was not able to solve yet. Both subspecies are very closely similar and the latter occurs in similar environment according to American descriptions. Comparing internal structure of epigynum of both subspecies I have found some small difference in the shape of copulatory canals and the way of their sclerotization — I was, however, unable to check the importance of this difference on larger material. The problem of separation of these subspecies needs further studies and it would be interesting to check whether are there any differences in mating behaviour or other reproductive barriers.

Some attention should be paid to the observation of WILD (1969) that female of *S. floricola* is able to laid down fertilized eggs and produce normal spiderlings 11 months after copulation.

#### Survey of species

### *Sitticus floricola floricola* (C. L. KOCH, 1837)

*Eophrys floricola* C. L. KOCH 1837.

*Attus floricola*: THORELL 1856: 172; SIMON 1864: 312; KULCZYŃSKI 1884: 177, 210, 1890: 22, 25, 28, 30, et auct.

*Sitticus floricola*: SIMON 1901: 578, 580, 1937: 1191, 1194, 1256; KULCZYŃSKI 1913: 16; CHARITONOV 1932: 184, 1936: 219; BONNET 1945: 4073-4075; LOCKET, MILLIDGE 1951: 230-232, ff. 112D, 113C; PRÓSZYŃSKI, STAREGA 1971: 285-286.

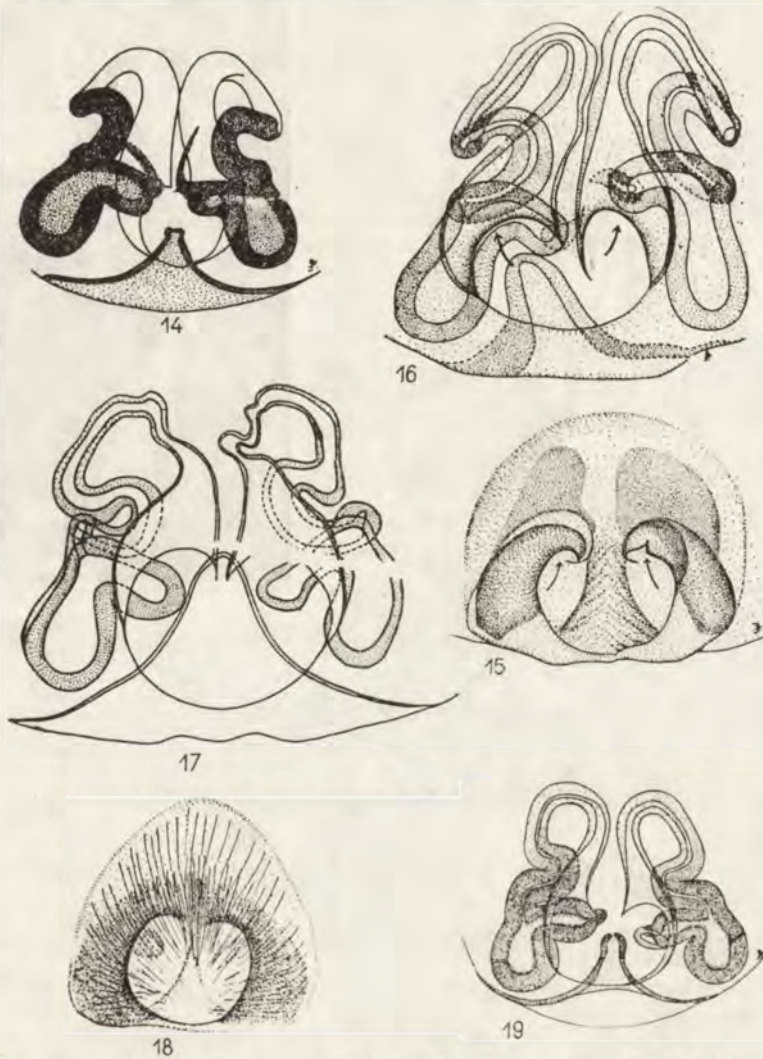
*Sitticus floricola orientalis* STRAND in BÜSENBURG, STRAND 1906: 343-344.

*Salticus littoralis* (?) HAHN 1831: 70.

*Sitticus littoralis*: DAHL 1909: 10, 1926: 33, ff. 94-98; TULLGREN 1944: 30-31 ff. 20a, 33-34, ROEWER 1954: 1245-1246, HARM 1973<sup>1</sup>: 380-383, ff. 2, 9, 23, 27-28, 41-44.

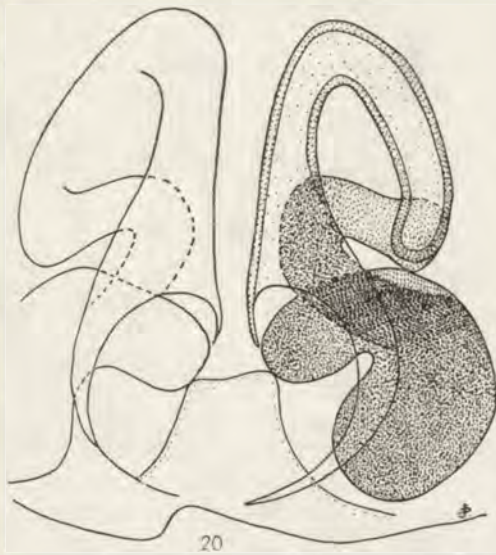
<sup>1</sup> The nomenclatorial problem of this species requires some comments. It should be absolutely unimportant which name is applied for any given species, provided the name is universally accepted and does not change. An unfortunate example set by E. STRAND was followed by F. DAHL 1909 who has found a number of obsolete allegedly priority names and replaced with them generally accepted ones. In a case of *Salticus littoralis* HAHN 1831 the name was almost completely forgotten for 72 years (quoted 6 times before DAHL) while *Attus floricola* was mentioned during the same time in more than 100 publications. So according to present nomenclatorial rules DAHL should never revive "*littoralis*". The change has made a lot of confusions in the subsequent years — and both names were used simultaneously by various authors. The confusion was deepened when ROEWER 1954 used "*littoralis*" in his Katalog while BONNET 1945-1961 retained *floricola*. The name "*floricola*" seems, however, to be more commonly used during last 20 years. So according to our present nomenclatorial rules name "*floricola*" should be retained, even if there weren't any doubt that the species described by HAHN was in fact *floricola*. That synonymy remains unfortunately doubtful and I do not share positive opinion of M. HARM 1973: 380 about it. — But I do not think that in this case the argument on identity of HAHN's specimens matters much. The important point is that specific name should be in general use as a means of communication. The name "*littoralis*" is not in general use and there are no reasons why it should be.

Material: Numerous specimens from Poland (IZ PAN) and several other European countries. Also several specimens from eastern Siberia – from Primorie, River Amur and Yakutia – including specimen from 64°7'N, 120°8'E – in the collection of ZIN – Leningrad.



Figs. 14–19. Epigyne and its internal structure in *Sitticus floricola*. 14 – *S. floricola floricola* from Poland, 15–16 the type of *Attus morosus*, 17 – *S. floricola palustris*, 18–19 – *S. floricola palustris* from Minnesota.

The male palpal organ is shown figs. 3–4, with details shown on figs 8 and 13. The epigyne of female is shown on figs. 14, 20, the nid on fig. 21. The diagnostic characters and measurements are given on precedent pages.



Figs. 20–21. *Sitticus floricola floricola*. 20 – epigyne of a ♀ from Yakutia, 21 – a retreat with cocoon made on a *Juncus* sp. (Sękocin, Poland).

### *Sitticus floricola palustris* (PECKHAM, 1883)

*Attus palustris* PECKHAM 1883: 25, 1888: 43–44, t. 1, f. 30, t. 3, ff. 30–30a.

*Sitticus palustris*: SIMON 1901: 579–580; PETRUNKEVITCH 1911: 709; BONNET 1958: 407; KASTON 1948: 454–459, ff. 1660–1667, 1667–1668.

*Attus morosus* BANKS 1895: 97.

*Sitticus morosus*: PETRUNKEVITCH 1911: 709; BONNET 1958: 4076.

*Sitticus palustris*: PECKHAM 1909: 626, 628, t. 43, f. 4 (?), t. 44, f. 3–3c.

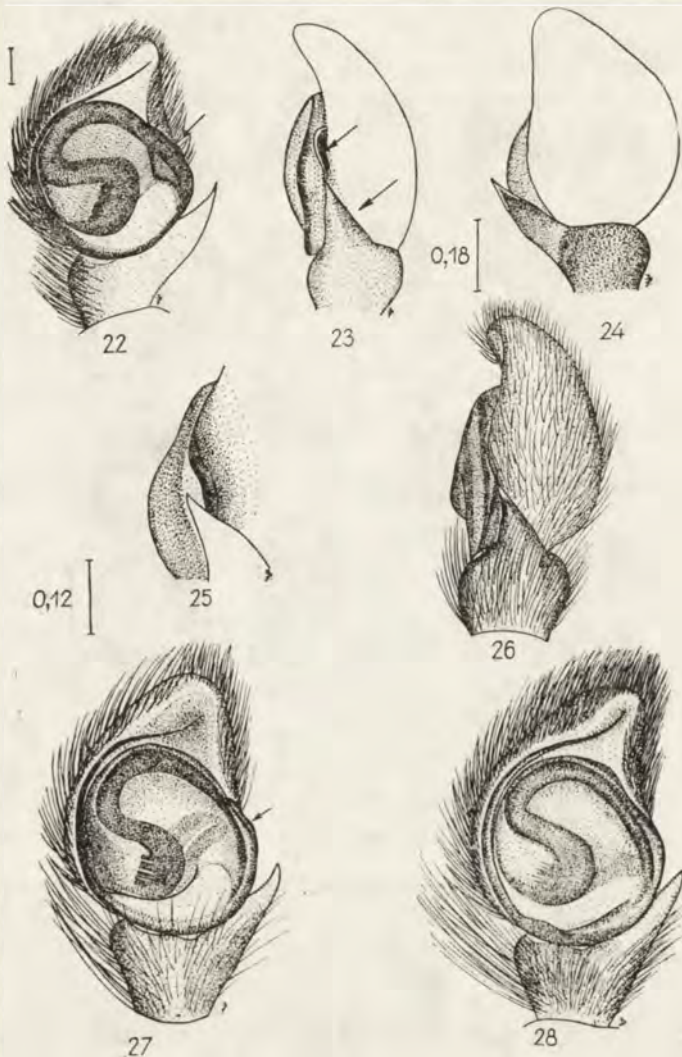
**Material:** “*Attus morosus* BANKS – Olympia Wash.”. Type. Various specimens from MCZ-Harvard, AMNH-New York, B. CUTTLER, C. DONDALE and W. MADDISON collections.

The measurements were given earlier in this paper, the shape of epigyne and its internal structures are shown on figs. 15–19. The palpal organ structure is shown on figs. 22–28, the variation in colour pattern in males and females on figs. 29–43.

The relationship of subspecies *floricola* and *palustris* is uncertain and cannot be solved without biological research. I have not noticed any clear separa-

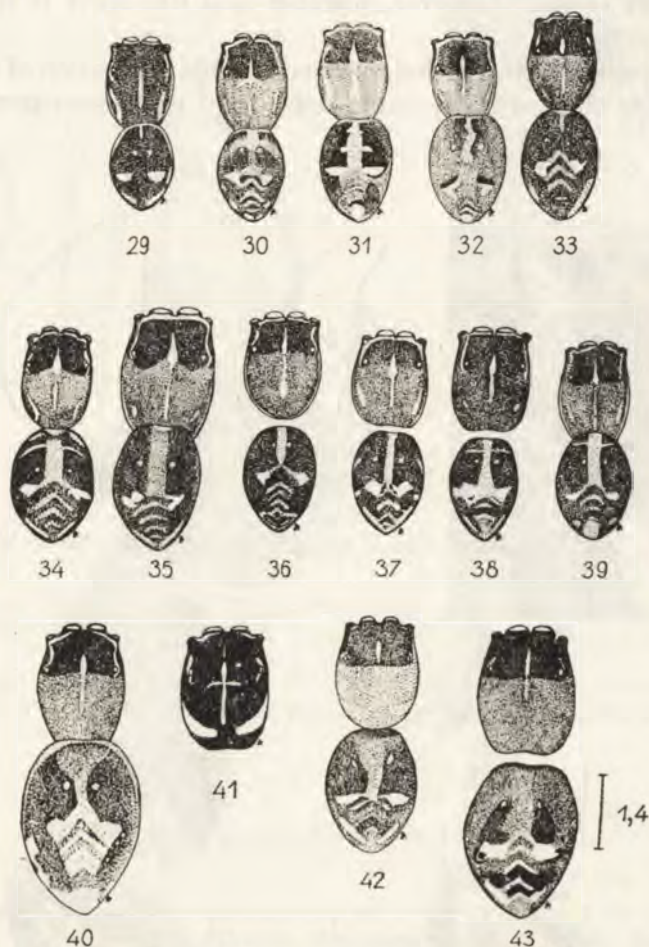
ting character between these forms. There is some small difference in copulatory canals in the very spot they join spermathecae — the sclerotization of the canals' wall may be gradual or sharp, the loop may be of slightly different form (figs. 14–19). I am not certain, however, whether that difference is true for larger series of specimens.

My own personal feeling is that even subspecific separation of these populations may appear exaggeration, but I defer final conclusion until more facts



Figs. 22–28 Palpal organ in *Sitticus floricola palustris*. 22–25 — Minnesota specimen, 26–27 — SIMON collection specimen, 28 — Mt. Washington specimen.

would become available. The zoogeographical conclusion from the above may be that *S. floricola palustris* is not really autochthonous North American form, although its distribution is now very wide.



Figs. 29-43. Variation in colour pattern in *Sitticus floricola palustris*, specimen from Minnesota. 29-39 - males, 40-43 - females.

### *Sitticus rupicola* (C. L. KOCH, 1837)

*Euophrys rupicola* C. L. KOCH 1837: 34.

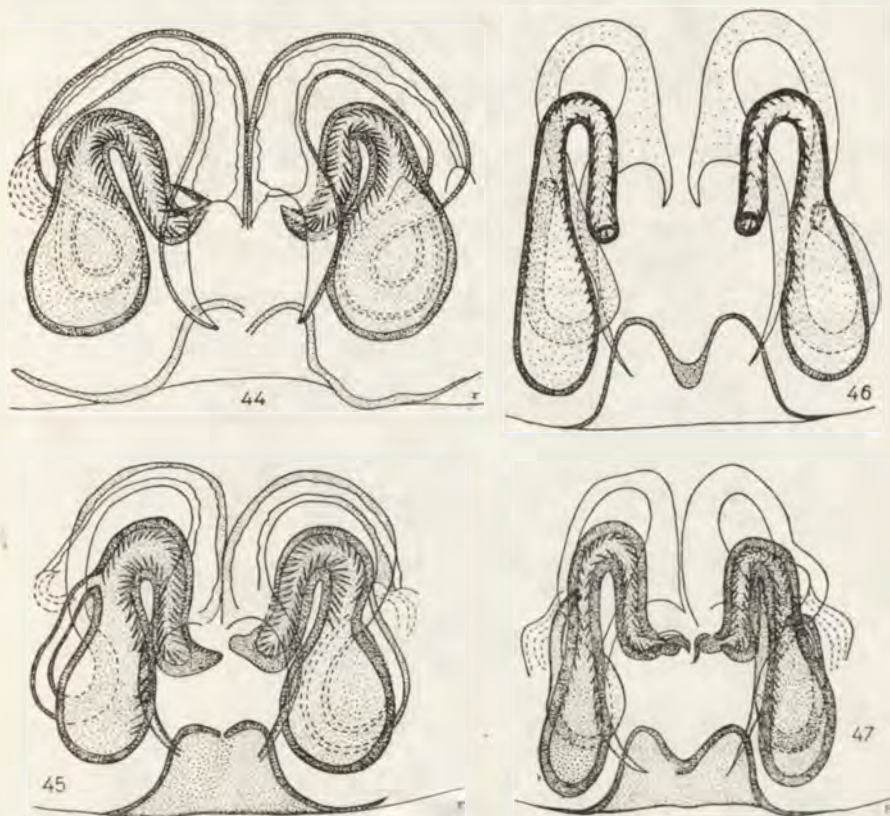
*Attus rupicola*: DOLESCHAL 1852: 630, et auct.

*Sitticus rupicola*: SIMON 1901: 578, 580, 1937: 1192, 1194, 1256, f. 1862; TULLGREN 1944 (1970): 28-29, f. 21, t. 2, ff. 30-31; BONNET 1945-1961: 4081; ROEWER 1954: 1248; HARM 1973: 383-384, ff. 3, 24, 29, 35-36, 45.

*Sitticus strandi* KOLOSARY 1934: 16, 1936: 100; BONNET 1945-1961: 4083; ROEWER 1954: 1248.

**Material:** Numerous specimens from Poland: Tatra Mts., Bieszczady Mts., Pieniny Mts., numerous ♂♂, ♀♀ — “Urseren Tal near Realp, Switzerland”, leg. M. J. PRÓSZYŃSKI coll. IZ PAN, Warsaw; 1 ♂ “*Sitticus strandi* KOLOSZVÁRY, Kőrmiebanya 933. 3. 4. Typus” — coll. TM — Budapest; “*Attus rupicola*, coll. CHYZER” — TM Budapest; numerous specimens E. SIMON coll., MNHN — Paris; ♀, ♂ — “8049 *Sitt. palustris* PCK” (possibly from North America, provided specimens were not mixed up during labelling) E. SIMON coll. — MNHN, Paris; ♀ resembling *S. rupicola* “Texas, Houston, July 8, 1928” — AMNH, New York ♂, ♀ *Sitticus rupicola* 11. VI. 1972, W. Estland. Inselchen Kumarilaid im Ostsee [Baltic Sea]. Meeresstrand am Geroll, leg. det. A. VILBASTE.

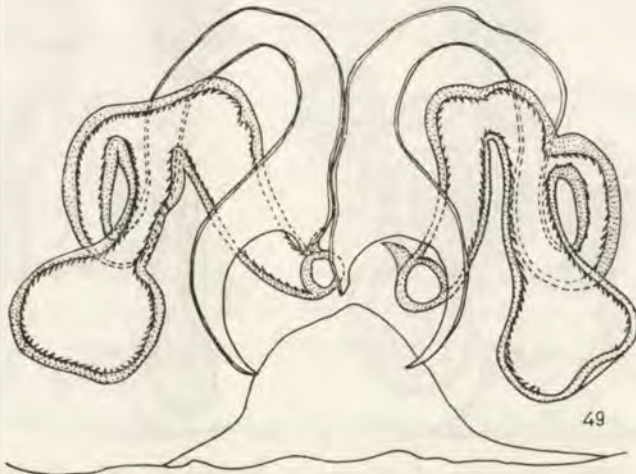
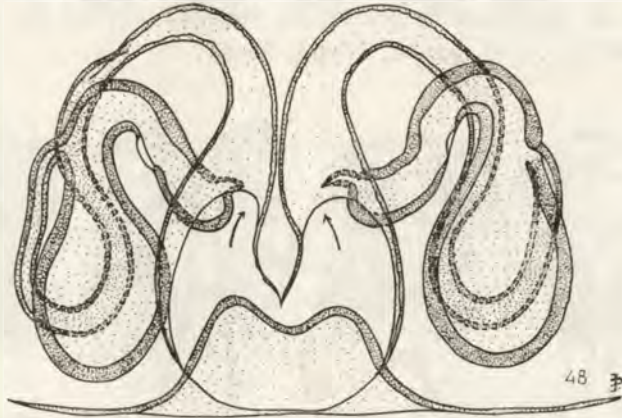
The key characters of this species were discussed earlier in this paper. The structure of epigynum is shown on figs. 47–50, 58–59, the structure of palpal organ on figs. 5–6, 51–52, 53–54, 56–57.



Figs. 44–47. Internal structure of epigyne in *Sitticus rupicola*. 44–45 — specimens from Pieniny Mts. and Bieszczady Mts., Poland, 46–47 — specimens from Urseren-Tal near Realp, Switzerland.

There is certain individual variation in internal structure of epigynum — concerning proportions of spermathecae, exact position of insertion of copulatory canals into spermathecae and the length of the posterior loop of the copula-

tory canals. The presumed North American specimens in the Paris collection are not decisive proof of occurrence of the species in that continent, because of lack of exact collecting point on the label and also because of possibility of that specimens could be placed in a wrong tube during about 100 years of storage in the collection. The Texas specimen has got shorter posterior loop, intermediate to *S. magnus* CHAMBERLIN et IVIE, 1944, so its systematic position is not clear. Considering the above the possibility of occurrence of this species in North America cannot be excluded, but it is not certain yet.



Figs. 48–49. Epigyne in *Sitticus rupicola* specimens in Paris collection. 49 – structures distorted by boiling in KOH of a specimen 8049 labelled as “*Sitt. palustris* (PKH.)”.

Ecologically *S. rupicola* is a rock dweller, occurring mainly in the Central European mountains (in Tatra Mts. up to about 1700 m, but more commonly on lower altitudes) and some rocky environments in the lowlands.



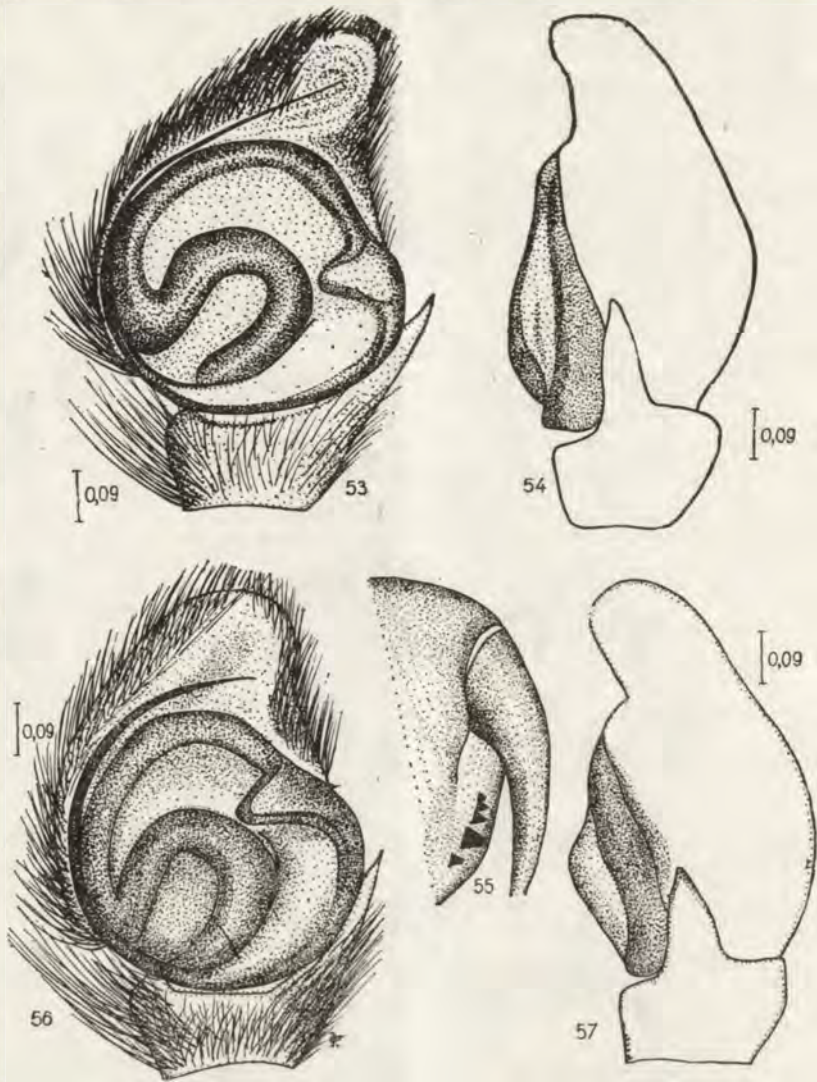
Its occurrence on shingle covered beaches in two localities on the south coast in Great Britain is apparently a secondary local adaptation of a presumably recently established population of colonists. It is interesting, however, that the species occurs in similar environment on two small islands off Estonian coast.

The Estonian beach specimens are characterized by generally darker coloration, for instance femora are uniformly dark brown. This is apparent in comparison with Tatra Mts. specimens. However, more southern specimens — from Bulgaria, have still lighter coloration. So there is possibility of populational geographical variation, which deserves separate research, perhaps.



Figs. 50–52. Presumable *Sitticus rupicola* epigyne and palpal organ. The specimens are labeled as “8049 *Sitt. palustris* (PKH.)”, which suggests their North American (?) origin.

The females built retreats, in which they lay down cocoons, under the stones lying either on rock surface or larger stones. There are usually several retreats under single stone, often more than 10, grouped closely together. Sometimes they occur together with similar retreats of a *Heliophanus* sp.



Figs. 53-57. *Sitticus rupicola*, palpal organ and somewhat aberrant cheliceral dentition. 53-55 - CHYZER collection specimen, 56-57 - type of *Sitticus strandi*.

### *Sitticus caricis* (WESTRING, 1861)

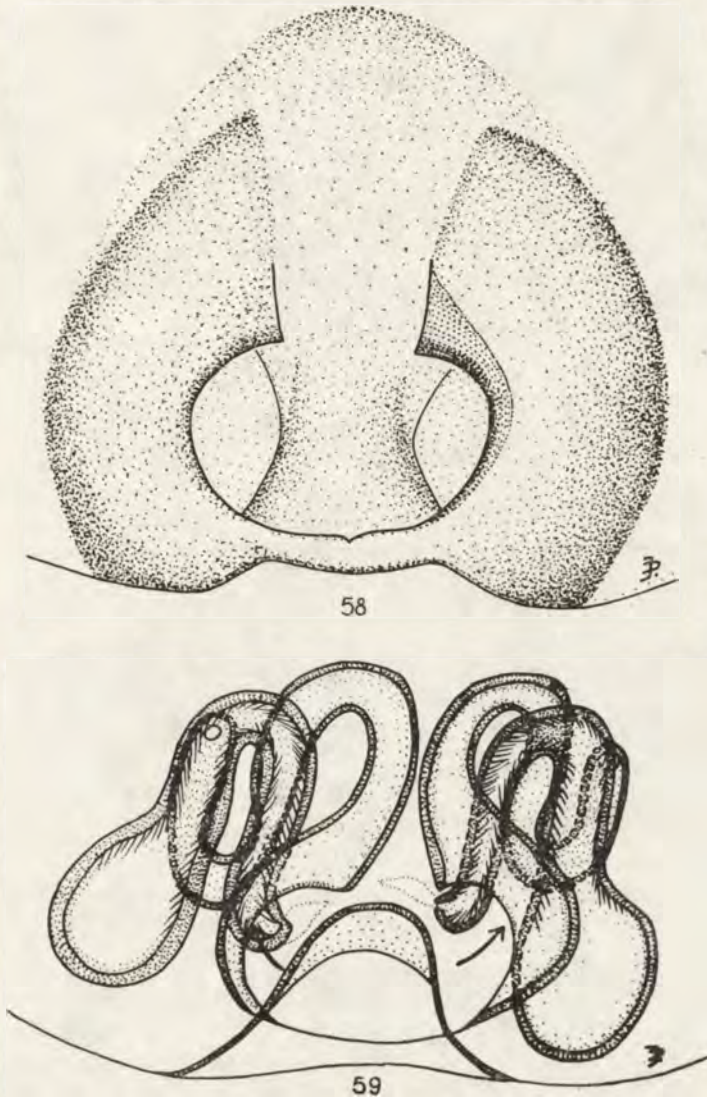
*Attus caricis* WESTRING 1861: 576, et auct.

*Sitticus caricis*: SIMON 1901: 579, 580, 1937: 1190, 1193, 1255, f. 1880; TULLGREN 1944 (1970): 26, f. 20B, t. 2, ff. 28-29; BONNET 1945-1961: 4069; ROEWER 1954: 1244; PRÓSZYŃSKI, STARĘGA 1971: 284; HARM 1973: 384-386, ff. 4, 25, 30, 37-38.

**Material:** Numerous specimens from the collections of: IZ PAN, Warszawa, TM, Budapest, Senckenberg Mus., Frankfurt a/M; 1 ♀ - Far East of the USSR, Liman of Amur -

Tatar Sound shores, village Cherryx between peninsulas Petakh and Ozerpakh, coll. I. Zool. AN USSR, Leningrad.

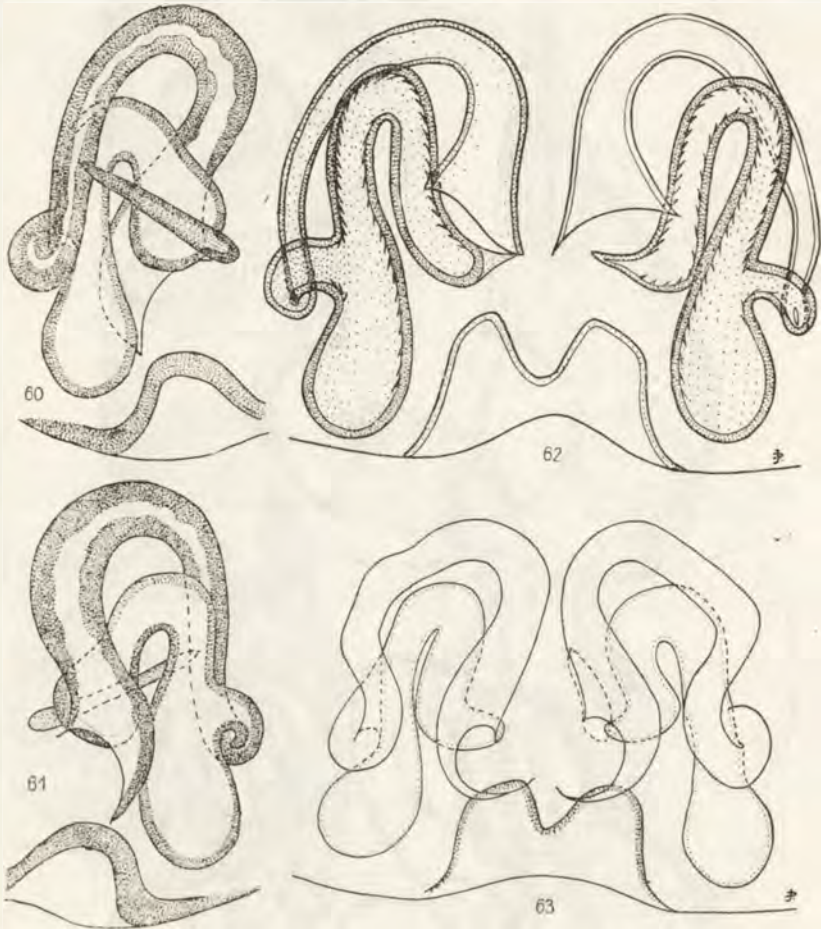
The key characters of this species are discussed earlier in this paper. The palpal organ structure is shown on figs. 1-2, 7, the structure of epigynum on



Figs. 58-59. Epigyne and its internal structure of a specimen resembling *Sitticus rupicola*, from Houston, Texas.

figs. 60-63. The major features of this species are much smaller dimensions and lack of white spots on abdomen. The palpal organ in males is very similar to that in *S. rupicola*, but much smaller. The internal structure of epigynum

in females is comparable with that in *S. rupicola* but differs in having much smaller loop of the posterior part of the copulatory canal. The same loop in the American species *S. magnus* CHAMBERLIN et IVIE, 1944 is somewhat bigger and intermediate between *S. rupicola* and *S. caricis*. Occurrence of this species



Figs. 60-63. Internal structure of epigyne in *Sitticus caricis*. 60-61 - right spermatheca, dorsal and ventral views, CHYZER coll. specimen, 62 - specimen from Poland, coll. KULCZYŃSKI, 63 - eastern Palaearctic, Liman of Amur specimen.

at the eastern end of the Palaearctic (Tatar Sound shores) indicates its Euro-Siberian type of distribution. According to Dr. A. KAJAK (Personal communication) the species builds his nests in lower parts of *Carex*-tufts in meadows. HARM (1973) quotes several informations on its occurrence in *Sphagnum*-moor and other hygrophilous biotopes. It should be rather common, but is seldom collected and there are few specimens in the collections.

The measurements are quoted earlier in this paper.

*Sitticus magnus* CHAMBERLIN et IVIE, 1944

Material: "*Sitticus magnus* CHAMB. and IVIE w. 83 n. 34, ♀ Holotype". "W. 83°48'; N. 34°18', Georgia, Gainesville, April 24, 1934 Wilton IVIE collector", ♀, ♂ — *Sitticus magnus*, PRÓSZYŃSKI det., from North Carolina: Durham co. Kerley Road, Duke Forest, pine with young hardwood, pitfalls, 12 July 1963 (♀) and 19 May 1964. Two tubes collected by J. W. BERRY. All specimens kept in the AMNH — New York.

The epigyne of the holotype is shown on figs. 64–65, that of the other specimens of figs. 67–68, the structure of the palpal organ of the male on fig. 66.

## Description of female (Duke Forest specimen).

Cephalothorax blackish brown with black margins of the eye field, covered with short and sparse white adpressed setae. Length of cephalothorax 1.78, length of eye field 0.75, width of eye field I (on level of eyes I) 1.33, width of eye field III (on level of eyes III) 1.31.

Abdomen brownish grey covered with brownish and white setae. There are two indistinct white spots, transversely in the middle of abdomen. Two large white spots in front of spinnerets, there are also minute white spots scattered over the abdomen and concentrating on the margins where they form an irregular paler belt. Abdomen ventrally greyish with two white spots in front of spinnerets. Epigyne — see drawings 64–65, 67–68. Length of abdomen 2.04.

Sternum brown, coxae brownish grey, maxillary plates and labium brown, white tipped, chelicerae brown. Pedipalps greyish fawn with tarsus, tibia and prolateral surface of femur darker. Legs yellowish fawn with darker rings. Length of legs: I 0.41+0.46+0.59+0.59+0.93; II 0.39+0.41+0.46+0.54+0.76; III 0.34+0.41+0.42+0.44+0.75; IV 0.54+0.70+0.88+0.61+1.46.

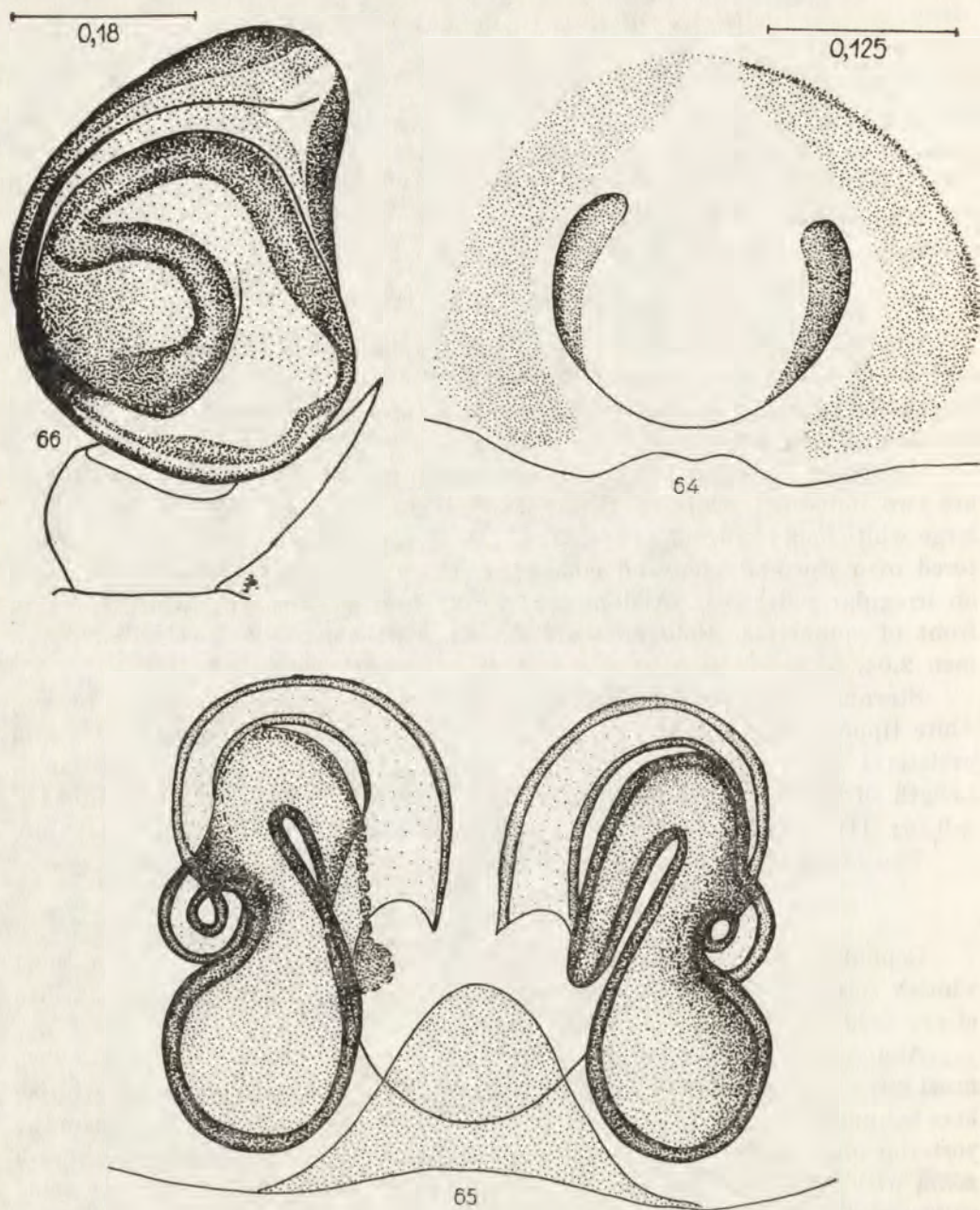
The holotype specimen similar to the above described.

## Description of male

Cephalothorax brown, eye field black, both covered with sparse short whitish setae. Length of cephalothorax 1.53, length of eye field 0.66, width of eye field I 1.12 width of eye field III 1.09.

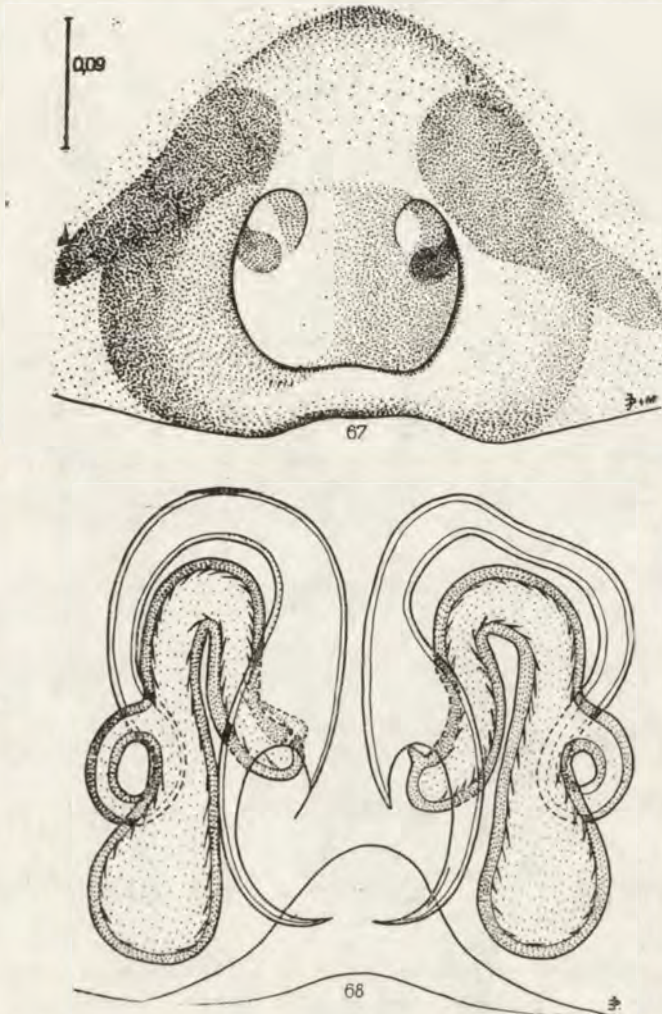
Abdomen dorsally brownish with blackish brown and whitish setae. Two fused large whitish spots in the posterior half of the abdomen and three whitish lines behind. There are darker spots in front of whitish ones, and white line on the posterior one fourth of the margin of the abdomen. Abdomen ventrally greyish fawn, with two white spots in front of spinnerets. A pair of small white spots on the margin on the level of the epigastric furrow. Length of abdomen 1.19. Sternum brown, coxae greyish fawn, maxillary plates and labium dark brown, white tipped, chelicerae brown.

Palpal organ very similar to that in *S. caricis* (fig. 66). Pedipalpal tarsus and tibia dark brown, patella and femur yellowish with long white hairs on their dorsal surfaces.



Figs. 64–66. *Sitticus magnus*. 64–65 – epigyne of the holotype, 66 – palpal organ of a specimen of presumably this species, from Duke Forest, North Carolina.

Legs yellowish fawn with darker brownish rings on metatarsi, tibiae, patellae and femora I-IV; there are white setae between these rings. Femur IV strikingly longer than any other segment. Length of legs I  $0.37 + 0.42 + 0.48 + 0.51 + 0.76$ ; II  $0.36 + 0.37 + 0.37 + 0.39 + 0.63$ ; III  $0.34 + 0.36 + 0.29 + 0.34 + 0.69$ ; IV  $0.37 + 0.49 + 0.59 + 0.46 + 1.10$ .



Figs. 67-68. Epigyne in *Sitticus magnus*, Duke Forest specimen.

Apart from minor differences in colour pattern (white spots on the abdomen) and in copulatory canals loops in epigyne, the species is very similar to *S. caricis* and could be even conspecific with it.

*Sitticus zimmermanni* (SIMON, 1877)

*Attus atricapillus* SIMON 1882: 39, *syn. n.*<sup>1</sup>

*Sitticus atricapillus*: SIMON 1937: 1889; ROEWER 1945: 1243.

*Attus Zimmermanni* SIMON 1877: 74.

*Sitticus zimmermanni*: REIMOSER 1919: 105; SIMON 1937: 1192, 1257; BONNET 1945-1961: 4085; ROEWER 1954: 1249; PRÓSZYŃSKI, STARĘGA 1971: 289; HARM 1973: 386-388, ff. 5, 10, 26, 31-32, 39-40, 46-50.

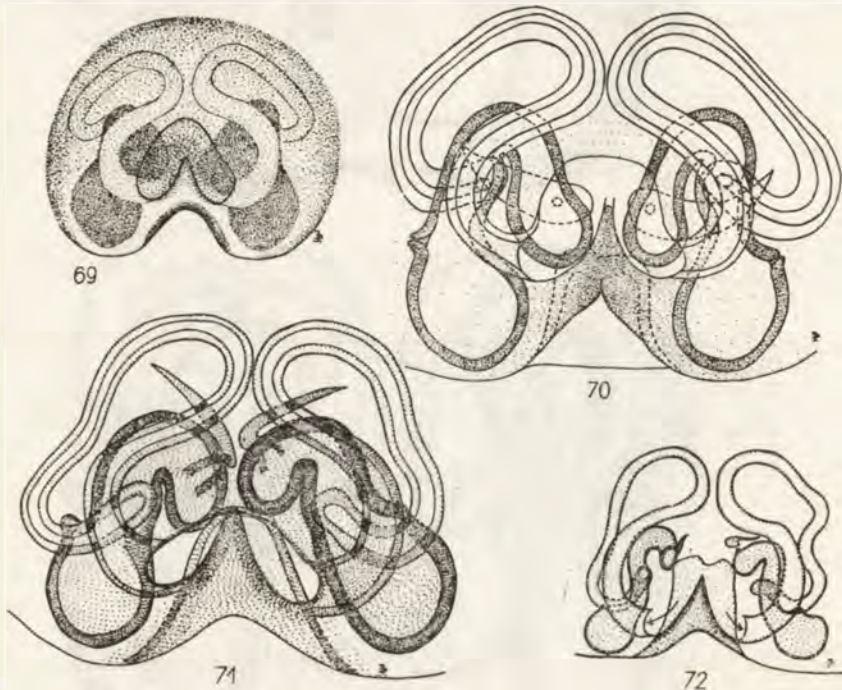
*Attus alpicola* KULCZYŃSKI 1887: 251, 285.

*Sitticus alpicola*: SIMON 1901: 580; BONNET 1945-1961: 4069; ROEWER 1945: 1243; PRÓSZYŃSKI, STARĘGA 1971: 289 (= *S. zimmermanni*).

*Attus hungaricus* KULCZYŃSKI in CHYZER, KULCZYŃSKI 1891: 19, 20, 23.

*Sitticus hungaricus*: REIMOSER 1919: 104; BONNET 1945-1961: 4076; ROEWER 1954: 1245; PRÓSZYŃSKI, STARĘGA 1971: 289 (= *S. zimmermanni*).

*Sitticus appolinis* BRISTOWE 1935: 784-786, ff. 17-20; BONNET 1945-1961: 4069; ROEWER 1954: 1243; PRÓSZYŃSKI, STARĘGA 1971: 289 (= *zimmermanni*).



Figs. 69-72. Epigyne and its internal structure in *Sitticus zimmermanni*. 69-70 - Lake Buchillon specimen of *Sitticus hungaricus*, identified by KULCZYŃSKI, 71 - *Sitticus tullgreni*, specimen from Poland, 72 - a specimen labelled "*3778 nigrocapillatus* E. S." from SIMON collection.

<sup>1</sup> The name is almost completely forgotten and even omitted in BONNET 1945-1961; the species is known from a single specimen kept in the SIMON collection, MNHN - Paris, presumably being its type but labelled with different name with the same meaning ("*nigrocapillatus*") and misspelled geographical area where it was collected.

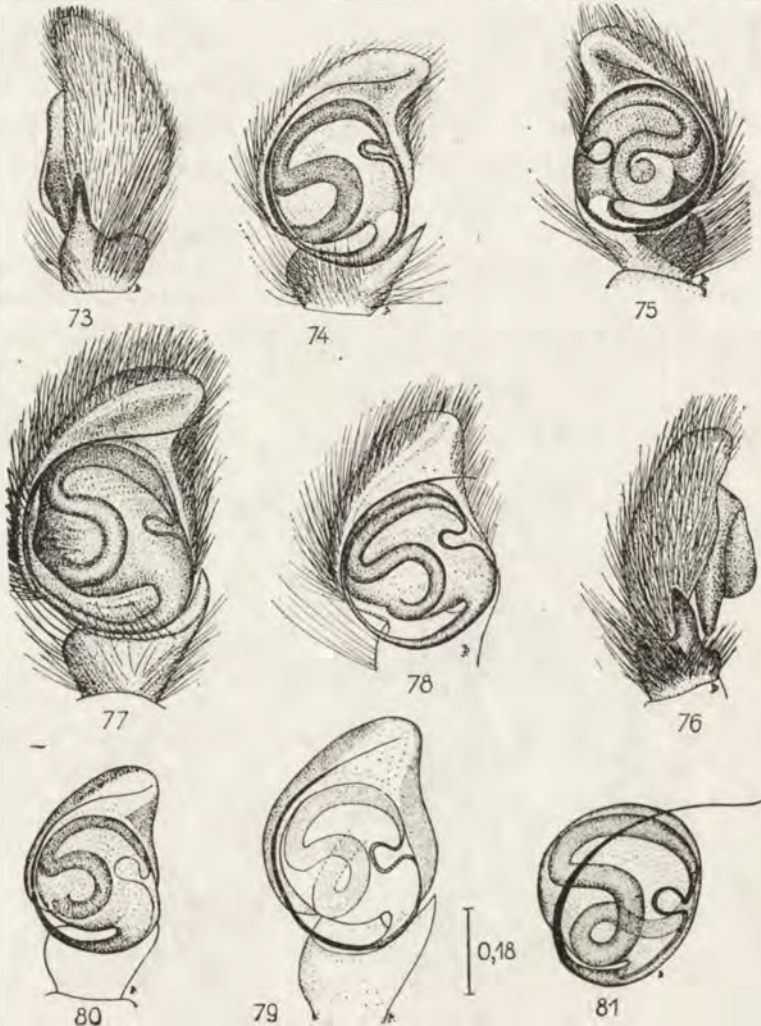


*Sitticus semivittatus* SIMON 1937: 1192; BONNET 1945-1961: 4083; ROEWER 1954: 1248; PRÓSZYŃSKI, STARĘGA 1971: 289 (= *S. zimmermanni*).

*Sitticus tullgreni* HOLM 1944: 3 (the Part B4 of the Ark. Zool. 35 was printed with date 4. VII. 1944); TULLGREN 1944 (1970): 29, f. 21B, t. 2, f. 32; ROEWER 1954: 1248; PRÓSZYŃSKI, STARĘGA 1971: 289 (= *S. zimmermanni*).

*Sitticus cingulatus*: BRAUN 1963: 125, ff. 22-25; PRÓSZYŃSKI, STARĘGA 1971: 289 (= *S. zimmermanni*).

Material: 1 ♂ (mounted in a microscopic slide) "*Attus* (= *Sitticus*) *zimmermanni* SIM. Typus. ZMB 5972" - Zool. Mus. Berlin; 1 ♀ "3778 [*Sitticus*] *nigrocapillatus* [should be apparently *atricapillus*] E. S. Baulecuta" [in the collection catalogue - Basilicata], coll.



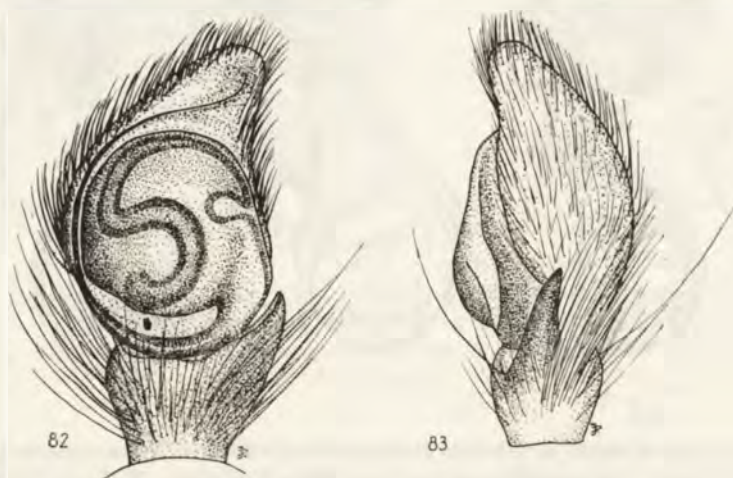
Figs. 73-81. Palpal organ in *Sitticus zimmermanni*. 73-74 - *Attus alpicola* from Črni Lug, Yugoslavia, 75-76 - *Sitticus hungaricus* from Lake Buchillon, 77-78 - *Sitticus semivittatus* from Lautaret, H. Alps Mts., possibly syntype, 79 - type of *Attus zimmermanni*, Berlin Museum, 80 - Zawada, Poland specimen, 81 - macerated and isolated bulb.

E. SIMON, MNHN — Paris (the specimen subsequently identified as *S. tullgreni* by J. PRÓSZYŃSKI); 2 ♀♀ *Attus zimmermanni* — coll. CHYZER, T. M. — Budapest; "*Sitticus hungaricus* det. J. PRÓSZYŃSKI, Leśnictwo Zawada pow. Czarnków, Poland" IZ PAN — Warszawa; ♂♀ — *Sitticus hungaricus* KULCZ. det. par KULCZYŃSKI, Lac Buchillon, LESSERT. Leg.", NHM — Basel; 2 ♂♂ "888 *Sitticus semivittatus* ES. Ht. Alps: Lautaret" — MNHN — Paris; ♀ "*Attus alpicola* KULCZYŃSKI, Risnjak, coll. CHYZER" — TM — Budapest; ♂ "*Attus alpicola* KULCZ., Črni Lug, coll. CHYZER" TM — Budapest, 1 ♀ "*Sitticus tullgreni* HOLM — det. F. MILLER. Góra Nartowa, Puszcza Kampinoska, Poland, leg. J. PRÓSZYŃSKI". — IZ PAN — Warszawa; 1 ♂ *Sitticus zimmermanni* det. J. PRÓSZYŃSKI — "1948 *Sitt. palustris* PKH" — coll. SIMON, MNHN. (There is the question whether that specimen was originally collected in North America or maybe put inadvertently into a tube with label of *S. palustris*).

The species can be recognized externally by white longitudinal lines on cephalothorax and a pair of large white spots on the abdomen resembling colour pattern in *S. rupicola* and *S. floricola*. The male can be recognized by a broad gap between original part of embolus and bulbus and by the characteristic position of a small loop of the seminal receptacle canal (Figs. 73–83). In females the posterior edge of epigynum is bent forward, the copulatory canals form large loops extending anteriorwards from spermathecae (Figs. 69–72).

Measurements of males (Lac Buchillon and Zawada forestry specimens). Length of cephalothorax 1.89–1.62, length of eye field 0.78–0.72; width of eye field I 1.22–1.17, width of eye field III 1.22–1.08, length of abdomen 1.96–1.53. Length of legs: I 0.54–0.42 + 0.72–0.60 + 0.84–0.72 + 0.72–0.54 + 1.14–0.96; II 0.45–0.42 + 0.54–0.48 + 0.54–0.42 + 0.60–0.48 + 0.96–0.72; III 0.42–0.36 + 0.54–0.48 + 0.48–0.42 + 0.48–0.36 + 0.90–0.78; IV 0.60–0.48 + 0.84–0.72 + 0.90–0.78 + 0.60–0.54 + 1.35–1.20.

Measurements of a female (Lac Buchillon specimen): length of cephalothorax 2.24, length of eye field 0.72, width of eye field I 1.35, width of eye



Figs. 82–83. *Sitticus zimmermanni* — palpal organ structure in a specimen labelled "1948 *Sitt. palustris* PKH." in SIMON collection, possibly from North America.

field III 1.40, length of abdomen 4.14. Length of legs: I 0.60 + 0.60 + 0.78 + 0.78 + 1.14; II 0.48 + 0.54 + 0.60 + 0.66 + 1.08; III 0.54 + 0.66 + 0.63 + 0.48 + 1.08; IV 0.66 + 1.08 + 1.35 + 0.72 + 1.71.

The species seems to occur in two different environments: on rocks in mountains and on sand ground in lowlands. As there are several *Sitticus* species occurring in the same environments, one may wonder whether they present some similar ecological properties for the spiders.

### *Sitticus striatus* EMERTON, 1911

*Sitticus* [sic!] *stratus* EMERTON 1911: 407, f. 6.

*Sitticus striatus*: BONNET 1945-1961: 4083; KASTON 1948: 459, ff. 1689-1691; ROEWER 1954: 1251.

*Sitticus rivalis* SIMON 1937: 1190, 1193, 1256, **syn. n.**; BONNET 1945-1961: 4081; ROEWER 1954: 1247.

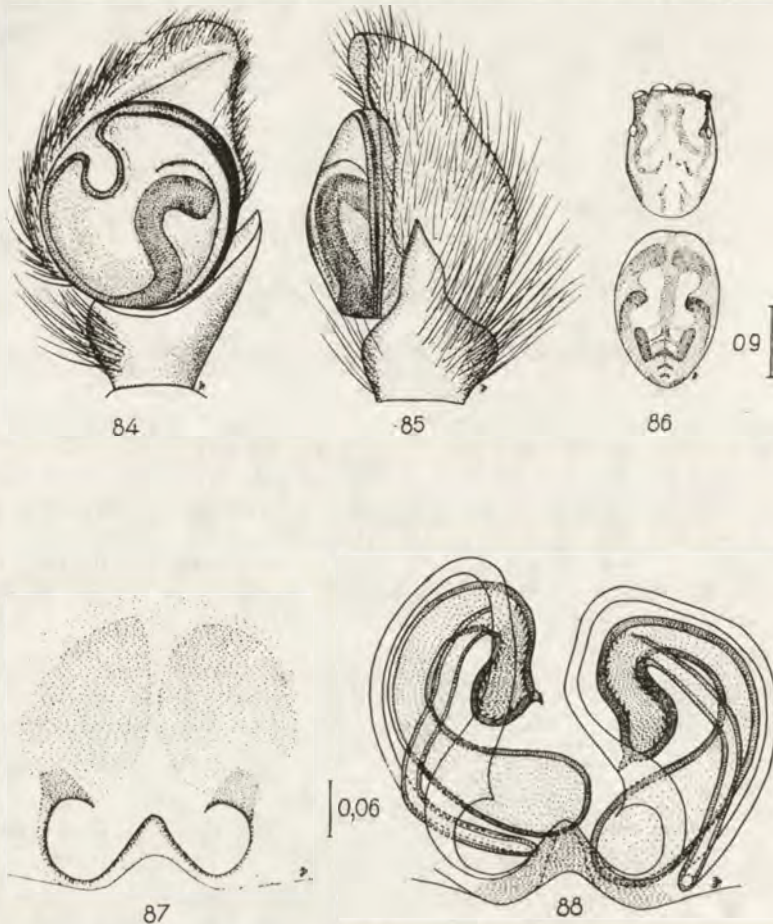
*Sitticus lineatus* DENIS 1950: 86, ff. 10, 11, 13 **syn. n.**; ROEWER 1954: 1245.

Material: ♂, ♀ "*Sitticus stratus* EM. 1911, Plum 2, Mass., June 17, 1910" — J. H. EMERTON coll., probably type" — MCZ — Harvard; ♂, ♀ "*Sitticus stratus* EM. det. B. CUTLER. Minn., Roseau Co. June 10, 1965, sweeping on bluegrass, leg. B. CUTLER" — coll. B. CUTLER; 1 ♂ "*Sitticus striatus* EM. det. B. CUTLER, Cartwright, Labrador, 29. VII. 55. E. E. STEANS", coll. DONDALE. 1 ♀ "*Sitticus lineatus* DENIS 1950, Htes Pyrenees; Lac Superieur d'Estibere, 2320 m, 9. 7. 1948" coll. MNHN — Paris; 1 ♀ "22191 *S. rivalis* E. S. Pyrennees" MNHN — Paris; "25251 *Sitt. rivalis* E. S. DURANCE pres Avignon (type)" — an empty tube — coll. MNHN — Paris; 1 ♀ "*Sitticus rivalis* E. S. Perugia III" — tube contain single unadult female of different genus — coll. CAPORLACCO, Mus. Civ. Storia Naturale Genova, Italy.

Description of male (based on "probably type" specimen, which is faded). Cephalothorax yellowish-fawn, eyefield olive-fawn, surrounding of lateral eyes black. Covered very sparsely with short and inconspicuous fine white setae as well as somewhat stouter brown setae. There is a very narrow, faint and inconspicuous paler median longitudinal streak on the thorax. Length of cephalothorax (I measurement — "probably type", II Minnesota specimen, III Labrador specimen) 1.58-1.29-1.53. Length of eye field 0.72-0.59-0.63; width of eye field I 1.05-0.85-1.00; width of eye field III 1.12-0.92-1.02.

Abdomen dorsally greyish-olive yellow with undistinct brownish-grey spots arranged into an inconspicuous pattern. There is a paler median streak, followed by two darker ones. There are three undistinct dark reversed "V" marks in the posterior part of abdomen. There is no similar pattern visible on the Labrador specimen. Abdomen ventrally pale fawn with a narrow median and two broader lateral brownish grey streaks. Length of abdomen 2.38 — missing — 1.58. Sternum yellowish-fawn with an olive shade, there is a paler median area, as well as darker margin. In Labrador specimen sternum is uniform. Coxae pale yellow with a greyish shade. Maxillary plates and labium yellowish with yellowish fawn spots. Chelicerae fawnish-chestnut brown. Pedipalps yellowish olive (in Labrador specimen brown). The structure of the palpal organ is shown on Figs. 84-85.

Legs. Yellowish with an olive shade. In the Labrador specimen legs dark brown with a very striking paler yellow stripes, covered with seta, white setae, running along dorso - lateral edges of all segments. These are particularly conspicuous on legs I and somewhat less on legs II when seen from the front.

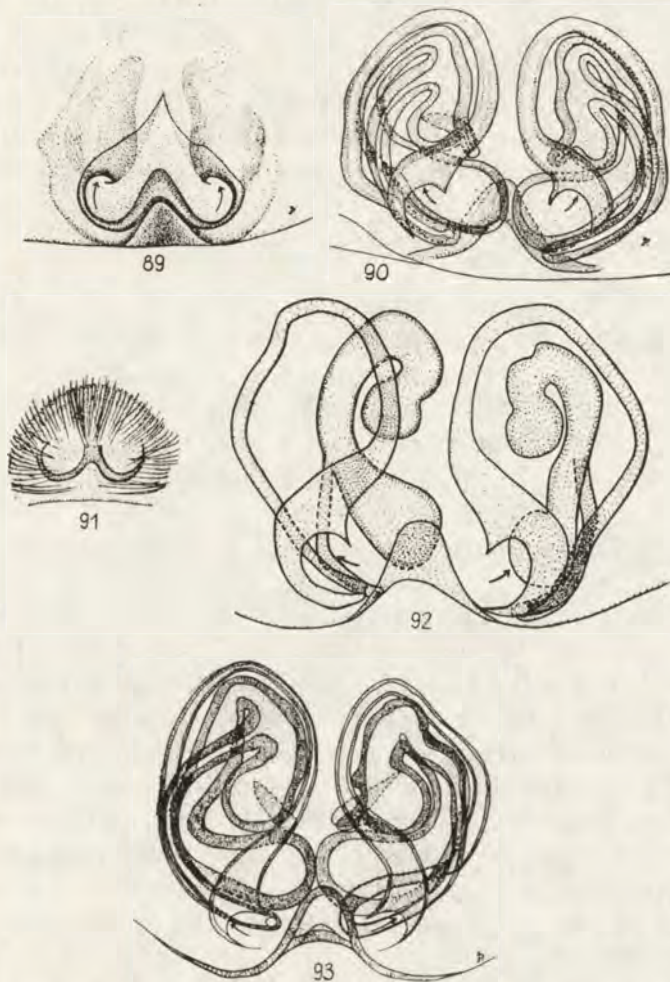


Figs. 84-88. *Sitticus striatus*. 84-85 - palpal organ of a "possibly type" specimen, 86-88 colour pattern and epigyne of a Minnesota specimen.

Length of segments of legs: I 0.51-0.37-0.49 + 0.72-0.46-0.71 + 0.81-0.49-0.85 + 0.60-0.46-0.68 + 1.08-0.70-1.09; II 0.42-0.31-0.34 + 0.48-0.37-0.42 + 0.48-0.34-0.46 + 0.48-0.37-0.51 + 0.81-0.56-0.76; III 0.42-0.34-0.37 + 0.45-0.36-0.46 + 0.45-0.25-0.41 + 0.42-0.34-0.41 + 0.75-0.58-0.68; IV 0.48-0.42-0.46 + 0.69-0.53-0.68 + 0.75-0.58-0.76 + 0.51-0.42-0.51 + 1.17-0.92-1.22.

Description of female (based on "probably type" specimen, which is partly faded, and compared with the *S. rivalis* specimen). Cephalothorax pale fawn with anterior and lateral margins of eyefield blackish brown, covered with inconspicuous and short white setae. There is an inconspicuous white median

line along the posterior part of the field and through the thorax. In the *S. rivalis* specimen the eyefield has a metallic copper gleam white streak on the eye-field is covered with white setae and form a dagger shaped mark. White setae form also transversal white line behind eyes I and two indistinct white streaks along eyes lateral. Length of cephalothorax ("probably type" specimen) 1.89, length of eye field 0.78, width of eye field I 1.17, width of eye field III 1.26.



Figs. 89-93. Epigyne in *Sitticus striatus*. 89-90 "probably type" specimen, 91-92 - syntypus of a *Sitticus rivalis*, note different insertion point to spermathecae of the copulatory canal, presumably a drawing mistake, 93 - type of *Sitticus lineatus*.

Abdomen dorsally faded and changed in both specimens, olive yellowish with indistinct pattern of paler spots. Abdomen ventrally fawnish grey with yellowish longitudinal streaks. In *S. rivalis* pale yellowish grey with three brown

longitudinal streaks. Length of abdomen 3.34. The external appearance of a ♀ from Minnesota is shown on fig. 86.

The shape of epigyne and its internal structures are shown in Figs. 88–93. It appears that the length and shape of the copulatory canals is highly distinctive and therefore most important key character of this species. There is a striking difference on insertion of copulatory canals into median part of spermathecae in *S. rivalis* (fig. 92) and to the anterior (topographically) part in all remaining studied specimens (figs. 88, 90, 93). Because *S. lineatus* type (fig. 93) from the same Pyrenees Mts. is identical with American specimens I assume that fig. 92 is wrong in this respect, presumably because the microscopic slide was not clear enough. I made that drawing apparently in 1964 and I did not know any *S. striatus* at that time, so I could not correct that mistake at once. All the above needs confirmation on fresh specimens. Strenum pale fawn with a brownish margin. Maxillary plates and labium fawn with paler tips. Coxae fawn with greyish shade. Chelicerae pale chestnut brown. Legs uniformly fawn, with 2 rings on femora I–IV, grey in “probably type” specimen and pale yellow on *S. rivalis*, covered sparsely with fawnish brown setae and some whitish scales. Length of segments of legs: I 0.42 + 0.54 + 0.57 + 0.66 + 0.96; II 0.42 + 0.48 + 0.48 + 0.54 + 0.84; III 0.42 + 0.51 + 0.48 + 0.48 + 0.78; IV 0.60 + 0.81 + 0.93 + 0.63 + 1.40.

The geographic distribution of forms identified now as *Sitticus striatus* poses some questions. In North America it is known rather from lowland areas in Massachusetts, Minnesota, Labrador and also from Matanuska (149°W, 61°N) in Alaska. It has been collected from straw in a salt marsh, an edge of sphagnum bog, and CUTLER has collected it sweeping on blue grass. The European forms are rather mountain dwellers and DENIS describes environment of his *S. lineatus* as “sous les pierres au bord du lac a l'emplacement du neve” — on bords of the mountain artificial lake Lac Superieur d'Estibere (altitude 2320 m). There is no environment mentioned on the Pyreneen specimen of *S. rivalis* and the missing second specimen was collected from “Durance près Avignon”. In May 1966 I made search trip for that species along the Durance river starting from Avignon up to the Gap in High Alps and I have not been able to find single specimen on rocks or stones. It seems that a rather strange distribution of this species warrant further study on its morphology (unknown male specimens from Europe) and environmental requirements.

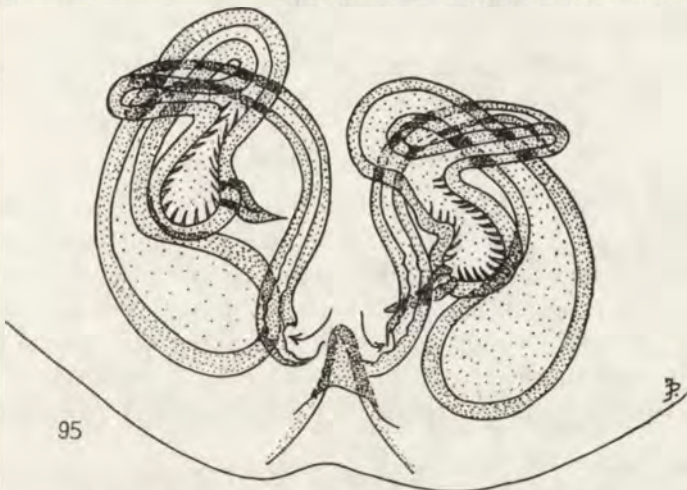
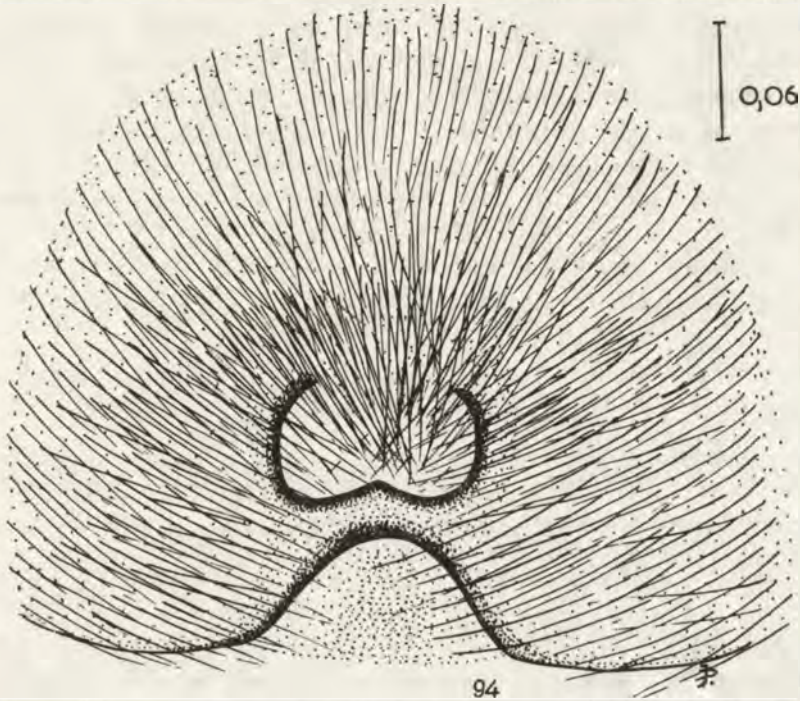
### *Sitticus cutleri* sp. n.

Material: 1 ♀ — holotype “Grand Rapids, Minn., July 3, 1935, D. G. DENNING”. coll. University, St. Paul. Mr. Wayne MADISON has informed me recently on another ♀ from Wrigley, North West Territories, Canada, kept in the Canadian National Collection.

The species can be recognized by the shape of epigyne with its deeply carved posterior edge (fig. 94), and by its internal structure, resembling in

the general plan *S. striatus*, but differing by very considerably shortened loops of copulatory canale and very small vaginal roof (fig. 95).

The cephalothorax of the female is brown with surrounding of eyes lateral blackish-brown; covered with fine, adpressed white setae, without any distinct



Figs. 94-95. Epigyne in *Sitticus cutleri* sp. n.

pattern. Length of cephalothorax 1.75, length of eye field 0.73, width of eye field I 1.19, width of eye field III 1.19.

Abdomen dorsally brownish grey now, with faint traces of white and darker brown spots, resembling somewhat colour pattern of *S. floricola*. Covered with fine adpressed setae, white on paler spots and dark brown on darker ones. Abdomen ventrally fawnish grey with broad darker grey longitudinal central stripe. Covered with whitish dense setae. Length of abdomen 2.19. Epigyne small, covered densely with whitish setae (fig. 94). Sternum brown with remnants of fine whitish setae. Coxae fawnish brown with sparse white setae. Maxillary plates fawn and labium brownish grey, both white tipped. Chelicerae fawnish brown. Pedipalps yellow with brown spots, covered with whitish-grey setae.

Legs brownish-fawn with darker brown rings, covered with greyish setae. Length of segments of legs: I  $0.43 + 0.46 + 0.57 + 0.54 + 0.86$ ; II  $0.43 + 0.40 + 0.43 + 0.51 + 0.78$ ; III  $0.40 + 0.43 + 0.38 + 0.43 + 0.76$ ; IV  $0.54 + 0.78 + 0.84 + 0.57 + 1.30$ .

The species is named in honour of Dr. Bruce CUTLER, who has helped me considerably in my study of American *Sitticus*.

### *Sitticus gertschi* sp. n.

Materia: 1 ♂ holotype "Utah, Richfield July 4, 1930. W. J. GERTSCH" — coll. AMNH — New York.

The species resembles *S. striatus* in general appearance of the palpal organ (figs. 96–98) but differs from it in having shorter embolus, arising posteriorly and making only half turn around lateral side of the bulbus. The bulbus in comparison with *S. striatus* appears to be turned by some  $210^\circ$  and the small loop is located posteriorly.

The species is named in honour of Dr W. J. GERTSCH, who has helped me considerably in my study of North American *Salticidae*.

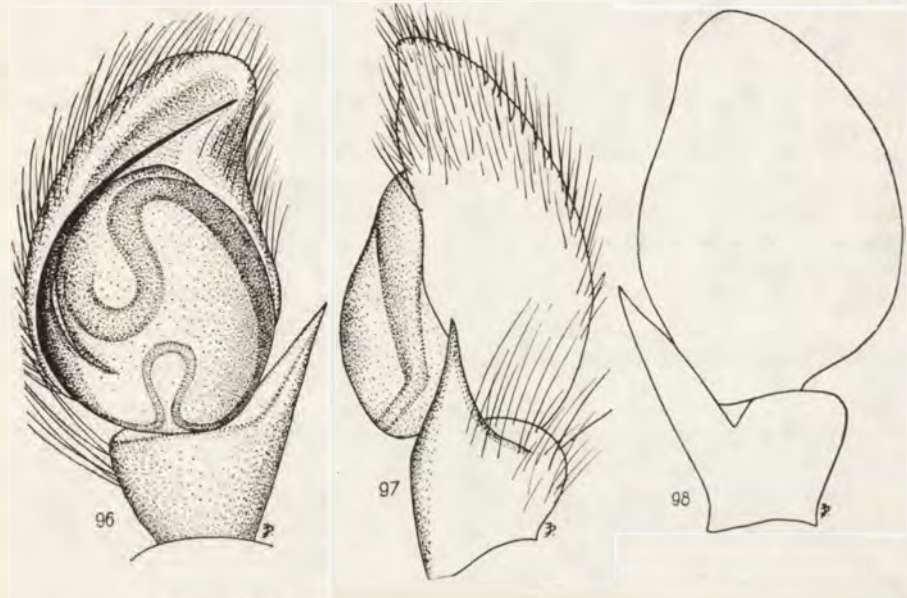
### Description of male

Cephalothorax fawnish brown, with surrounding of eyes II and III dark brown. Eye field covered sparsely with very fine and short whitish setae, posterior slopes of thorax covered with dark brown setae of similar shape. There is a streak of white setae on the edge between dorsal and lateral surfaces of the thorax on each side, as well as another one along the middle longitudinal line of the thorax — all these streaks, however, are confined to the sloping posterior surface of the thorax. Clypeus very narrow, eyes surrounded by colourless setae.

Length of cephalothorax 1.75, length of eye field 0.65, width of eye field I 1.05, width of eye field III 1.10. Ratio *a*: 0.37, ratio *b* 0.95, ratio *c* 0.62.



Abdomen dorsally dark brown with yellowish fawn spots — one pair of larger spots in the middle of abdomen resembles those in *S. floricola*, there are also two pairs of whitish-yellow dots (white setae on the yellowish background) on the edges of dorsal surface in the posterior part of abdomen. Yellowish dots flank central darker line in the anterior half of abdomen, in the posterior part there are four thin transversal yellowish lines. Abdomen covered sparsely with very thin and inconspicuous brown setae, with the colourless or whitish ones on the yellowish dots. Lateral surfaces covered with whitish setae. Ventrally abdomen brownish grey with two longitudinal yellowish stripes on the border of lateral surfaces. Length of abdomen 1.65.



Figs. 96–98. Palpal organ in *Sitticus gertschi* sp. n.

Sternum light brown. Coxae dark greyish fawn with an olive gleam. Maxillary plates brown, white tipped. Labium dark brown white tipped. Chelicerae light brown.

Pedipalpal tarsus and tibia brown, covered with brownish setae.

Legs brownish fawn, covered with brownish, greyish and white setae. There are indistinct darker rings near the apical end of tibiae I–IV. Femora III–IV somewhat paler, dense tarsal tufts are greyish. Length of segments of legs: I 0.45 + 0.52 + 0.62 + 0.60 + 0.95; II 0.47 + 0.57 + 0.65 + 0.55 + 0.92; III 0.40 + 0.45 + 0.40 + 0.37 + 0.75; IV 0.50 + 0.67 + 0.75 + 0.50 + 1.20. Ratio *c* 1.87.

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Zakład Zoologii, IBS, WSRP.  
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## STRESZCZENIE

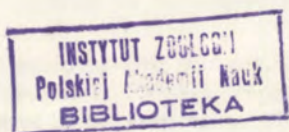
[Tytuł: Rewizja rodzaju *Sitticus* SIMON, 1901 (*Aranei, Salticidae*), IV. Grupa *Sitticus floricola* (C. L. KOCH, 1837)]

Ozwarta część rewizji rodzaju *Sitticus* omawia 9 blisko spokrewnionych gatunków, łączonych w grupę *Sitticus floricola* (C. L. KOCH). Dwa gatunki — *Sitticus cutleri* i *S. gertschi*, oba z Ameryki Północnej, opisane są jako nowe dla nauki. Interesujące jest stwierdzenie par blisko spokrewnionych form, z których jedna ma zasięg palearktyczny, druga — nearktyczny. Są to: *S. floricola floricola* (C. L. KOCH) i *S. floricola palustris* (PECK.) oraz *S. caricus* (WEST.) i *S. magnus* CHAMB. et IVIE. Uważany za typowo amerykański *S. striatus* EM. występuje również w Pirenejach. Praca zawiera również rozważania metodyczne nad przydatnością taksonomiczną cech biometrycznych.

## РЕЗЮМЕ

[Заглавие: Ревизия рода *Sitticus* SIMON, 1901 (*Aranei, Salticidae*), IV. Группа *Sitticus floricola* (C. L. Косн, 1837)]

В четвертой части ревизии рода *Sitticus* обсудили 9 близкородственных видов, объединенных в группу *Sitticus floricola* (C. L. Косн). Два вида — *Sitticus cutleri* и *S. gertschi* — оба из Северной Америки, описали как новые для науки. Большой интерес представляет обнаружение пар близкородственных форм, одна из которых распространена в Палеарктике, а другая в Неарктике. Это: *S. floricola floricola* (C. L. Косн) и *S. floricola palustris* (Реск.), *S. caricus* (West.) и *S. magnus* Шамб. et Ivie. Вид *S. striatus* Ем., считающийся типично американским, встречается также в Пиренеях. Работа содержит также методические рассуждения относительно пригодности биометрических признаков для таксономии.



Redaktor pracy — prof. dr J. Nast

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Państwowe Wydawnictwo Naukowe — Warszawa 1980  
Nakład 960 + 90 egz. Ark. wyd. 2,75; druk. 2,25. Papier druk. mat. kl. III, 80 g, B1. Cena zł 20, —  
Nr zam. 2008/80 — Wrocławska Drukarnia Naukowa

**ISBN 83-01-03273-1**  
**ISSN 0003-4541**