On the separation of *Sitticus ranieri* Peckham & Peckham and *S. saxicola* (C. L. Koch) (Araneae, Salticidae)

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On the separation of *Sitticus ranieri* Peckham & Peckham and *S. saxicola* (C. L. Koch) (Araneae, Salticidae). - *Sitticus ranieri* Peckham & Peckham and *S. saxicola* (C. L. Koch) constitute a close group of species due to the morphology of their copulatory organs. Re-examination of specimens previously identified as *Sitticus saxicola* from Fennoscandia has revealed that they belong to *S. ranieri*. Redescriptions with illustrations of both species are provided. *S. saxicola* has a disjunct distribution, occurring in mainly montane areas in the central parts of Europe and on the Balkan peninsula, as well as in the Russian Far-East (known from Sakhalin). *S. ranieri* shows a wide, hypoarcto-boreal distribution throughout northern Europe and Siberia, extending into North America. North American males of *S. ranieri* from southern British Columbia, Washington, Oregon, and Wyoming differ from those examined from other parts of the range (northern Palearctic, Alaska, Yukon, Saskatchewan, Manitoba, Colorado) by having slightly different proportions of the bulb and by lacking a streak of white hairs between the anterior median eyes. Reasons are given for presently not taking these differences into nomenclatorial account.

Key-words: Araneae - Salticidae - *Sitticus* - taxonomy - Holarctic.

INTRODUCTION

Within the jumping spider genus *Sitticus* C. L. Koch, *S. ranieri* Peckham & Peckham, 1909 and *S. saxicola* (C. L. Koch, 1846) constitute a morphologically close species pair in the Holarctic region. Both were redescribed by Prószyński (1971b), the former under the name *S. lineolatus* (Grube, 1861). Re-examination of old material, as well as access to new material, have shown that *S. ranieri* has previously been misidentified as *S. saxicola* in northern Europe. In this paper, diagnostic characteristics of the two species are given together with comments on their distribution.

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S. saxicola was originally described on material from Bavaria, Germany. The species is mainly montane in Continental Europe. It has recently also been found in the Far East of Russia (Marusik et al., 1992). The presence of a seemingly disjunct European occurrence of this species in northern Fennoscandia was announced by Holm (1931), followed by Palmgren (1943), Tullgren (1944, 1952), Holm (1950), Hackman (1951), and Granström (1979). The illustration of an epigyne attributed to S. saxicola by Tullgren (1952), drawn from a female collected in Swedish Lapland, however, rather appears to show an epigyne of S. ranieri. Examination of the corresponding specimen confirmed this assumption. Re-examination of other Fennoscandian specimens attributed to S. saxicola revealed that they all had been misidentified.

Sitticus ranieri was for a long time known as a Nearctic species until Prószynski (1971a,b) synonymized it with Sitticus lineolatus (Grube, 1861). The identity of Attus lineolatus Grube was disclosed by Prószynski (1971a,b) after examination of the holotype. A. lineolatus was transferred to Sitticus and the Nearctic Sitticus ranieri Peckham & Peckham and S. haydeni Levi & Levi were placed under S. lineolatus as junior synonyms (Prószynski, 1971a, b), as was S. mazamae Schenkel (Prószynski, 1971b). However, S. lineolatus is an invalid name because Attus lineolatus Grube, 1861 is a primary homonym of Attus lineolatus Sundevall, 1833 (Platnick, 1993) [the latter now in synonymy with Salticus cingulatus (Panzer)], and must therefore be replaced by the next oldest available name, S. ranieri (Platnick, 1993). Examination of the holotype and other material identified as S. ranieri, as well as the holotype of S. haydeni, revealed slight differences from the holotype and other material identified as S. lineolatus in the male sex. We have, however, been unable to morphologically distinguish females of the American morph (for which S. ranieri was described) from the Siberian morph (for which S. lineolatus was described). At present we regard the two morphs as conspecific. Further investigations may well reveal that they differ at the species level. If so, Icimus daisetsuzanus Saito, 1934 (described from Mt. Daisetsu on Hokkaido in Japan; no material from Japan has hitherto been available to us) may be conspecific with the Siberian morph (see Saito, 1934: pl. 12 fig. 13, pl. 14 fig. 51) and no replacement name required for S. lineolatus sensu Grube.

DEPOSITORIES
AMNH American Museum of Natural History, New York, NY, USA (N. I. Platnick)
CNBW Collection of Nationalpark Bayerischer Wald, Grafenau, Germany
CNC Canadian Collection of Insects and Arachnids, Ottawa, Canada (C. D. Dondale)
CTh Collection of K. Thaler, University of Innsbruck, Innsbruck, Austria
IBPN Institute for Biological Problems of the North, Magadan, Russia (Y. M. Marusik)
ISEN Siberian Zoological Museum of the Institute for Systematics and Ecology of Animals, Novosibirsk, Russia (D. V. Logunov)
MCZ Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA (L. Leibensperger)
NHMB Naturhistorisches Museum, Basel, Switzerland (A. Hänggi)
NHRS Swedish Museum of Natural History, Stockholm, Sweden (T. Kronestedt)
RBCM Royal British Columbia Museum, Victoria, B. C., Canada (T. Steigenberger)
ZMHU Zoological Museum of Helsinki University, Helsinki, Finland (J. Terhivuo)
ZMUU Zoological Museum of Uppsala University, Uppsala, Sweden (T. Jaenson)
ZMUW Zoological Museum of Wrocław University, Wrocław, Poland (W. Wesolowska)
UWBM Burke Museum, University of Washington, Seattle, WA, USA (R. Crawford)
ABBREVIATIONS IN THE TEXT

ALE = anterior lateral eyes
AME = anterior median eyes
ap = apical
d = dorsal
Fm = femur
I, II, etc. = referring to first leg, second leg, etc.
L = length
Mt = metatarsus
PLE = posterior lateral eyes
pr = prolateral
Pt = patella
rt = retrolateral
Tb = tibia
Tr = tarsus
v = ventral

For the leg spination the system adopted is that used by Ono (1988). Measurements are given in millimetres.

**Sitticus ranieri** Peckham & Peckham, 1909  Figs 1, 2, 4, 5, 8-10, 14, 16, 17, 18-20


*Sitticus lineolatus*; Prószyński, 1971a: 223, figs 37-39 (♂); 1971b: 192, figs 2, 14-21 (♂) 22-30 (♀); Chikuni, 1989: 150, 277, fig. 19 (♀).

*Sitticus ranieri* Peckham & Peckham, 1909: 520, pl. 43, fig. 5a-5c (♀ ♂). *"Sittacus"* is an incorrect subsequent spelling of *Sitticus* Simon, 1901 ([ICZN Article 33.3]). Lectotype examined (see below).


*Sitticus ranierinus* Bonnet, 1958: 4081 [unjustified emendation ([ICZN Article 33.2.3]).

*Sitticus saxicola* (misidentification); Palmgren, 1943: 23, fig. 22 (♂ ♀); Tullgren, 1944: 32, pl. 2 figs 37, 38 (♂ only), 1952: 151, fig. 1 (♀).

*Sitticus haydeni* Levi & Levi, 1951: 232, figs. 36, 45, 46 (♂). Holotype examined (see below).


**COMMENTS**

To us, Prószyński’s (1971a,b) synonymization of *Sitticus ranieri* with *S. lineolatus* sensu Grube is not unambiguously warranted but needs further investigation. When compared with *S. lineolatus* sensu Grube, the male type specimen of *S. ranieri* [examined by Prószyński (1971b) and erroneously called “holotype” instead of lectotype], as well as other males examined by us (listed under American morph below), differ in certain proportions (cf. Figs 1 & 2 and Fig. 24). Moreover, the bulbus in the Siberian morph (*S. lineolatus* sensu Grube) is distally somewhat more tapering and exhibits a more or less pronounced shallow concavity prolaterally (see arrow in inset of Fig. 24). Maybe most significant is the presence of streaks of white hairs, one between the AMEs, continuing a short distance backwards, and one on each side between AME and ALE. These are characteristic in males of the Siberian morph, but absent (or hardly traceable) in the males examined and listed under the American
### Differences between *Sitticus ranieri* and *S. saxicola*

<table>
<thead>
<tr>
<th>Table 1</th>
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<tbody>
<tr>
<td><strong>Males</strong></td>
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<td>Carapace: details in colour pattern and pilosity of cephalic part</td>
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<tr>
<td>Leg I length</td>
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<td>Palpal segments</td>
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<td>Retrolateral tibial apophysis in ventral view</td>
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<td>Dorsodistal protrusion of palpal tibia</td>
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<tr>
<td><strong>Females</strong></td>
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<td>Carapace</td>
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<tr>
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<td>Epigyne</td>
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<td>Spermathecae</td>
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morph below (cf. Figs 16 & 17). The remark on North American salticids by
Crawford (1988: 34) is applicable in this case: "...the potential exists in this family for
numerous species with similar genitalia, which differ in color and other sexual display
characters."

We could not morphologically distinguish females of the Siberian and
American morphs. Further research, including studies of courtship behaviour and
DNA, is required to throw further light on the possible distinctness of the two morphs.

**DIAGNOSIS.** See Table I.

**DESCRIPTION**

**MALE** (Siberian morph) (Russia: Chita Area). **Measurements.** Carapace 2.32
long, 1.83 wide, 1.19 high at PLE. Ocular area 1.10 long, 1.38 wide anteriorly and
1.40 posteriorly. Diameter of AME 1.41. Abdomen 2.23 long, 1.83 wide. Cheliceral
length 0.68. Clypeal height 0.23. Length of leg segments:

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<th>Diameter of AME</th>
<th>Abdomen</th>
<th>Cheliceral length</th>
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<tr>
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<td>1.40</td>
<td>1.83</td>
<td>0.68</td>
<td>0.23</td>
</tr>
</tbody>
</table>

**Leg spination.** Leg I: Fm d 0-1-1-4; Pt pr and rt 0-1-0; Tb pr 1-2, rt 1-0, v 1-1-2ap; Mt pr and rt 1-1, v 2-2ap. Leg II: Fm d 0-1-1-4; Pt pr and rt 0-1-0; Tb pr 1-1, rt 1-0, v 1-1-2ap; Mt pr and rt 1-1, v 2-2ap. Leg III: Fm d 0-1-1-4; Pt pr and rt 0-1-0; Tb d 1-0, pr and rt 1-1-1, v 1-2ap; Mt pr and rt 1-1-2ap, v 2-2ap. Leg IV: Fm d 0-1-1-5; Pt pr and rt 0-1-0; Tb d 1-1, pr and rt 1-1-1, v 1-0-2ap; Mt d 1-0, pr and rt 1-1-2ap, v 2ap.

**Coloration.** Carapace dark to blackish brown. Eye field black, with a short
median longitudinal stripe of white hairs from between AMEs rearwards and with a
more or less distinctly marked elongated spot of white hairs behind each ALE. Spot of
white hairs in midline between PLEs. Clypeus medium to blackish brown, with white
hairs. Sternum and chelicerae dark brown. Maxillae and labium dark brown, with
yellow apices. Abdomen: dorsum dark grey-brown, with a pair of light spots (some-
times poorly marked); sides brownish yellow, with inclined, dark brownish grey lines;
venter light to yellowish grey. Book-lung covers and spinnerets grey, with yellowish
tinge. All legs yellowish to median brown, with numerous dark to blackish brown
stains and rings; coxae lighter (yellowish to brownish grey); leg I: see Fig. 14. Palp
medium to blackish brown.

**Palp.** Structure as in Figs 1, 4, 5, shape of tibia as illustrated in Figs 8-10 (see
also Table I).

Park). **Measurements.** Carapace 2.20 long, 1.60 wide, 1.13 high at PLE. Ocular area
1.05 long, 1.28 wide anteriorly and 1.30 posteriorly. Diameter of AME 0.38. Abdo-
men 2.13 long, 1.75 wide. Cheliceral length 0.60. Clypeal height 0.20. Length of leg
segments:
FIGS 4-7

Left male palp, ventral (4, 6) and dorsal view (5, 7). - 4, 5, *Sitticus ranieri* (Siberian morph) (Russia: the Altai). - 6, 7, *S. saxicola* (Russia: Sakhalin). Scale lines: 0.1 mm.
Leg spination. Leg I: Fm d 0-1-1-4; Pt pr 0-1-0; Tb pr 1-1-1, rt 1-0, v 1-2-2ap; Mt pr 1-1ap, rt 1ap, v 2-2ap. Leg II: Fm d 0-1-1-3; Pt pr and rt 0-1-0; Tb pr 1-1, d and rt 1-0, v 1-2-2ap; Mt pr and rt 1-1ap, v 2-2ap. Leg III: Fm d 0-1-1-5; Pt pr and rt 0-1-0; Tb d 1-1-0, pr and rt 1-1-1, v 2ap; Mt d 1-0, pr and rt 1-2ap, v 2-2ap. Leg IV: Fm d 1-0-1-5; Pt pr and rt 0-1-0; Tb d 0-1-0, pr and rt 1-2-1, v 1-0-2ap; Mt d 0-1-0, pr and rt 1-1ap, v 2-2ap.

Coloration. Carapace medium to dark brown, with black radial veins. Eye field black, covered with black hairs (numerous appressed and, more frontally, scattered long erect ones). Spot of white hairs in midline between PLEs. Clypeus brown, covered with thin light hairs. Sternum, maxillae, labium and chelicerae brown, with light yellow apices. Abdomen: dorsum dark grey-brown, with a pair of rounded white spots in the posterior half; venter greyish to yellowish brown. Book-lung covers yellowish brown. Spinnerets yellowish to greyish brown. All legs yellowish to medium brown, dorsally usually darker (brown); coxae, at least III and IV, light (yellowish). Palp medium to dark brown.

Palp. Structure as in Fig. 2 (see also Table I).

Female (USA: Washington, Pend Oreille Co.). Measurements. Carapace 2.52 long, 2.18 wide, 1.40 high at PLE. Ocular area 1.30 long, 1.63 wide anteriorly and 1.63 posteriorly. Diameter of AME 0.45. Abdomen 4.00 long, 3.50 wide. Cheliceral length 0.75. Clypeal height 0.23. Length of leg segments:

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<tr>
<td>IV</td>
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<td>7.14</td>
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</table>

Leg spination. Leg I: Fm d 0-1-1-2; Tb pr 1-1, v 1-2-2ap; Mt pr 1-1ap, v 2-2ap. Leg II: Fm d 0-1-1-4; Tb pr 1-1, v 1-2-2ap; Mt pr 1-1ap, v 2-2ap. Leg III: Fm d 0-1-1-4; Pt pr and rt 0-1-0; Tb pr 1-1-1, rt and v 1-0; Mt pr and rt 1-1-2ap, v 2-2ap. Leg IV: Fm d 1-1-3; Pt pr and rt 0-1-0; Tb d 1-1-0, pr and rt 1-1-1, v 1-0-2ap; Mt pr and rt 1-1-2ap, v 2ap.

Coloration. Carapace brown, with numerous black veins, covered with white appressed hairs. Eye field black, covered with black hairs. Short median stripe of white hairs between PLEs continuing into thin white median line in thoracic part. Clypeus brown, densely covered with white hairs. Maxillae and labium brown, with white apices. Sternum and chelicerae brown. Abdomen: dorsum grey-brown, with one pair of smaller oblique white spots in anterior half followed by one pair of larger oblique white patches at about the middle and by a few light chevron-like markings.
FIGS 8-13
Left male palpal tibia, dorsal (8, 11) and retrolateral view (9, 12), tibial apophysis only, ventral view (10, 13). 8-10. Sitticus ranieri (Siberian morph) (Sweden). 11-13. S. saxicola (Italy). Arrows point at differences between the two species. Scale lines: 0.1 mm.

FIGS 14, 15
Right leg I of male, retrolateral view. 14. Sitticus ranieri (Siberian morph) (Sweden). 15. S. saxicola (Italy). Scale lines: 0.5 mm.

posteriorly, all forming a pale median band in some specimens; sides yellowish, with inclined white stripes; venter yellowish. Book-lung covers and spinnerets grey, with a brownish to yellowish tinge. All legs yellow-brown, with pale brownish grey rings; coxae lighter (yellowish). Palp yellow-brown, tarsus somewhat darker.

Epigyne and spermathecae as in Figs 18-20.

**Material Examined**

Figs 18-23


**Distribution**

*Sitticus ranieri* was described from eastern Siberia by Grube (1861, sub *Attus lineolatus*), but it was not until Prószyński (1971a) examined the holotype that its identity became clear. In the meantime the species was described from North America under three different names. The species (sub *S. lineolatus*) has recently become known as being wide-spread in Siberia (cf. records summarized in Logunov & Marusik, 2000). It has also been reported from Japan (Hokkaido) (Chikuni, 1989; Matsuda, 1997) and may be conspecific with the species described under the name *Icicus daisetsuzanensis* (see Saito, 1934; Matsuda, 1997). With the findings reported here, the known range of *S. ranieri* is extended westwards to northern Fennoscandia, thus making it a Holarctic hypoarcto-boreal element. Its distribution in the Nearctic is restricted to the northern boreal and hypoarctic region of Canada (eastwards to Newfoundland: Dondale et al., 1997) and to montane areas in USA (Washington, Oregon, Wyoming, Colorado). However, as emphasized above, a renewed study on the conspecificity of what is now standing as one species in North America is wanting.

*Sitticus saxicola* (C. L. Koch) Figs 3, 6, 7, 11-13, 15, 21-23

Allus saxicola; Bösenberg, 1903: 426, 430, pl. 41 figs 631 A-D (♂♀).

*Sitticus saxicola*; Tulgren, 1944: 31, fig. 19a, pl. 2 fig. 36 (♀ only); Bonnet, 1958: 4082; Prószynski, 1971b: 188, figs 1, 3-13 (♂♀); 1991: figs 1389.1-4 (♂♀), www; Harm, 1973: 394, figs 6, 52, 57, 58, 64 (♂♀); Logunov & Wesolowska, 1995: 173, figs 9-16 (♂♀); Plätt, 1993: 813, 1998: 939 (in part), www (in part); Fühn & Gherasim, 1995: 248, figs 11A-F (♂♀); 'abka, 1997: 95, figs 364-369 (♂♀).

*Allus saxicola*; Simon, 1868: 50 (♂). Holotype from Switzerland: Zermatt, not located.


*Sitticus moniligerus*; Bonnet, 1958: 4076.

*Sitticus littoralis* (incorrect synonymy); Roewer, 1954: 1246.

**Diagnosis.** See Table I.

**Description**

**Male** (Germany: Bavaria). 

*Measurements.* Carapace 2.32 long, 1.65 wide, 1.10 high at PLE. Ocular area 1.03 long, 1.48 wide anteriorly and 1.34 posteriorly. Diameter of AME 0.38. Abdomen 2.25 long, 1.88 wide. Cheliceral length 0.68. Clypeal height 0.18. Length of leg segments:

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<td>3.63</td>
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<tr>
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<tr>
<td>IV</td>
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<td>1.18</td>
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*Leg spination.* Leg I: Fm d 0-1-1-3; Pt pr 0-1-0; Tb pr 1-0, v 1-2-2ap; Mt pr 1-1ap, v 2-2ap. Leg II: Fm d 0-1-1-3; Pt pr 0-1-0; Tb pr 1-1, rt 0-1, v 1-2-2ap; Mt pr 1-1, v 2-2ap. Leg III: Fm d 0-1-1-3; Pt pr and rt 0-1-0; Tb d 1-0, pr and rt 1-1-1, v 1-2ap; Mt pr rt and v 2-2ap. Leg IV: Fm d 1-1-3; Pt pr and rt 0-1-0; Tb 1-1-0, pr and rt 1-1-1, v 1-0-2ap; Mt pr and rt 1-2-2ap, v 2ap.

*Coloration.* Carapace dark brown, with black veins and narrow band of white hairs along lateral rims. Carapace covered with orange, white and black appressed hairs (especially dense in eye field). Eye field black, with a more or less contrasting black Δ-shaped area between PLEs, intersected by a narrow longitudinal median stripe of white hairs; patch of white hairs at inner side of each PLE. Clypeus brown, poorly covered with recumbent light and erect black hairs. Sternum and chelicerae brown. Maxillae and labium brown, with white apices. Abdomen: dorsum multicoloured, with a pattern of black, white and orange hairs, in posterior half with a pair of large light patches, sometimes confluent, with white hairs. In front of each patch a black area present, anterior to it a smaller light dot. A pattern of small chevron-like bars posterior to the large white patches. Sides brownish yellow with inclining dark brown lines; venter brownish yellow. Book-lung covers and spinnerets brownish yellow. All legs light brown, with dark brown stains and rings, but Fm I dark brown dorsally, Tb I and Mt I ventrally black with a well marked black edging, and Tr I
contrastingly light yellowish with numerous white hairs (Fig. 15). Mt I dorsally with a patch of white hairs in each half. Palp yellowish brown, but basal parts of femora dark brown.

**Palp.** Structure as in Figs 3, 6, 7, shape of tibia as in Figs 11-13 (see also Table I).

**FEMALE (Germany: Bavaria).** **Measurements.** Carapace 2.68 long, 2.08 wide, 1.35 high at PLE. Ocular area 1.23 long, 1.65 wide anteriorly and 1.60 posteriorly. Diameter of AME 0.48. Abdomen 3.25 long, 2.70 wide. Cheliceral length 0.73. Clypeal height 0.18. Length of leg segments:

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</table>

**Leg spination.** Leg I: Fm d 0-1-1-3; Tb pr 1-1, v 1-2-2ap; Mt pr 1-1, v 2-2ap. Leg II: Fm d 0-1-1-3; Pt pr 0-1-0; Tb pr 1-1, v 1-2-2ap; Mt pr 1-1, v 2-2ap. Leg III: Fm d 1-1-3; Pt pr and rt 0-1-0; Tb d 1-0, pr and rt 1-1-1, v 1-2ap; Mt pr and rt 1-1-2ap, v 1-0-2ap. Leg IV: Fm d 1-1-3; Pt pr and rt 0-1-0; Tb d 1-0, pr and rt 1-1-1, v 1-2ap; Mt pr and rt 1-1-2ap, v 1-0-2ap.

**Coloration** as described for the male, but different in the following: carapace posterior to ocular area lighter brown; a pair of whitish spots behind ALEs; leg I coloured as remaining legs (yellowish brownish, with dark brown stains and rings); palp yellow, with brown femora.

**Epigyne** and spermathecae as in Figs 21-23.

**Material examined**


**Distribution**

The occurrence of *Sitticus saxicola* in Europe is so far as known mainly restricted to montane areas in Central Europe (France, Switzerland, Italy, Austria, Germany, Czech Republic, Slovak Republic, Poland, Romania) as well as in Croatia (Risnjak) and Yugoslavia of today (Prózyński, 1971b). The records from Ukraine: Cherkassy Area (Pichka, 1974) and from the European part of Russia: Kursk and Voronezh Areas (Pichka, 1965, 1984) are in need of verification.
The species has mostly been found at higher altitudes (from 700 to 2000 m asl). Records from lower altitudes in Europe are few [Poland: Kraków area (Prószyński, 1971b)]. Early records from Germany: Rhineland and Westphalia (Bösenberg, 1903) were not specified to localities but there are areas of higher altitudes (above 700 m asl) in both provinces; a more recent record from the Harz was apparently from a high altitude locality (Harm, 1973). All Hungarian localities mentioned in Chyzer & Kuczyński (1891) are situated in present-day Slovak Republic, Romania (Suligul, Borsec) and Croatia (Risnjak), all of them more or less montane. The records from Yugoslavia (Serbia): Topčider (sub S. montigenus) and Kopaonik, both mentioned in Stojčević (1929), are in need of verification. Recent records from Sakhalin (summa-
FrG.26

**Fig. 26**

Distribution of *Sitticus ranieri* (★) and *S. saxicola* (★) in the Palaearctic region. ★? denote finds of *S. saxicola* in need of verification (cf. text).

rized in Logunov & Marusik, 2000), indicate that *S. saxicola* has a disjunctive, amphi-Eurasian subboreal distribution (sensu Gorodkov, 1984; see also Logunov, 1996) (Fig. 26). So far, no morphological differences have been found between Sakhalin and West Palaearctic specimens. A recent record from the Altai (Marusik *et al.*, 1996) is erroneous and pertains to *S. ranieri* (already reported under the name *S. lineolatus* by Logunov & Wesołowska, 1995). A record of *S. saxicola* from Russia: Samara area (Krasnobaev & Matveev, 1993) is a misidentification of a female *Sitticus distinguendus* (own observation). A record from Kazakhstan (Ust'-Kamenogorsk) (Savelyeva, 1990) is most probably also erroneous.

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