

A new species of the genus *Erigone* Sav. & Aud. (Araneae: Erigonidae) from Swedish Lapland

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Abstract

HOLM, Å. A new species of the genus *Erigone* Sav. & Aud. (Araneae: Erigonidae) from Swedish Lapland. — Ent. Tidskr. 96: 17—23, 1975.

Three males and a female of a new species, *Erigone svenssoni*, from Stordalen, Torne Lappmark, Sweden, are described. The species is characterized especially by a long spur on the ventral side of the widened part of the male palpal tibia. It belongs to the *psychrophila*

group and seems to be most closely related to *E. uintana* Chamb. & Ivie from Uintah Mts. U.S.A. The males vary with respect to size, tooth armature of carapace, chelicerae, palps and legs and relative length of palps. Two of the males and the female show anomalies in the chaetotaxy of the tibiae of the two posterior pairs of legs. The habitat of the species is described and a list given of associated species.

Introduction

In a mire at Stordalen near Lake Torneträsk in Northern Sweden Mr. Bo Svensson, Institute of Zoology, Uppsala, in the summer of 1970 collected a male of an *Erigone* species previously not described. The specimen was caught in a pitfall trap in a boggy part of the mire in connection with an extensive ecological investigation included in the International Biological Programme (IBP) and started by the Swedish IBP committee in 1970.

Last summer I visited the same locality and succeeded in obtaining two adult males and one adult female of this species. The male is very characteristic by having a long spur on the ventral side of the widened part of the palpal tibia and differs in this respect from all remaining European species of the genus. As in other *Erigone* species the males

vary with regard to size and tooth armature. Below are descriptions given of one of the males, selected as holotype, and the female allotype as well as additional descriptions of the two other males.

Erigone svenssoni sp. n.

Type material and type locality

Male holotype and female allotype from a mire 1.5 km NNW of Stordalen railway station, Torne lappmark, July 6, 1974. From the same locality one male paratype (A) July 2—6, 1970 (coll. Bo Svensson) and one male paratype (B) July 6—17, 1974.

Description

Male holotype. Total length 3.1 mm. Carapace 1.55 mm long, 1.12 mm wide.

Colour. Carapace dark reddish brown, cephalic part somewhat lighter, thoracic part with black median streak at fovea and black radiating striae. Chelicerae reddish brown. Sternum black, legs and palpi light reddish brown. Abdomen dark greyish.

Carapace (Fig. 1) with cephalic part moderately elevated, along median line 7 hairs on small knobs, lateral margin with 8—10 strong and some small teeth. Clypeus proclive, slightly convex, 0.37 mm high. Eyes: Anterior row distinctly procurved, medians smaller than laterals (5:6); median interval smaller than diam. of median eyes (3:5), lateral intervals equal to the same. Posterior row procurved, eyes equal, median interval equal to the eye diam., lateral intervals somewhat wider.

Chelicerae (Fig. 2) 0.73 mm, 3/4 of ectal side from base strongly and evenly convex. Antero-laterally a row of 6 (left chelicera)—8 (right chelicera) teeth, the strongest one 0.08 mm long. Antero-mesally in basal half a row of 4 small teeth and more medially near base two small teeth. Anterior margin of fang groove with 2 strong and 4 small teeth, posterior margin with 4 medium-sized teeth, the two distal ones fused at base.

Legs. Femur I in proximal half with 4 small pro-lateral teeth, retro-ventral row of hairs on small knobs. Coxa I with an apical pro-dorsal tooth, coxae II and IV with a very small one. Tibial spines 2.2.2.1 but right tibia IV shows an anomaly by having 2 spines. Proximal spine of tibia IV 0.17 mm, its position 0.35; distal spine of right tibia IV 0.16 mm. Diam. of tibia I at middle 0.13 mm. *tb*: Mt I=0.43, *tb*: Mt III=0.41. Leg I/carapace=2.79. Length of the legs:

Leg	Fe	Pt	Ti	Mt	Ta	Total
I	1.24	0.39	1.09	0.99	0.63	4.34 mm
II	1.12	0.39	0.96	0.89	0.59	3.95 mm
III	0.92	0.33	0.73	0.75	0.49	3.22 mm
IV	1.15	0.36	1.06	0.95	0.52	4.04 mm

Palp (Fig. 3) 3.16 mm: Fe 1.33, Pt 0.72, Ti+Ta 1.11 mm. Patellar apophysis 0.30

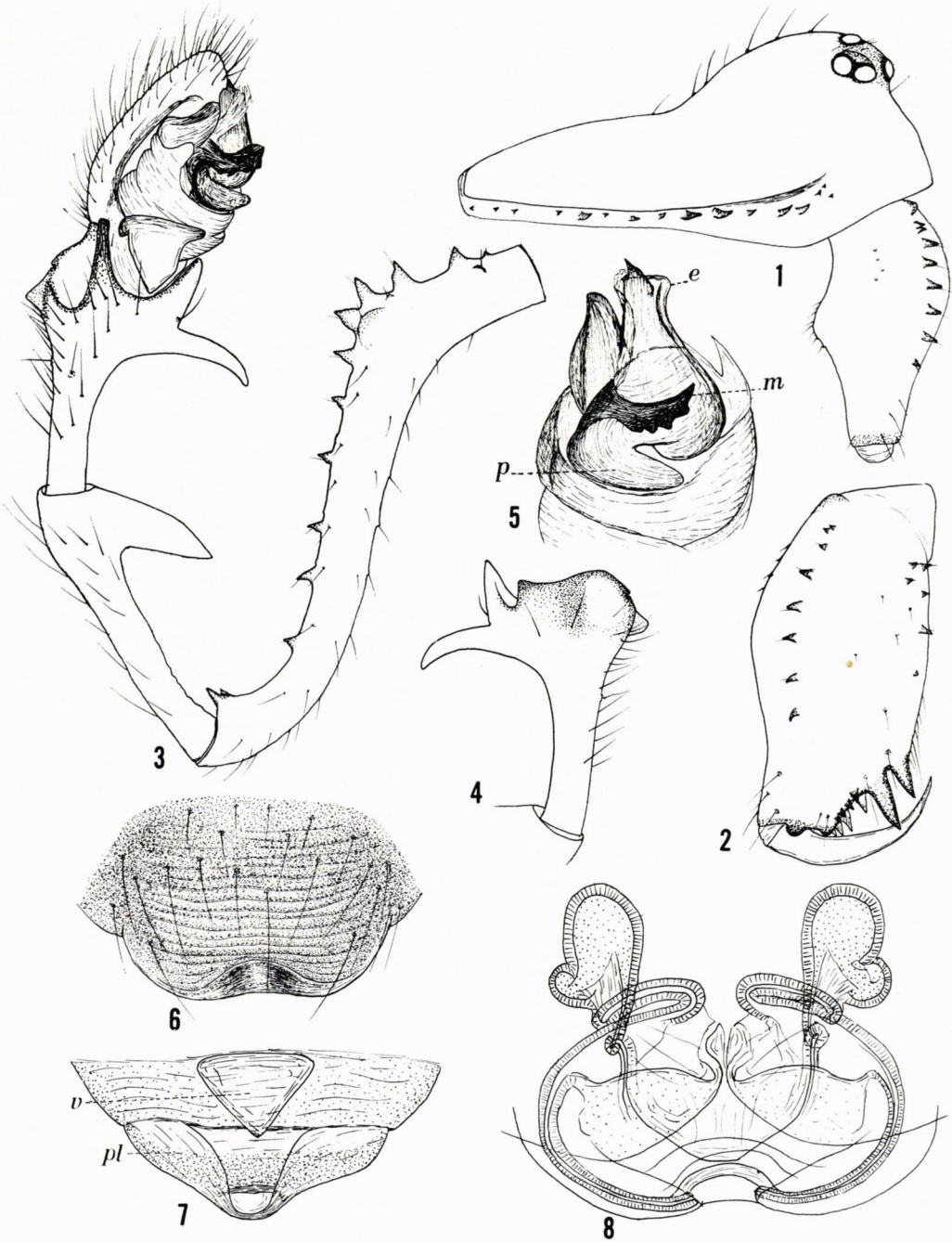
mm, together with diam. of patella 0.39 mm. Ti 0.39 mm, width (height) of widened part 0.37 mm, length of ventral spur 0.19 mm. Femur moderately curved upward at base and downward at tip, thickened at the curve and with a pro-ventral row of 9—11 teeth, the three strongest ones and a ventral swelling at the basal curve; pro-dorsally a row of about 10 small teeth or knobs and near base a large knob; terminally one rather strong retro-ventral and one small pro-ventral tooth. Patella long and almost straight, ventral apophysis short, directed somewhat backward, stout and shortly pointed at tip. Ratio of length of femur to that of patella 1.85. Ratio of length of patella to that of its apophysis 2.4. Tibia somewhat shorter than patella, widened part similar that of *E. psychrophila* Thor. except for a long ventral spur, slightly curved and bluntly pointed at tip. Median tooth of retro-lateral apical margin of tibia long. Dorsal ridge of widened part of tibia with a small notch at the middle. Pro-lateral apical margin of tibia slightly indented and with a deep incision ventrally (Fig. 4). Embolic division (Fig. 5) with a long curved median tooth (*m*) with 4 transversal ridges; posterior tooth (*p*) large, oval, rounded at tip. Incision between posterior tooth and scaphium rather large.

Male paratype A. Total length 2.45 mm. Carapace 1.33 mm long, 0.98 mm wide.

Carapace (Fig. 9). Lateral margin with 7 stout and 3—4 very small teeth. Clypeus proclive, straight, 0.31 mm high.

Chelicerae 0.67 mm long, antero-laterally with a row of 6 rather small teeth and antero-mesally with 5—6 small teeth. Anterior margin of fang groove with 2 stout and 2 small teeth, posterior margin with 4 teeth of medium size.

Legs. Femur I in proximal half with 4 small pro-lateral teeth, coxa I apically with a pro-dorsal tooth, coxae II—IV without tooth. Also this male shows an anomaly in the chaetotaxy of the tibiae, those of the third pair having only one (proximal) spine, those of the fourth pair two spines. Length



Figs. 1—5. *Erigone svenssoni* sp. n., ♂ (holotype). — 1. Carapace from right side ($\times 45$). — 2. Right chelicera, frontal view ($\times 65$). — 3. Right palp, retro-lateral view ($\times 65$). — 4. Right palpal tibia, pro-lateral view ($\times 65$). — 5. Right bulbus, ventral view ($\times 125$) (*e* embolus, *m* median tooth, *p* posterior tooth).

Figs. 6—8. *Erigone svenssoni* sp. n., ♀ (allotype). — 6. Epigyne, ventral view ($\times 125$). — 7. Epigyne, posterior view ($\times 125$) (*pl* posterior plate, *v* vestibulum). — 8. Vulva ($\times 200$).

of proximal spine of tibia I 0.19 mm, that of tibia IV 0.17 mm, position of the latter spine 0.35. Length of distal spine of tibia IV 0.12 mm. *tb*: Mt I=0.43, *tb*: Mt III=0.41. Leg I/carapace=2.71. Length of the legs:

Leg	Fe	Pt	Ti	Mt	Ta	Total
I	1.03	0.32	0.90	0.82	0.53	3.60 mm
II	0.94	0.32	0.77	0.75	0.52	3.30 mm
III	0.77	0.27	0.59	0.61	0.41	2.65 mm
IV	0.96	0.30	0.86	0.77	0.48	3.37 mm

Palp (Fig. 10) 2.36 mm: Fe 1.00, Pt 0.48, Ti+Ta 0.88 mm. Patellar apophysis 0.21 mm; Ti 0.47 mm, its apical width 0.35 mm, ventral spur 0.15 mm. Femur with a pro-ventral row of 8 teeth, the three strongest ones and a ventral swelling at the basal curve; terminally a retro-ventral and a very short pro-ventral tooth. Pro-dorsally a row of 8 small knobs and near base a large one. Ratio of length of femur to that of patella 2.08. Ratio of length of patella to that of apophysis 2.29. Tibia hardly shorter than patella.

Male paratype B. Total length 3.35 mm. Carapace 1.61 mm long, 1.17 mm wide.

Carapace (Fig. 11). Lateral margin with 10 strong and some small teeth. Clypeus 0.40 mm high, slightly convex at the middle.

Chelicerae with a row of 8 anterio-lateral teeth, in basal half 5 anterio-mesal and more medially 2 or 3 teeth. Teeth of fang groove as in the holotype.

Legs. Femur I in proximal half with a pro-dorsal row of 7—8 teeth and a retro-dorsal row of 3 teeth; retro-ventral hairs on small knobs. Coxa I apically with a stout curved pro-dorsal tooth, coxae II—IV with a small one. Tibial chaetotaxy normal, 2.2.2.1. Proximal spine of tibia I 0.23 mm, spine of tibia IV 0.20 mm, its position 0.27. *tb*: Mt I=0.39, *tb*: Mt III=0.36. Leg I/carapace=2.75. Length of the legs:

Leg	Fe	Pt	Ti	Mt	Ta	Total
I	1.28	0.39	1.11	1.02	0.63	4.43 mm
II	1.16	0.39	0.96	0.92	0.59	4.02 mm
III	0.95	0.33	0.75	0.79	0.47	3.29 mm
IV	1.20	0.35	1.08	0.98	0.55	4.16 mm

Palp 3.27 mm: Fe 1.39, Pt 0.76, Ti+Ta 1.12 mm. Patellar apophysis 0.32 mm, Ti 0.65 mm, its apical width 0.31 mm, length of ventral tibial spur 0.19 mm. Femur with a pro-ventral row of 11 teeth, at basal curve a swelling with 3 small retro-ventral teeth; pro-dorsally a row of about 12 small teeth and near base a large knob; terminally a rather long retro-ventral and a very small pro-ventral tooth. Ratio of length of femur to that of patella 1.7. Ratio of length of patella to that of apophysis 2.4. Ventral spur of tibia rather strongly curved (Fig. 12).

Female allotype. Total length 2.45 mm. Carapace 1.21 mm long, 0.91 mm wide.

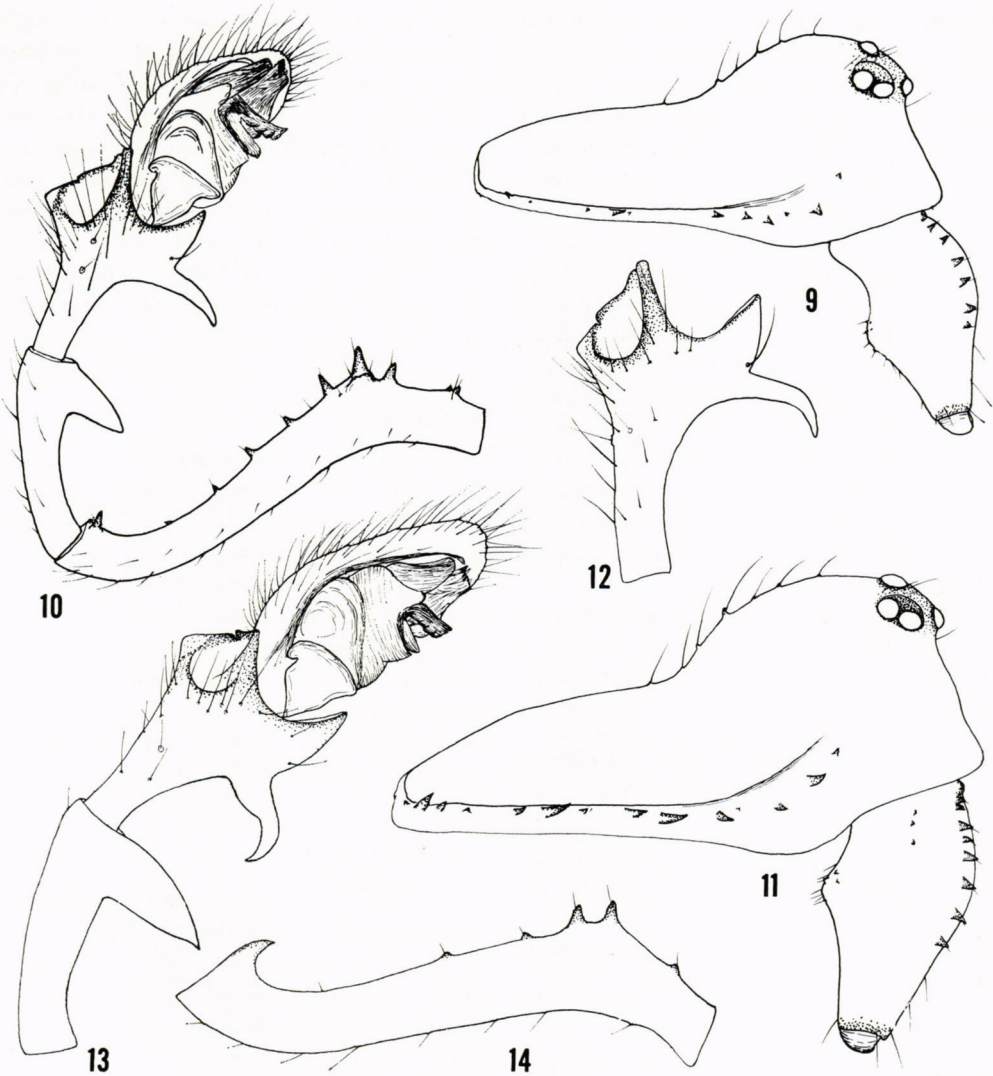
Colour. The specimen is newly moulted and not fully coloured. Carapace brownish, thoracic part with broad and distinct black striae, sternum blackish, chelicerae light brown, legs light greyish brown and abdomen dark grey.

Carapace. Cephalic part somewhat less elevated than in the male and with a slight indentation before thoracic juncture; in median line a row of 8 hairs. Clypeus 0.23 mm high, straight and vertical. Lateral margins with some very small teeth. Eyes as in the male.

Chelicerae with a row of 5 anterio-lateral teeth, the three proximal ones small. Fang groove with 5 promarginal teeth, the terminal one small, the following three gradually increasing in length, the 5th as long as the 2nd. Posterior margin with 5 small teeth.

Legs. Tibial spines of left legs 2.2.2.1, those of right legs 2.2.2.2. Proximal spine of tibia I and IV 0.21 mm, distal spine of left tibia IV 0.17 mm. Position of proximal spine of tibia IV 0.23. Diam. of tibia I 0.12 mm. *tb*: Mt I=0.40, *tb*: Mt III=0.39. Leg I/carapace=3.21. Length of the legs:

Leg	Fe	Pt	Ti	Mt	Ta	Total
I	1.11	0.35	0.95	0.89	0.60	3.90 mm
II	1.02	0.35	0.81	0.80	0.55	3.53 mm
III	0.86	0.30	0.64	0.69	0.47	2.96 mm
IV	1.09	0.32	0.98	0.88	0.52	3.79 mm



Figs. 9—12. *Erigone svenssoni* sp. n., ♂. — 9. Carapace of paratype A from right side ($\times 45$). — 10. Right palp of paratype A, retro-lateral view ($\times 65$). — 11. Carapace of paratype B, from right side ($\times 45$). — 12. Right palpal tibia of paratype B, retro-lateral view ($\times 65$).

Figs. 13—14. *Erigone uintana* Chamb. & Ivie, ♂ (holotype). 13. Patella, tibia and tarsus of right palp, retro-lateral view ($\times 85$). — 14. Femur of right palp, retro-lateral view ($\times 85$).

Epigyne (Fig. 6) 0.31 mm broad, slightly chitinized, with fine transversal rifling. Posterior side (Fig. 7) with triangular groove, broad posterior plate (*pl*) with broad notch; vestibulum (*v*) equilaterally triangular. Vulva as shown in Fig. 8.

Variation

In the males described above the difference in carapace length between the largest one (paratype B) and the smallest one (paratype A) is 0.28 mm, the ratio 1.21. The ratio be-

tween the length of the first leg in the two specimens is only slightly higher, 1.23, whereas the ratio between the length of the palp is considerably higher, 1.39. For comparison with another *Erigone* species I have measured the first leg and the palp of two males of *E. psychrophila* Thor., a large male (carapace length 1.84 mm) from Northern Alaska (Barrow tundra, 24/7 1960, coll. K. J. Stone) and a small male (carapace length 1.26 mm) from Northeastern Greenland (Mt. Einar, Aug. 1948, coll. G. Wängsjö). The difference in carapace length of these two males is 0.58 mm, the ratio 1.46. The ratio between the lengths of first leg is slightly higher, 1.48, whereas the ratio between the lengths of palp is much higher, 1.67. In larger specimens thus the palps are relatively longer than in small ones.

The following table contains the pertinent measurements of the three males of *E. svenssoni* and the two males of *E. psychrophila*.

	Length of			Ratio of length of	
	carapace	palp	leg I	leg I/ carapace	palp/leg I
<i>E. svenssoni</i>					
Paratype A	1.33	2.36	3.60	2.71	0.66
Holotype	1.55	3.16	4.34	2.80	0.73
Paratype B	1.61	3.27	4.43	2.75	0.74
<i>E. psychrophila</i>					
NE Greenland	1.26	2.64	4.00	3.18	0.66
N Alaska	1.84	4.42	5.90	3.21	0.75

The different figures for the relative length of the legs are certainly specific characters. The different ratios between palp and first leg are on the other hand corresponding in the two species and roughly proportional to the carapace length.

As pointed out in the descriptions, the chaetotaxy of the legs in *E. svenssoni* is subject to a remarkable variation, two of the three males and the female showing discrepancies from the normal tibial spine formula 2.2.2.1. In the holotype the right tibia of the

fourth pair of legs is armed with two spines, in paratype A the tibiae of the third pair of legs with only one spine and the tibiae of the fourth pair both with two spines. Also in the female allotype there is an anomaly in the chaetotaxy, the left tibia of the fourth pair of legs having two spines. Such an anomaly in the chaetotaxy of the legs seems to be very rare within the family and I cannot remember having observed any similar case in other species.

Diagnosis

A species of the *psychrophila* group of the genus *Erigone* most closely related to *E. uintana* Chamb. & Ivie by having a long spur on the ventral side of the widened part of the male palpal tibia and no median ventral tooth at the middle of the palpal patella. Recognized from the latter species by the structure of the embolic division of the palpal organ and the notch in the dorsal ridge of the male palpal tibia being situated at the middle. Female of *E. uintana* not known.

Habitat

The mire in which the specimens of *E. svenssoni* were found is situated in the birch forest region in a flat area, rich in small lakes and mires, between Stordalen railway station and Lake Torneträsk. The height above sea level is about 350 m. The find locality was a sedge bog close to a small stream in the mire and with high, partly dried *Carex rostrata* and *Eriophorum vaginatum*. The bottom layer consisted of wet *Sphagnum* and *Amblystegium* moss and black mud partly submerged by water. Two male specimens were caught in pitfall traps placed in the mud, one male and one female were obtained by submerging the sedge and moss and sweeping the resultant water surface with a net. The most abundant species collected in this way was *Tmeticus affinis* (Bl.), the others being *Dismodicus bifrons* (Bl.), *Erigone capra* Sim., *Minyrioloides tri-*

frons (O.P.-Cambr.), *Kaestneria approximata* (O.P.-Cambr.), *K. pullata* (O.P.-Cambr.), *Bathyphantes setiger* F.O.P.-Cambr., *Araneus patagiatus* Cl. and *Clubiona norvegica* Str. In pitfall traps following species were collected: *Pardosa atrata* (Thor.) (numerous), *P. hyperborea* (Thor.) and *Tricca alpigena* (Dol.).

This kind of bog is a typical habitat of *Erigone capra* in the Torneträsk area. *E. svenssoni* has only been found in this bog in the Stordalen mire and seems to be lacking in the area east of Stordalen where the spider fauna is fairly well investigated.

A survey of the vegetation of the Stordalen mire is given in a report from the Swedish Tundra Biome project published by Flower-Ellis (1973). An inventory of the insect fauna of the mire is committed by Svensson (1972).

Taxonomical remarks

Erigone svenssoni belongs to a group of *Erigone* species which Crosby & Bishop (1928) designated as the *psychrophila* group. Other members of this group are, besides *E. psychrophila* Thor., the Palaearctic species *E. cristatipalpus* Sim., *E. tenuipalpis* Sim. and *E. tirolensis* L. Koch and a number of North American species. Also *E. ourania* Crosby & Bishop from China, *E. koshiensis* Oi from Japan, *E. prominens* Bös. & Str. from Japan and New Zealand and *E. wiltoni* Locket from New Zealand have been ranged into the *psychrophila* group but differ from the other members of the group by having the ventral apophysis of the male palpal patella more or less directed forward (Locket 1973).

Among the Nearctic species of the *psychrophila* group there are three species, viz. *E. dentosa* O.P.-Cambr. (Crosby & Bishop 1928), *E. hydrophytae* Ivie & Barrows (1935) and *E. uintana* Chamberlin & Ivie (1935) which like the present species have a spur on the ventral side of the widened part of the male

palpal tibia. In *E. dentosa*, however, this spur is sometimes reduced to a short tooth like that in most species of the group. By having one or two hooked teeth at the middle of the palpal patella the males of *E. dentosa* and *E. hydrophytae* differ from that of *E. uintana* and *E. svenssoni*. On the other hand the two latter species are distinctly different in several details of the structure of the male palp: in *E. uintana* the posterior tooth of the embolic division is shorter, the notch of the dorsal ridge of the widened part of the palpal tibia situated more terminally, the ventral spur of the tibia is thickened in its basal half (Fig. 13) and the palpal femur is armed with only 5 proventral teeth (Fig. 14).

Acknowledgements

I wish to express my warmest thanks to Mr. Bo Svensson for presenting me the first specimen of the species described above and it gives me pleasure in naming this species after him. I am also most grateful to Dr. Norman Platnick of the American Museum of Natural History, New York, for the loan of the type of *Erigone uintana*.

References

- CHAMBERLIN, R. V. and W. IVIE 1935. Miscellaneous new American spiders. — Bull. Univ. Utah 26 (4): 1—79.
- CROSBY, C. R. and S. H. BISHOP 1928. Revision of the spider genera *Erigone*, *Eperigone* and *Catabrithorax* (Erigoneae). — N. Y. State Mus. Bull. 278: 3—73.
- FLOWER-ELLIS, J. G. K. 1974. Progress Report 1973. — Tundra Biome Project. Techn. Rep. 16: 1—212.
- IVIE, W. and W. M. BARROWS 1935. Some new spiders from Florida. — Bull. Univ. Utah 26 (6): 1—24.
- LOCKET, G. H. 1973. Two spiders of the genus *Erigone* Audouin from New Zealand. — Bull. Brit. Arachn. Soc. 2 (8): 158—165.
- SVENSSON, B. 1972. An inventory of the insect fauna at Stordalen mire 1970. — Tundra Biome Project. Techn. Rep. 3: 1—22.