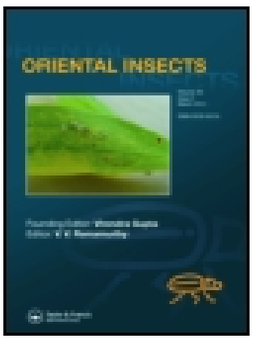

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A survey of the Holarctic genus *Arctella* Holm, 1945 (Araneae: Dictynidae, Tricholathysinae), with the description of *Tricholathys ovtchinnikovi* sp. n.

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ABSTRACT

The study of two species placed in *Arctella* Holm, 1945, *A. lapponica* Holm, 1945, and *A. subnivalis* Ovtchinnikov, 1989, revealed that the latter species belongs to the genus *Tricholathys*. A new combination is suggested: *Tricholathys subnivalis* (Ovtchinnikov, 1989) comb. n. The record of *Arctella subnivalis* from the Northern Caucasus was found to be based on a misidentification and refers to *Tricholathys ovtchinnikovi* sp. n. All three species are illustrated and described. A new diagnosis is provided for *Arctella*. Two previously unknown characters were found in the male palp of *Arctella* and *Tricholathys*: a large cavity on the mesal side of the tibial apophysis, and a digitiform or spur-like outgrowth on the conductor.

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KEYWORDS
Spider; Aranei; new species; new combination; Palaearctic; Nearctic

Introduction

Arctella Holm, 1945 is a small Holarctic genus of Tricholathysinae spiders with only two species: *A. lapponica* Holm, 1945 (the type species) and *A. subnivalis* Ovtchinnikov, 1989. Holm (1945) erected this genus for one species known only from Lapland. Later the rank of *Arctella* was reduced to the subgeneric level by Chamberlin and Gertsch (1958) and placed in *Tricholathys* Chamberlin et Ivie, 1935. Holm (1960) confirmed the subgeneric status of *Arctella* and reported *A. lapponica* from Western Alaska. Lehtinen (1967), in his world revision of the cribellate spiders, considered *Arctella* to be a separate genus.

For more than 40 years, *Arctella* was known as a monotypic genus until Ovtchinnikov (1989) described *A. subnivalis* from the highlands of Northern Tian

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Shan and Eastern Pamir Mountains. Recently, this species was also reported from the Northern Caucasus by Ponomarev and Mikhailov (2007). The perfect original description of *A. subnivalis*, with comparative figures of both species was published in Russian in proceedings that are difficult to access (Ovtchinnikov 1989). Recently, we had the opportunity to compare the two species considered in *Arctella* on the basis of numerous specimens of *A. lapponica* from Lapland, Siberia, and the Northwestern Nearctic, and *A. subnivalis* from Kyrgyzstan and from the Northern Caucasus. This study reveals that specimens from Central Asia and the Caucasus represent different species. Comparisons of *A. subnivalis* and related species with *A. lapponica* and available literature led us to conclude that *A. subnivalis* should be transferred to *Tricholathys*. The goals of this paper are to: (1) discuss the status of the South Palaearctic *Arctella*; (2) redescribe *A. subnivalis*; (3) describe a new species; and (4) briefly discuss the new morphological characters found in the genera *Arctella* and *Tricholathys*.

Materials and methods

Photographs were taken in dishes of different sizes with paraffin at the bottom. Specimens were photographed using an Olympus Camedia E-520 camera attached to an Olympus SZX16 stereomicroscope and with an SEM JEOL JSM-5200 scanning microscope at the Zoological Museum, University of Turku. Digital images were prepared using 'CombineZP' image stacking software (http://www.hadleyweb.pwp.blueyonder.co.uk/). Illustrations of epigynes were made after maceration in 10% potassium hydroxide aqueous solution and after exposure for a few minutes in an alcohol/water solution of Chlorazol Black. Lengths of leg segments were measured on the dorsal side. Descriptions of the palps refer to the left one. All measurements are given in millimetres (mm). Collectors of the specimens listed in 'material examined' are placed in brackets.

Specimens treated here belong to the following institutions: IBPN – Institute for Biological Problems of the North, Magadan; IZP – Institute of Zoology, Polish Academy of Sciences (Warsaw); ZMMU – Zoological Museum of the Moscow State University; ZMUT – Zoological Museum, University of Turku.

Abbreviations used for spination descriptions are as follows: a – apical, d – dorsal, m – ventromedian, p – prolateral, r – retrolateral, v – ventral. For ventral spines, we indicate prolateral first then retrolateral (which are absent in most cases). Leg joints are abbreviated as follows: Fe – femur, Mt – metatarsus, Pt – patella, Ta – tarsus, Ti – tibia.

Taxonomy

Arctella Holm, 1945

Arctella Holm 1945, 70; Lehtinen 1967, 215; Ovtchinnikov 1989, 90; Almquist 2006, 302.

Tricholathys (*Arctella*): Chamberlin & Gertsch 1958, 18; Holm 1960, 130.

Type species: *Arctella lapponica* Holm, 1945 from Swedish Lapland.

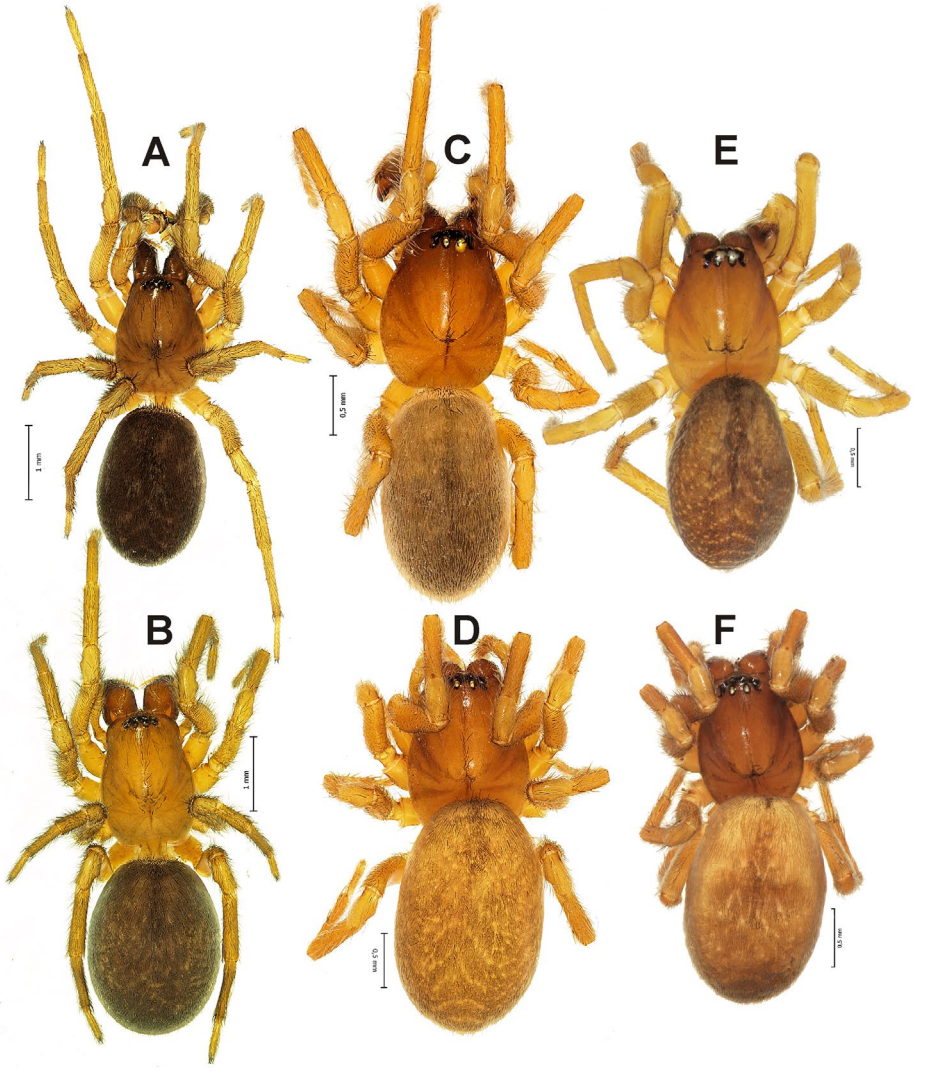

Figure 1. Habitus of *Arctella lapponica* (A–B) from Kamchatka, *Tricholathys subnivalis* (C–D) and *T. ovtchinnikovi* sp. n. (E–F). (A, C, E) male; (B, D, F) female.
Scale: A–B = 1 mm, C–F = 0.5 mm.

Diagnosis. *Arctella* is most similar to *Tricholathys*, differing from other Tricholathysinae genera by coiled lower arm of conductor; distinguished from *Tricholathys*, except *T. subnivalis* by the presence of *only* 2 teeth in the inner margin of the chelicera (Figure 2(A), as in *T. subnivalis*, 4–5 in other Tricholathys species, Figure 2(E)), whereas; epigyne and vulva weakly sclerotized and lacking subcircular coils of insemination ducts (Figure 6(A)-(F)), whereas *Tricholathys* has strongly sclerotized circular insemination ducts (*Ss*, Figure 6(H)-(I), (J)-(L)); male palp with a wide, twisted, ribbon-like terminal part of the conductor (Figures 3(A)-(D), 4(A)-(C)) vs. a tapering, spiraled tip of the conductor in *Tricholathys* (Figures 4(D)–(I), 5(B)-(C)).

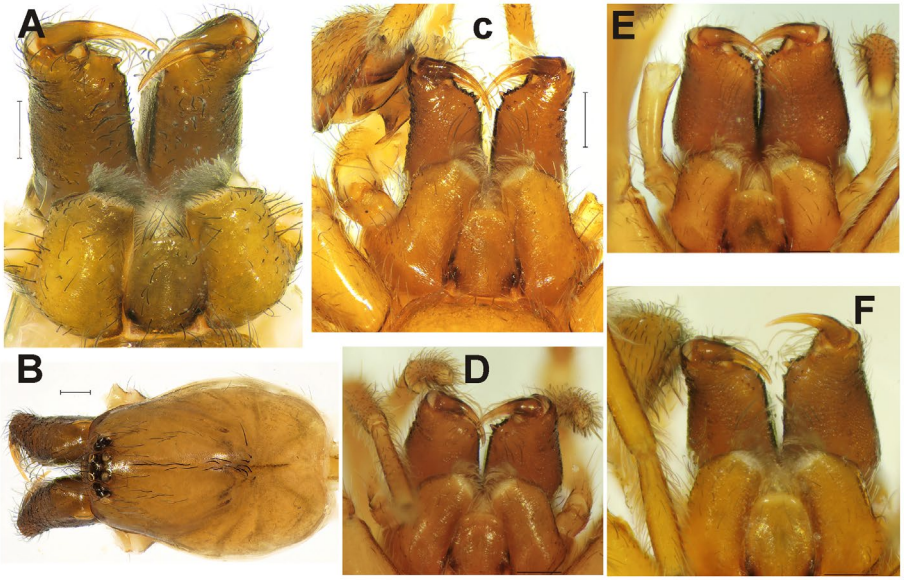

Figure 2. Mouth parts and prosoma of *Arctella lapponica* (A–B) from Kamchatka, *Tricholathys subnivalis* (C–D) and *T. ovtchinnikovi* sp. n. (E–F). (A, C, E) mouth parts of male; (B) male prosoma; (D, F) mouth parts of female.
Scale: 0.2 mm (if present).

Description. Medium-sized, body about 3.0–4.5 mm long. Body and legs uniformly coloured, without distinct pattern. Carapace lighter than abdomen, with inconspicuous radial stripes, and dark margins; fovea long and shallow; cephalic part slightly higher than thoracic, covered with several rows of black setae (Figure 2(B)). Eyes subequal in size, median ocular quadrangle square-shaped or trapezoidal. Chelicerae with 4–5 promarginal and 2 retromarginal teeth (Figure 2(A)). Labium longer than wide, endites long, subparallel. Legs with few spines on metatarsi I–IV and tibiae III–IV. Metatarsus IV with 11 distinct calamistral setae and 5 less-distinct setae (Figure 3(I)). Tarsus with 3 trichobothria; metatarsus with 2 trichobothria (Figure 3(H)–(I)). Spination slightly variable. Ventral spines unpaired. Abdomen elongate; cribellum undivided. Tarsal organ as in Figure 3(J). Copulatory organs: see species description.

Composition. *Arctella lapponica* only.

Distribution. The genus is known across the Palaearctic and in the Western Nearctic, from Lapland to Chukotka and from Western Alaska to the Northwest Territories, south to British Columbia (Figure 7).

***Arctella lapponica* Holm, 1945**
Figures 1(A)–(B), 2(A)–(B), 3(A)–(J), 4(A)–(C), 6(A)–(F), 7
Arctella lapponica Holm 1945, 71, fig. 23 (♂♀).

Figure 3. Palp and leg IV of *Arctella lapponica* male from Kamchatka. (A–C) palp, ventral, retrolateral, and prolateral; (D) lower arm of conductor; (E) mid part of conductor (showing fine ridges), and twisted tip of embolus; (F–G) palpal tibia, ventro-prolateral, and prolateral; (H–I) tarsus and metatarsus showing trichobothria (arrowed) and calamistrum; (J) tarsal organ.
Abbreviations: *Bp* basal part of lower arm of conductor, *Cp* cymbial pocket, *Dc* deep cavity of tibial apophysis, *Dp* digitiform process of conductor, *Eb* base of embolus, *Em* embolus, *Fr* fine ridges of conductor, *La* lower arm of conductor, *Tc* terminal part of conductor, *Ua* upper arm of conductor, *Wm* wide membrane.

Arctella lapponica: Lehtinen 1967, 215, f. 285 (♀); Palmgren 1977, 23, figs. 5.9–12 (♂♀); Ovtchinnikov 1989, 92, figs. 2a–b (♂); Danilov 1994, 201, fig. 6 (♀); Almquist 2006, 302, figs. 265a–f (♂♀).

Material examined: FINLAND: 9♂, 1♀, 2juv. (ZMUT), ***Lapland***: Utsjoki, Kevo, Puksalskaidi, 1974 (S. Koponen). RUSSIA: ***Tyumen' Area***: 3♂ 4♀ (ZMMU), Tazovski Distr., Messoyakhinski Zakaznik, Messo Faktoria 68°01′50″N, 78°41′33″E, pitfall traps, 29.06.–19.07.2008 (M.A. Khrisanova). ***Krasnoyarsk Province***: 1♀, 1juv. (IBPN), Taimyr Peninsula, Kotui River 114 km from Khandyga Vil., 205 m,

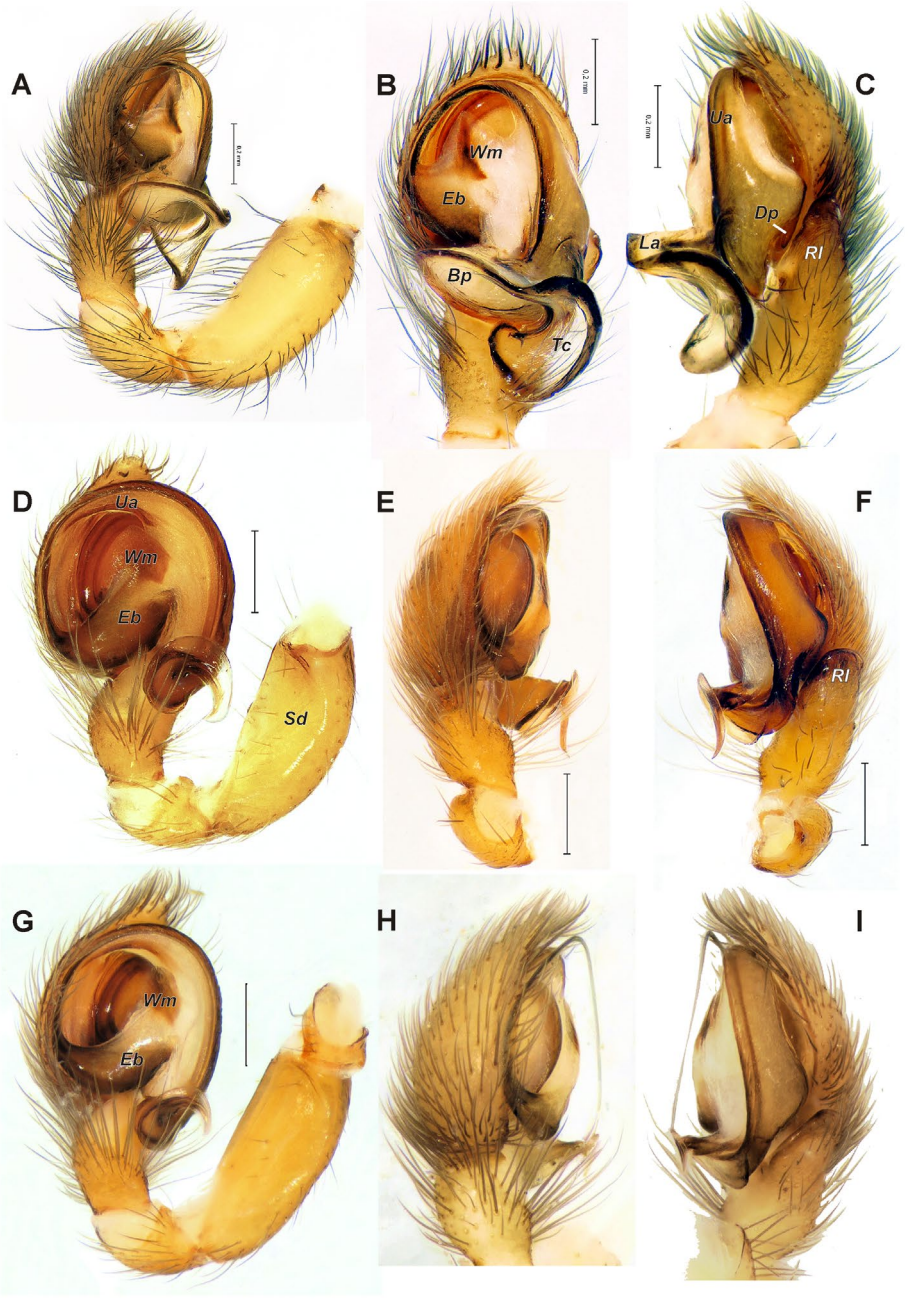

Figure 4. Male palp of *Arctella lapponica* (A–C) from Kamchatka, *Tricholathys subnivalis* (D–F) and *T. ovtchinnikovi* sp. n. (G–I). (A, D, G) prolateral; (B, E, H) ventral; (C, F, I) retrolateral.
Scale: 0.2 mm. Abbreviations: *Bp* basal part of lower arm of conductor, *Dp* digitiform process of conductor, *Eb* base of embolus, *Rl* retrolateral tibial apophysis, *Sd* shallow depression of femur, *Tc* terminal part of conductor, *Wm* wide membrane.

71.4°N, July 2010 (O.A. Khrulyova). ***Tuva***: 4♂ (ZMUT), Naryn-Balyktygkhem Pass, 50°17.40′N 96°23.72′E, 2300 m, mountain tundra, 26.06.1996 (Y.M. Marusik, D.V. Obydov). ***Yakutia***: 5♂ 1♀ (ZMUT), Yana River down flow, environs of Kular

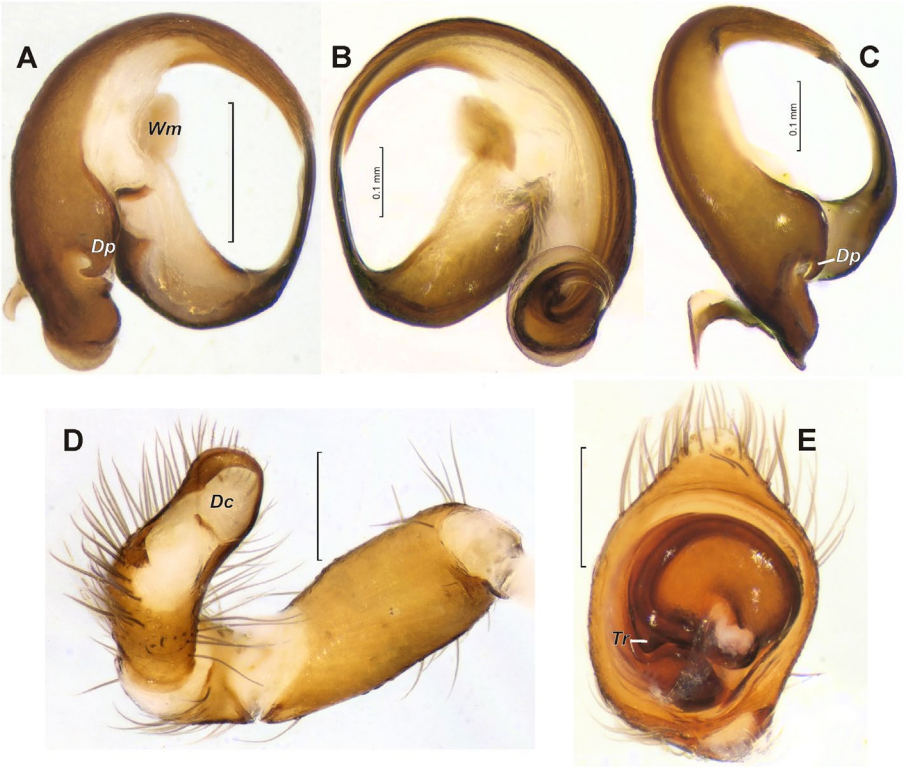

Figure 5. Details of palp of *Tricholathys ovtchinnikovi* sp. n. (A–C) conductor, dorsal, ventral and retrolateral-dorsal; (D) femur-tibia, dorsal-prolateral; E cymbium and tegulum, ventral.
Scale: 0.2 mm. Abbreviations: *Dc* deep cavity of tibial apophysis, *Dp* digitiform process of conductor, *Tr* triangular outgrowth of the tegulum, *Wm* wide membrane.

Vil., 70.35°N, 134.34°E, July 1996 (N.N. Vinokurov). ***Kamchatka Province***: 3♂, 8♀, 3 juv. (IBPN), Koryakia, N part, Penzhyna River environs of Kamenskoye Village, 62.454°N, 166.191°E, 4–31.07.2011 (A.S. Ryabukhin). ***Chukotka***: 4 juv. (IBPN), Beringovskiy Distr., 40 km SSW of Beringovskiy Vil., 62°43.275′N, 178°55.800′E, leaf litter and moss under willows and birch, 1.08.2012 (A. Stekol'shchikov); 18♂, 23♀, 12 juv. (IBPN), Pevek Town, Valkumei & Apapelgino Villages, ca. 69.6°N, 170.2°E, Summer 2011 (O.A. Khrulyova). MONGOLIA: ***Khovd Aimag***: 2♀ (ISEA), Baitag-Bogd-Uul, Khoshootiyn-Khotol Mt. (near Altan-Ovoo Mt.), 45°13'N 90°54'E, stony alpine meadow, 3050 m, 22.05.2015 (A.A. Fomichev). ***Bayanhkongor Aimag***: 1 juv. (IBPN), Gurvanbulag Sum, Khokh-Nuur (Lake), 47°32′N, 98°3Z′E, 2600 m, 7–10.06.1997 (Y.M. Marusik). ***Arkhangai Aimag***: 2♀ (IBPN), Ondrer-Ulaan, Tsakhir, Chulut Gorge. 48°07′N, 100°22′E, 2100 m, 10–13.06.1997 (Y.M. Marusik); 1♀ (IZP), Kharbalgas, 30 km N Kharkhorin, 15.09.1971 (B. Pisarski). USA: ***Alaska***: 1♂ (IBPN), Turquoise Lake, 60°46′N, 154°00′W, 11.05–10.07.1997 (P. Tomkovich); 1♂ (IBPN), Chalandar Shelf, 68°04′N, 149°36′W, 26–29.08.1993 (N.Y. Dokuchaev). CANADA: ***Yukon Territory***:

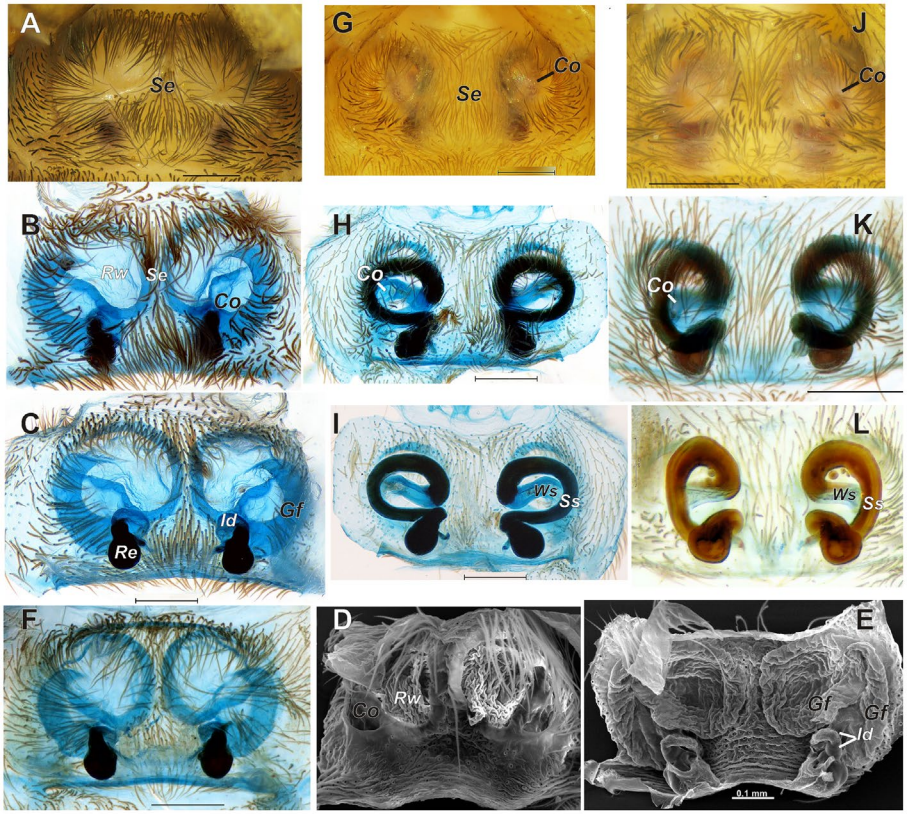

Figure 6. Epigyne of *Arctella lapponica* (A–F), *Tricholathys subnivalis* (G–I) and *T. ovtchinnikovi* sp. n. (J–L). (A, D, G, J) intact, ventral; (B, H, K) after maceration, ventral; (C, E–F, I, L) after maceration, dorsal. (A–E) from Kamchatka, (F) from Lapland.
Scale: 0.2 mm. Abbreviations: *Co* copulatory opening, *Gf* furrows of endogyne, *Id* insemination ducts, *Rw* round 'window', *Se* septum, *Ss* strongly sclerotized part of insemination duct, *Ws* weakly sclerotized part of insemination duct.

2♂, 3♀, 5 juv. (IBPN), Kluane Lake, Cultus Bay, 1200-1500 m, 9-14.07.1993 (Y.M. Marusik).

Description. *Male.* Total length 3.5. Carapace 1.75 long, 1.25 wide. Habitus and pattern (Figure 1(A)) as described for the genus. Spination: I-II Mt v1–1, 1ma; III Ti 1p, 2a or 1a, Mt 2–1v, 3ap; IV Ti 1–0 v or 2–0 v, 1a or 2a, Mt 2–0 v, 3a.

♂	Fe	Pt	Ti	Mt	Ta	Total
I	1.18	0.55	1.0	0.88	0.6	4.21
II	1.05	0.53	0.8	0.8	0.5	3.68
III	0.88	0.43	0.6	0.75	0.5	3.16
IV	1.25	0.5	0.95	1.03	0.55	4.28

Palp as in Figures 3(A)-(G), 4(A)-(C); femur thick, 2.5 times longer than wide, as long as patella + tibia. Patella almost as long as tibia in prolateral view. Tibia with broad, retrolateral apophysis (*Rl*) containing a deep cavity (*Dc*) on mesal side (Figure 3(F)-(G)). Cymbium unmodified, with short tip. Conductor large,

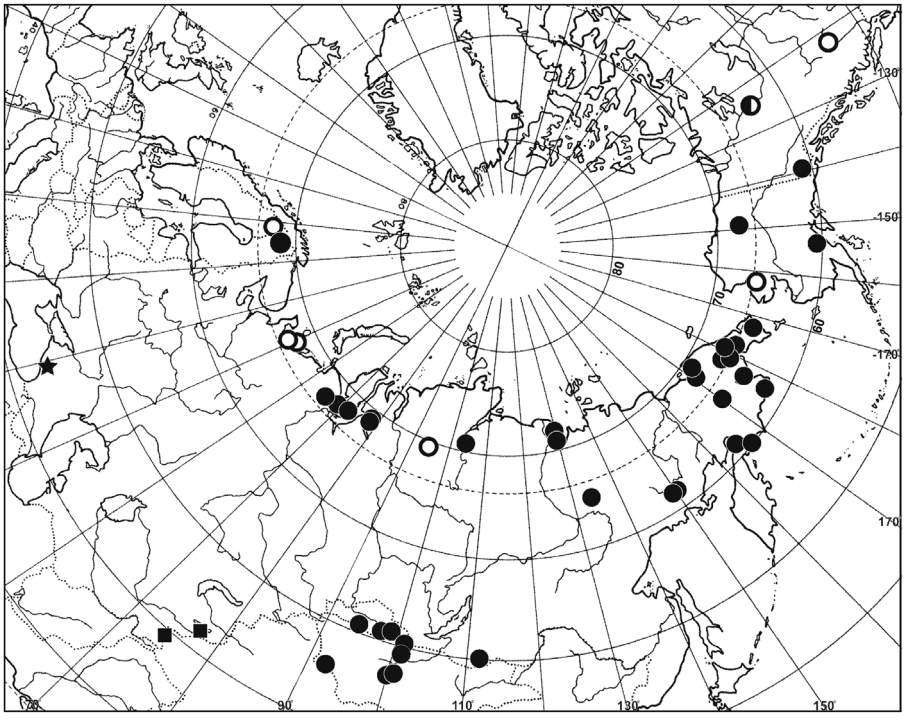

Figure 7. Distribution records of *Arctella lapponica* (filled circles refer to material examined, open circles refer to literature data, half open refers to province record without precise locality), *Tricholathys subnivalis* (square), *T. ovtchinnikovi* sp. n. (star).

upper arm (*Ua*) short, terminating at about 11:30 o'clock; lower arm (*La*) massive, bent, and twisted several times. Basal part (*Bp*) bent at right angle and directed prolaterally (Figure 3(A), (C)–(D)), discoid, wider than tibia, with fine ridges (*Fr*) on dorsal surface (Figure 3(E)); terminal part (*Tc*) ribbon-shaped, semicircular in lateral view (Figure 3(A)–(D)); tip (*Tc*) very short, bent dorsally; dorsal part with digitiform process (*Dp*) (Figures 3(B), 4(C)). Conductor connected with embolic base (*Eb*) by wide membrane (*Wm*), embolus whip-like, starting at about 9 o'clock, tip twisted (Figure 3(E)).

Female. Total length 4.3. Carapace 1.73 long, 1.25 wide. Habitus and pattern as in Figure 1(B). Spination: I Mt 1ma; II Mt 1r 1ma or 1p, 1r, 1ma; III Ti 1p (or 0p), 1ap, Mt 1–1 v, 3a; IV Ti 1–0 v, 2a, Mt 2–0 v, 3a, 1da.

♀	Fe	Pt	Ti	Mt	Ta	Total
I	1.18	0.53	0.85	0.75	0.5	3.81
II	1.03	0.45	0.68	0.75	0.48	3.39
III	0.93	0.43	0.58	0.63	0.48	3.05
IV	1.25	0.6	0.88	0.88	0.58	4.19

Epigyne as in Figure 6(A)–(F); weakly sclerotized (except for septum) with translucent receptacles; copulatory openings (*Co*) located on lateral sides of round

'windows' (*Rw*, less sclerotized part of epigyne). Receptacles small, separated by 2.5 diameters; insemination ducts short cylindrical segment near receptacle (*Id*), other parts of endogyne weakly sclerotized, and seem to represent furrows (*Gf*), not ducts, that may guide either the conductor or/and the embolus.

Note: Epigyne of specimen from Lapland differs slightly from those from Kamchatka; it is smaller and has somewhat different proportions (Figure 6(C), (F)).

Comments. According to the label data and from personal collections, this species is rather common in the tundra zone, in bogs and moist leaf litter under bushes. South of the tundra zone, *A. lapponica* inhabits subalpine and alpine bogs and heaths at elevations up to 2600 m. In the Yukon Territory, all specimens were collected at elevations of 1200–1500 m under stones, willow leaf litter with *Aulacomium* and *Hypnum* mosses, and in mountain tundra.
Barcoding of specimens from two populations from the Taymyr Peninsula and Chukotka, separated by over 3000 km revealed no differences (Blagoev, personal communication).

Distribution. The species is known from Swedish and Finnish Lapland (Palmgren 1977), Polar Ural (Esyunin & Efimik 1996), the whole of Siberia (Mikhailov 2013), Mongolia (Eskov 1989; Marusik and Logunov 1999), Alaska (Holm 1960), Yukon and Northwest Territories (Dondale et al. 1997) and British Columbia (Bennett et al. 2014) (Figure 7).

Tricholathys Chamberlin & Ivie, 1935

Tricholathys Chamberlin & Ivie 1935, 26; Chamberlin & Gertsch 1958, 17; Lehtinen 1967, 356; Ovtchinnikov 2001, 7.
Type species: *Tricholathys spiralis* Chamberlin & Ivie, 1935, from Utah by monotypy and original designation.

Diagnosis. *Tricholathys* is most similar to *Arctella*, differing from other Tricholathysinae genera by coiled lower arm of conductor; distinguished from *Arctella* (except *T. subnivalis*) by the presence of only 4–5 teeth on the inner margin of the chelicera (2 teeth in *T. subnivalis*), sclerotized insemination ducts (Figure 6(H)–(I), (K)–(L); weakly sclerotized in *Arctella*); a smaller conductor lacking bent part of lower arm and gradually tapering tip (Figures 4(D)–(I), 5(B)–(C)). Males of the two genera differ distinctly by the origin of embolus, lower than 8 o'clock in *Tricholathys* (Figure 4(D), (G)) and positioned at 9 o'clock in *Arctella* (Figure 4(B)), longer upper arm of conductor in *Tricholathys*, reaching 10 o'clock (Figure 4(D), (G)), whereas it reaches 11:30 o'clock in *Arctella* (Figure 4(B)) and the direction of the twisted tip of conductor, ventral in *Tricholathys* (Figure 4(D)–(I)), and dorsal in *Arctella* (Figures 3(A)–(C), 4(A)–(C)).

Description. Described by Chamberlin and Gertsch (1958). Here, we are not providing a redescription because we have not studied the Nearctic species and because the type of the Central Asian species, *T. relicta* Ovtchinnikov, 2001, is unavailable.

Composition and distribution. Ten species in the Western Nearctic (Ovtchinnikov 2001), from British Columbia to Manitoba and from California to Colorado (Canada and northern and western USA), and three species in the Palaearctic: *T. relicta* Ovtchinnikov, 2001, *T. subnivalis* (Ovtchinnikov, 1989), both from the mountains of Central Asia, and *T. ovtchinnikovi* sp. n. from the Northern Caucasus. Ovtchinnikov (2001), Platnick (2014), and the World Spider Catalog (2016) list all the Nearctic species as being from the USA only, although *T. dakota* Chamberlin & Gertsch, 1958, *T. rothi* Chamberlin & Gertsch, 1958, and *T. spiralis* are also known from Western Canada (Paquin et al. 2010).

Note. The ecribellate species, *Tricholathys relicta*, has the male palp and the epigyne differing from all other species currently placed in *Tricholathys*, and it may belong to a separate genus. Ovtchinnikov (2001) suggested this already. According to Ovtchinnikov (2001), the type series of this species was to be shared between the American Museum of Natural History, the Zoological Museum of Moscow State University and the Siberian Zoological Museum (Novosibirsk). However, specimens of this species are absent in these museums (Mikhailov, Azarkina, Prendini, personal communication).

***Tricholathys subnivalis* (Ovtchinnikov, 1989) comb. n.**
Figures 1(C)–(B), 2(C)–(D), 4(D)–(F), 6(G)–(I), 7
Arctella subnivalis Ovtchinnikov 1989, 90, figs. 1a–d (♂♀).

Material examined: KYRGYZSTAN: 2♂, 2♀ (ZMMU), Terskei Alatoo, Barskaun Gorge, August 1988 (S.V. Ovtchinnikov).

Note. The material for this study comes from the type locality. Types were not studied and not located.

Diagnosis. *Tricholathys subnivalis* differs distinctly from the other Central Asian species, *T. relicta*, by having a cribellum and being smaller (*T. relicta* is 6.6–6.8). *Tricholathys subnivalis* differs from the Caucasian *T. ovtchinnikovi* sp. n. by having only 2 teeth on the cheliceral retromargin (Figure 2(C)–(D)), whereas *T. ovtchinnikovi* sp. n. has 4 teeth (Figure 2(C)–(D)), the male palp has a broader lower arm of the conductor (Figure 4(D), (G)), and in the vulva, the insemination duct is almost completely coiled (Figure 6(H)–(I)).

Description. *Male*. Total length 3.1–3.75. Carapace 1.35–1.75 long, 1.0–1.2 wide; yellow–brown with darker radial stripes, and trident pattern around fovea; fovea long,

about ¼ of carapace length; carapace with median stripe of strong setae, cephalic part also with some hairs, rest of carapace hairless (Figure 1(C)). Maxillae slightly converging. Labium 1.2 times longer than wide (although Ovtchinnikov [1989] indicated that it is 1.5 times longer than wide). Chelicerae darker than labium and maxillae; promargin with 4 teeth and retromargin with 2 teeth (Figure 2(C)). Abdomen light brown with almost indistinct pattern. Legs light brown, uniformly colored; legs covered with erect hairs subequal or slightly longer than diameter of the segments.

Spination: I–II 1ma; III Ti 1p, 1r, 2a, Mt 1p, 1r, v1–0, 4a; IV Ti 1r, 2a, Mt 1p, rl, 5a. Leg segments length of specimen with carapace 1.35 long.

	Fe	Pt	Ti	Mt	Ta	Total
I	1.0	0.43	0.83	0.68	0.5	3.44
II	0.88	0.43	0.63	0.63	0.45	3.02
III	0.75	0.38	0.48	0.53	0.38	2.52
IV	0.95	0.43	0.8	0.88	0.43	3.49

Palp as in Figure 4(D)–(F); femur thick, two times longer than wide, with slight, shallow depression (*Sd*) prolaterally. Patella subequal in length to tibia in prolateral view. Tibia cylindrical with broad and truncate retrolateral apophysis. Cymbium unmodified. Conductor with two well-developed arms. Upper arm (*Ua*) tapering gradually and terminating at about 9:30 o'clock; lower arm terminating in a spiral. Conductor connected to embolic base by wide membrane. Embolus originating at about 7:30 o'clock position.

Female. Size, coloration and chelicerae as in male (Figures 1(D), 2(D)). Spination: I–II Ti 1ma; III Ti 1p 1r, 2ma, Mt 1p, rl, v1–1, 4a; IV Ti r1, v1–0 Mt 1p, rl, v1–1, 5a. Calamistrum as long as 3/5th of metatarsus IV and consisting of more than 20 setae. Leg segments length of specimen with carapace 1.38 long.

♀	Fe	Pt	Ti	Mt	Ta	Total
I	0.9	0.45	0.7	0.65	0.43	3.13
II	0.8	0.4	0.48	0.6	0.4	2.68
III	0.75	0.48	0.5	0.53	0.35	2.61
IV	1.0	0.43	0.8	0.75	0.43	3.41

Epigyne as in Figure 6(G)–(I); weakly sclerotized, with two shallow depressions separated by a kind of wide septum slightly less than 2 diameters of a depression. Receptacles and part of the insemination ducts clearly visible through the integument. Receptacles small, separated by about 2 of their diameters, converging anteriorly. Insemination duct with two distinct parts: weakly sclerotized part (*Ws*) connected with copulatory openings and with the strongly sclerotized (*Ss*) part forming almost a whole circle. Coil of sclerotized part wider than long.

Note. It seems that the number of spines is subject to variation. According to the original description (Ovtchinnikov 1989), the holotype male and allotype female are larger and have more spines.

Habitats. In both Kyrgyzstan and Tajikistan, this species occurs at elevations of 3100–4500 m (Ovtchinnikov 1989). It inhabits places with moist soil (permanent water sources), often near snow patches. Species can occur near the timberline of spruce forests in places with rocky outcrops.

Distribution. Mikhailov's (1997) and Platnick's (2011, version 12) catalogs list the distribution of this species as 'Kyrgyzstan' only; however, the original description clearly indicates that this species also occurs in Tajikistan (Figure 7).

***Tricholathys ovtchinnikovi* sp. n.**
Figures 1(E)–(F), 2(E)–(F), 4(G)–(I), 5(A)–(E), 6(J)–(L), 7
Arctella subnivalis: Ponomarev & Mikhailov 2007, 142 (misidentification).

Material examined. Holotype ♂ and paratypes 4♂, 4♀ (ZMMU), RUSSIA, West Caucasus, ***Adygea***, Caucasian Nature Reserve, 7th km of the road Guzeripl' – Abago, 43.973361°N, 40.198222°E, 1360 m, mixed *Fagus orientalis* and *Abies nordmanniana* forest, 9.06.2004 (Y.A. Chumachenko).

Etymology: The species name is a patronym honoring our late colleague and friend, Sergei V. Ovtchinnikov (1958–2007), of Bishkek, Kyrgyzstan, who made great contributions to the taxonomy and faunistics of Central Asian spiders.

Diagnosis. *Tricholathys ovtchinnikovi* sp. n. differs from *T. relicta* by having a cribellum. The new species differs from the *T. subnivalis*, by having 3–4 teeth on the cheliceral retromargin (Figure 2(F)–(E); 2 in *T. subnivalis*, Figure 2(C), (D)), a male palp with a thinner, lower arm of conductor (Figure 4(D), (G)), the coil of the insemination duct longer than wide (Figure 6(K)–(L); wider than long in *T. subnivalis* (Figure 6(H–(I)).

Description. Holotype *male*. Total length 2.9. Carapace 1.4 long, 1.05 wide; yellow-brown, with a sort of trident pattern around fovea and dark radial stripes; cephalic part darker than thoracic (Figure 1(E)). Cheliceral promargin with 4 relatively large teeth, and retromargin with 3–4 small teeth (Figure 2(E)). Spination: I–II 1ma; III Ti 1p, 1r, 2a, Mt 1p, 1r, v1–0, 5a; IV Ti 1r, v1–0, 2a, Mt v1–0, 5a. Abdomen brownish with weakly developed pattern composed of a dark median band and transverse, broken yellow stripes.

Leg measurements of the holotype.

♂	Fe	Pt	Ti	Mt	Ta	Total
I	1.08	0.4	0.75	0.65	0.48	3.36
II	0.83	0.4	0.58	0.55	0.4	2.76
III	0.65	0.35	0.4	0.53	0.35	2.28
IV	0.93	0.4	0.73	0.8	0.4	3.26

Palp as in Figures 4(G)–(I), 5(A)–(E); femur relatively thin, more than 2 times longer than wide, with a shallow depression prolaterally. Patella subequal in length to tibia in prolateral view.

Tibia cylindrical with broad and truncate retrolateral apophysis having pocket on mesal side (*Ds*, Figure 5(D)). Cymbium unmodified. Tegulum round with triangular outgrowth in proximo-prolateral part (Figure 5(E)). Conductor with two well-developed arms. Upper arm gradually tapering and terminating about at 9–9:30 o'clock; lower arm terminating in spiral, dorsal part of the upper arm with small claw-like outgrowth (*Dp*, Figure 5(A), (C)). Conductor connected to the embolic base by a wide membrane. Embolus originating at about 8 o'clock position. *Female*. Total length 3.55. Carapace 1.35 long, 1.0 wide. Carapace darker than in male with similar pattern (Figure 1(F)). Cheliceral promargin with *4* relatively big teeth, retromargin with 3 (Figure 2(F)) or 4 small teeth. Spination: I–II 1ma; III Ti 1p, 1r, 2a, Mt 1p, v1–0, 5a; IV Ti 1r, v1–0, 2a, Mt v1–0, 4a.

♀	Fe	Pt	Ti	Mt	Ta	Total
I	0.83	0.35	0.63	0.53	0.4	2.74
II	0.75	0.35	0.48	0.5	0.38	2.46
III	0.65	0.3	0.35	0.45	0.3	2.05
IV	0.95	0.43	0.63	0.68	0.33	3.02

Epigyne as in Figure 6(J)–(L); weakly sclerotized, with two shallow depressions separated by wide septum. Receptacles small, separated by about 2.5 diameters, converging anteriorly. Insemination duct with two distinct parts: a weakly sclerotized part connected to the copulatory openings and a strongly sclerotized part forming almost an entire circle. Coil of sclerotized part longer than wide.
Distribution. Known from the type locality only (Figure 7).

Remarks

During this study, two new characters were found in *Arctella* and *Tricholathys* male palp and one character in epigyne that were not mentioned or well documented by previous authors.

(1) First, a large pocket (big cavity) on the mesal side of the tibial apophysis has not been documented before in any Dictynidae or related families. It is deeper in *Arctella* (Figure 3(F)–(G)) than it is in *T. ovtchinnikovi* sp. n. (Figure 5(D)). It is likely that such a pocket is present in all other *Tricholathys*, as well as in *Hackmania* Lehtinen, 1967 and *Argyroneta aquatica* (Clerck, 1757), which also have a broad tibial apophysis. This pocket probably serves for guiding conductor.

(2) Second, *Arctella lapponica* and *T. ovtchinnikovi* sp. n. both have a small claw-like outgrowth (*Dp*, Figures 3(B), 5(A), (C)) on the dorsal side of the conductor. Most likely such an outgrowth is present in other *Tricholathys*

if not in all Tricholathysinae. Judging from Figure 3(B), it may serve for locking the conductor in the cymbial pocket (*Cp*), or for fixation of the conductor in the tibial apophysis. When viewed with a light microscope, the cymbial pocket in *T. ovtchinnikovi* sp. n. is not visible.

(3) The epigyne of *A. lapponica* is described in detail for the first time. Previously, there were only two figures of the endogyne, published by Holm (1945: fig. 23e) and by Almquist (2006: fig. 256f). The figures look very different and the authors provide no indication where the copulatory openings are located. The insemination ducts are very short (Figure 6(C), (E)), only as long as the receptacles. The other weakly sclerotized parts illustrated as ducts by Almquist (2006) are in fact furrows for guiding the conductor or embolus or both. The endogyne of *Tricholathys relicta,* illustrated by Ovtchinnikov (2001: fig. 3), looks similar to that of *A. lapponica*. It is worth mentioning that the endogyne of *Tricholathys* was also not known before this study. A good figure of the receptacles and insemination duct was published by Ovtchinnikov (1989) for *Arctella subnivalis* that we consider to be in the genus *Tricholathys*. Internal structures of the epigyne of the Nearctic *Tricholathys* have not been illustrated; however, they were mentioned by Lehtinen (1967, 365) as 'Vulval ducts: thick subcircular coils'.

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