

NOTES ON DICRANUM (DICRANACEAE, MUSCI) IN RUSSIA. 2.
DICRANUM PSEUDACUTIFOLIUM SP. NOV., FROM NORTH SIBERIA
ЗАМЕТКИ ПО РОДУ DICRANUM (DICRANACEAE, MUSCI) В РОССИИ. 2.
DICRANUM PSEUDACUTIFOLIUM SP. NOV. ИЗ СЕВЕРНОЙ СИБИРИ

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Abstract

A new species, *Dicranum pseudacutifolium* Otnyukova is described from North Siberia, Putorana Plateau. It is similar to *D. acutifolium* and *D. brevifolium* but differs from both species in the absence of bulgings above cell walls as it is seen on transversal leaf section, in not porose lower leaf cells, and in inner perichaetial leaves abruptly contracted into subula. It differs from *D. flexicaule* and *D. fuscescens* in leaf cross section looking like pair of tongs, and from the latter also in relatively scarce rhizoids, and in wide leaf base. A specific feature of this new species is straight cell walls making cell angles sharp, not rounded.

Резюме

С плато Пutorана (север Сибири) описан новый вид *Dicranum pseudacutifolium* Otnyukova sp. nov. По характеру дерновинок и форме листа он близок к *D. acutifolium* и *D. brevifolium*, но отличается от них отсутствием на поперечном срезе листа выступов клеточных стенок, не пористыми клеточными стенками в нижней части листа и перихециальными листьями резко суженными в узкую верхушку. От *D. flexicaule* и *D. fuscescens* новый вид отличается формой поперечного среза листа (края изогнуто-сходящиеся как олени рога), от последнего – более редкими ризоидами и более широким основанием. Клетки нового вида имеют прямые стенки, так что углы клеток выглядят резкими, не закругленными.

The revision of *Dicranum* species with quadrate upper cells in KRF, LE, SASY reveals in the north of Krasnoyarsk District (Siberia) *D. flexicaule* Brid., *D. fuscescens* Turn., *D. acutifolium* (Lindb. & Arn.) C.Jens., *D. brevifolium* (Lindb.) Lindb., and a new species that is described below.

***Dicranum pseudacutifolium* Otnyukova** sp.nov. Figs. 1-2

Caespites laxi vel densi, ad 10 cm alti. Folia valde haud flexuosa, margine superne dentato et ex parte bistrato. Vena superne scabra, apiculus dentatus. Cellulae laminorum superne quadratae, aut subquadratae, aut brevirrectangulares, leptodermaticae, non porosae, papillosae aut ad leves. Cellulae laminorum inferne rectangulatae, leptodermaticae, non porosae aut ad leviter porosae.

Folia tranverse secta carinata. TYPUS: Russia, prov. Krasnojarskensis, planities Putorana, fl. Neralakh, systema lacus Lama, 69 40' lat. bor., 89 50' long. orient., 200 m alt., ad solum. 29.VII.1991. T.N. Otnyukova (holotypus KRF).

Plants in loose or somewhat dense mats, relatively soft and flexible, dark-green to green (sometimes yellow-green only in herbaria) above and dull-brown to dark-brown below, slightly glossy. Stems to 10 cm high, scarcely to densely foliate, with loose rhizoid tomentum. Leaves somewhat falcate when dry and straight when wet, 5-7 mm long and 0.7-0.9(-1.1) mm wide, from ovate-lanceolate base more or less gradually narrowed to short or long, keeled-channeled subula, at tip acute; margins from strongly bistratose to partially bistratose and from

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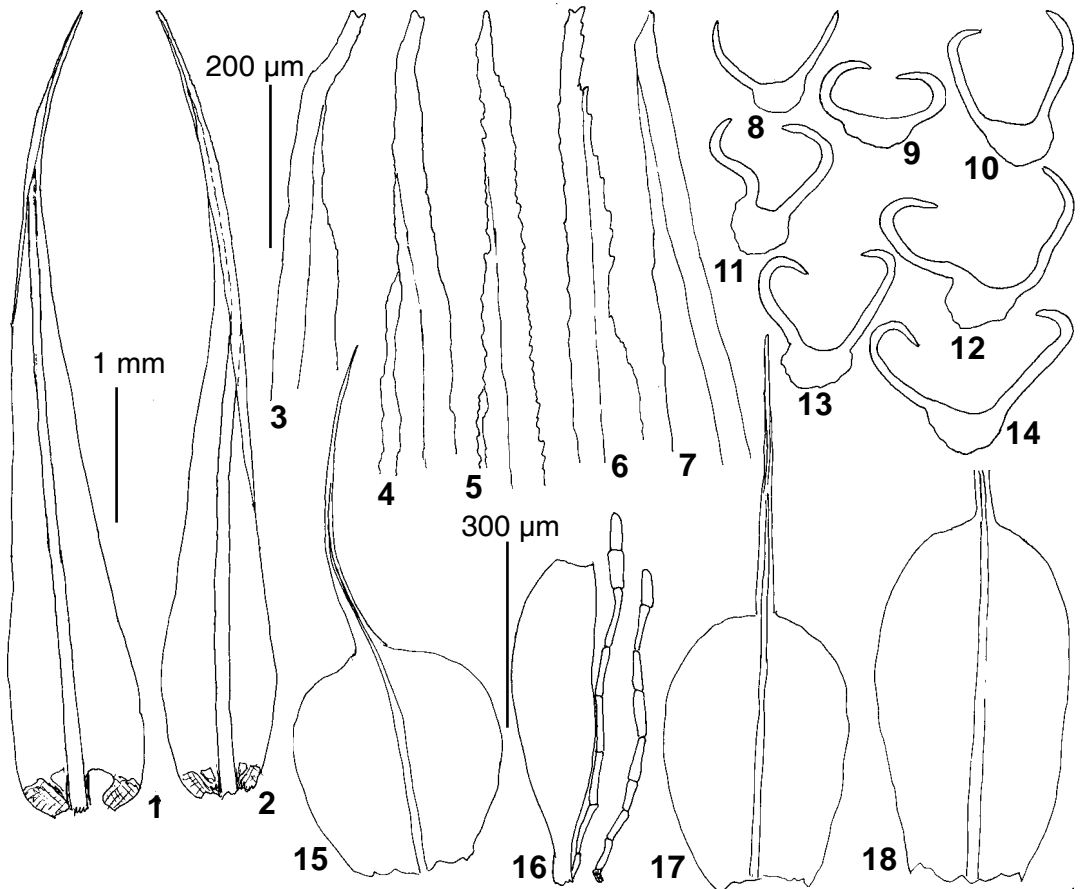


Fig. 1. *Dicranum pseudacutifolium* Otnyukova sp. nov. (from holotype): 1-2 – leaves; 3-7 – leaf apices; 8-14 – leaf transverse sections; 15, 17-18 – perichaetial leaves; 16 – antheridium with paraphyses. Scale bars: 1 mm for 1-2; 300 µm for 15-18; 200 µm for 3-14.

strongly serrate to subentire above, always entire below; costa precurrent or shortly excurrent, (1/5-) 1/7-1/9 of width of leaf base, from dentate or serrulate to smooth on dorsal surface. Upper leaf cells quadrate, short-rectangular, transverse-rectangular to irregular, (3-)5-10(-25) x 7-9(-12) µm, straight-walled, with sharp (not rounded) angles, thin-walled to thick-walled, in cross section cell walls between cells not bulging; lower leaf cells elongate to short elongate, (25-)35-55(-100) x 8-10 µm, thin and straight-walled, not pitted (or slightly pitted in old leaves), regular or irregular in shape; often abruptly transiting to short-rectangular and quadrate upper leaf cells; alar cells 2(-3)-stratose, brown; in cross section leaves looking like a pair of tongs, costa with differentiated dorsal epidermis. Dioicous or phyllo-dioicous. Sporophytes solitary (only green and old sporophytes with destroyed peristome were found). The inner perichaetial leaves concave and not ap-

pressed to setae, from obovoid or wide obovoid base abruptly narrowed to cylindrical subula; convolute leaf base 2.5-3.0 mm long, 1.2-1.4 mm wide, subula 2.0-2.5 mm long.

TYPE. Russia, Krasnoyarsk Territory, Putorana Plateau, Neralakh River 10 km distance from its flow in Lama Lake, 69°40'N, 89°50'E, 200 m elev. Open larch woodland, on skeleton soil. 29.VII.1991. T.N. Otnyukova (holotype KRF, isotype in MHA).

This new species is similar to *D. acutifolium* and *D. flexicaule*; moreover, these three species grow together in the northern Siberia. Plants of *D. pseudacutifolium* with sporophytes are easily to recognize by their inner perichaetial leaves that are loosely appressed to setae by concave basal part, while in two other species they are lanceolate, with appressed base. Well-developed vegetative plants of *D. pseudacutifolium* differ from *D. acuti-*

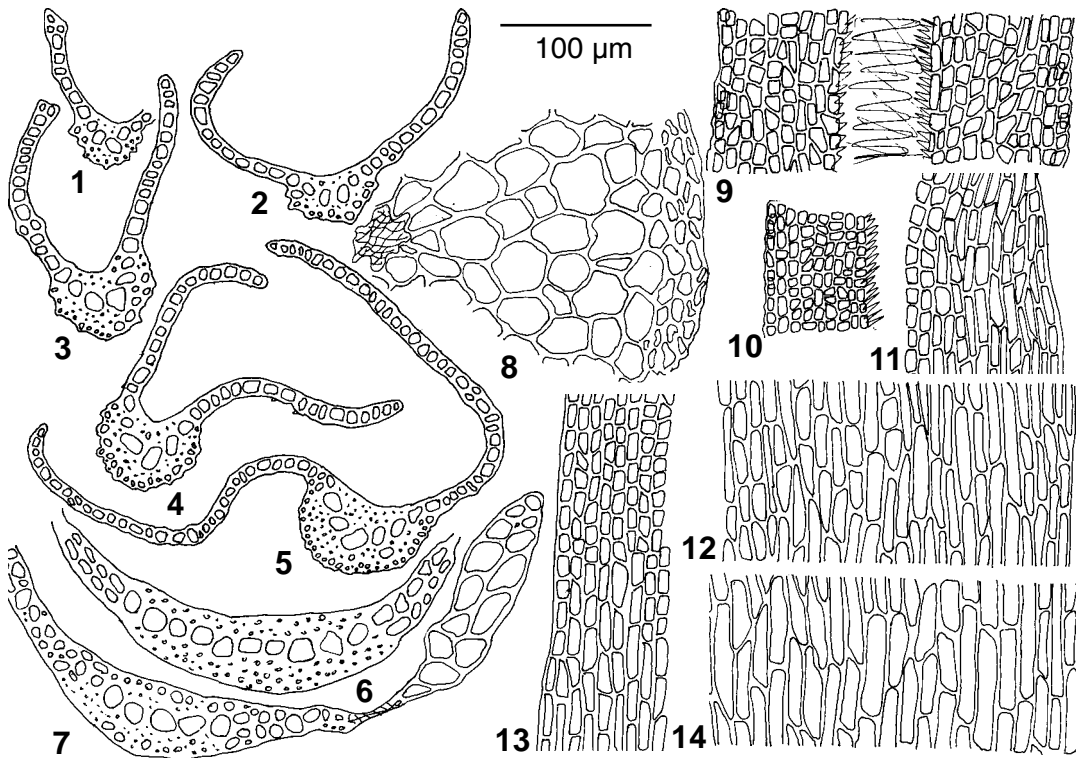


Fig. 2. *Dicranum pseudoacutifolium* Otnyukova sp. nov. (from holotype): 1-7 – leaf transverse sections; 8 – stem transverse section; 9-10 – upper leaf cells; 11 – mid-leaf cells; 12 & 14 – lower leaf cells; 13 – mid-leaf cells showing abrupt transition from short to elongate cells. Scale bars: 100 μm for 1-14.

folium and *D. flexicaule* in its long, wide at base, acuminate leaves that are keeled-channeled, with serrate margins and dorsal costa, as well as in thin-walled lower laminal cells and abrupt transition to small and quadrate upper leaf cells that makes lamina bicolor, with dark upper part and light lower part. This pattern is not conspicuous in weakly developed plants that have also only slightly serrulate leaf margin. These weakly developed sterile plants of *D. pseudoacutifolium* can be recognized by thin-walled and straight-walled cells, with sharp (not rounded) angles.

The new species differs from *D. acutifolium* primarily in the absence of bulgings above cell walls as it is seen in leaf cross section. Also it usually has not porose, thin-walled leaf cells, with sharp, not rounded angles (vs. always porose, thick-walled cells with rounded angles in *D. acutifolium*).

The differences from *D. brevifolium* include absence of bulgings in leaf transverse section and not porose lower laminal cells.

Dicranum pseudoacutifolium differs from *D. fuscescens* in wider leaf base, up to 30-50 cells

wide (vs. 15-25 in *D. fuscescens*) and also in wider and more thin-walled lower leaf cells, as well as in leaf cross section keeled-channeled, looking like pair of tongs (vs. V-shaped in *D. fuscescens*).

The new species differs from *D. flexicaule* in thin, straight and not porose laminal cell and in keeled-channeled, looking like pair of tongs leaf cross section (vs. keeled-tubulose in *D. flexicaule*). The unistratose lamina above is shorter and 3-5(-7) cells wide vs. longer and only (1)-2-3(-5) cells wide in *D. flexicaule*.

Comparison of *D. pseudoacutifolium* with similar species is given also in Table 1.

Variation. *Dicranum pseudoacutifolium* is variable in tuft density (loose or dense), plants (more or less tomentose), leaves (straight to rather falcate), upper leaf shape (from longly to shortly acuminate), dorsal surface of costa (serrate to smooth), margin of leaf (serrate to entire), upper leaf cells (much shorter to quadrate and therefore thin-walled to much longer and irregular in shape and then more thick-walled), lower leaf cells (± porose).

Table 1. Comparison of *Dicranum* species similar to *D. pseudacutifolium* sp. nov.

Characters	<i>D. acutifolium</i>	<i>D. brevifolium</i>	<i>D. pseudacutifolium</i>	<i>D. fuscescens</i>	<i>D. flexicaule</i>
Plant size, cm	to 10	to 5	to 10	to 5	to 15
Mats	±rigid	±rigid, somewhat scattered	soft and flexible	±rigid	rigid
Rhizoid tomentum	scarce or dense	dense	loose	dense	dense or loose
Rhizoid tomentum	pale-brown or brown	pale-brown or brown	dull-brown to dark-brown	pale-brown or brown	red-brown
Leaf size, mm	5-8x 0.5-0.9	4-7x 0.6-0.9	5-7(9)x0.7-0.9(1.1)	5-7x0.4-0.6	5-7x 0.5-0.9
Leaves when dry	±straight	±crispate	±falcate	± crispate	falcate
Leaves when wet	straight	straight	straight	straight or ±curved	curved
Leaf shape	oblong-lanceolate	oblong- or ovate-lanceolate	oblong- or ovate-lanceolate	narrowly oblong-lanceolate	oblong- or ovate-lanceolate
Leaf base	±widened	±widened	±widened	not widened	±widened
Middle part of leaf	plane to ±concave	plane to ±concave and ±channeled	plane to ±concave and channeled	plane	plane or concave and channeled
Upper part of leaf	keeled	keeled	keeled to ±channeled	keeled	keeled-tubulose to keeled
Costa at dorsal surface	scarcely dentate to smooth	slightly serrulate to smooth	strongly mammilate-serrulate to smooth	strongly dentate-serrulate to smooth	slightly and scarcely dentate to smooth
Number of cell rows in the widest part of leaf	30-40	30-40	30-50	15-25	25-40
Leaf margin	serrate to smooth	serrulate to smooth	serrulate to smooth	serrate to scarcely dentate	serrate to smooth
Leaf margin layers	1 or 1(-2)	1 or 1(-2)	2 or (1)-2	2 or (1)-2	1 or 1(-2)
Upper contours of margins	±even	±uneven	±uneven	±even	±even
Upper leaf cells, μm	10-25x9-14	7-16x8-12	(3-5-10(-25))x7-9(-12)	10-18x8-11	10-30x8-12
Upper leaf cell shape	irregular	regular to irregular	regular to irregular	regular to irregular	irregular to regular
Upper leaf cell angles	rounded	sharp to rounded	clearly sharp, rarely rounded	sharp to ±rounded	rounded to ±sharp

Characters	<i>D. acutifolium</i>	<i>D. brevifolium</i>	<i>D. pseudoacutifolium</i>	<i>D. fuscescens</i>	<i>D. flexicaule</i>
Upper leaf cell walls	thick	±thick	±thin	±thin	±thick
Upper leaf cell wall straightness	not straight	not straight	straight-walled	not straight	not straight
Upper cell rows	inapparent	apparent	apparent	apparent	inapparent
Lower leaf cells	3-12:1	1-12:1	0.5-12:1	4-8:1	3-8:1
Lower leaf cell shape	±regular	±irregular	regular or irregular	±regular	±irregular
Transition from long to upper quadrate cells	gradual	gradual or abrupt	abrupt, sometimes gradual	gradual, sometimes abrupt	gradual
Lower leaf cell walls	thick	±thick	±thin	thick	±thick
Lower leaf cell wall straightness	not straight	not straight	straight	straight	not straight
Lower leaf cell wall porosity	porose	porose	not or ±porose	not or ±porose	±porose
Leaf cross section	± 'pair of tongs'	apparent 'pair of tongs'	apparent 'pair of tongs'	keeled-tubulose to ± 'pair of tongs'	keeled
Bulgings in leaf cross section (except old leaves)	prominent, narrow, papillae-like	prominent, wide, spherical	usually absent	absent	absent
Sheathing base of innermost perichaetial leaf	long-obovoid, abruptly short-acute at tip	wide-obovoid, abruptly short-acute at tip	obovoid, rounded at tip	short-obovoid, abruptly short-acute at tip	lanceolate, abruptly short-acute or blunt at tip
Sheathing base length, mm	2.5-3.5	2.5-3.0	2.5-3.0	1.8-2.5	2.5-3.0
Perichaetial leaf subula, mm	1.5-2.5	1.0-1.5	2.0-2.5	2.5-3.0	1.0-1.5
Sporophytes	rare	rare	rare	frequent	frequent

SPECIMENS EXAMINED: Krasnoyarsk Territory: Putorana Plateau: Lama Lake at mouth of Neralakh River, 200 m elev., open larch stand, on skeleton soil, 28.VII.1991; Glubokoye Lake, 150 m elev., larch forest, on soil, 6.VIII.1990; Gorbiachin River, 200 m elev., larch forest, on rocky soil, 20.VII.1991; Kulyumbe River, 200 m elev., spruce-larch forest, on rock among mosses, 25.VII.1991; Tonengda River (Severnaya River basin),

spruce-larch forest, on decaying log, 17.VII. 1991. All collections made by T.N. Otnyukova, specimens in KRS.

ACKNOWLEDGEMENTS

I am very grateful to Dr N.V. Stepanov for correction of Latin diagnosis. The work was partly supported by RFBR, 05-04-48780.