Botanica Pacifica. A journal of plant science and conservation. 2015. 4(1)
DOI: 10.17581/bp.2015.04105

TAXONOMIC NOVELTIES

New taxa of *Deschampsia* P. Beauv. (Poaceae) from Russia

Nikolai N. Tzvelev [1], Nina S. Probatova [2]* & Jorge Chiapella [3]

Nikolai N. Tzvelev [1]
e-mail: tzvelev@mail.ru

Nina S. Probatova [2]*
e-mail: probatova@ibss.dvo.ru

Jorge Chiapella [3]
e-mail: jchiapella@imbiv.unc.edu.ar

[1] V.L. Komarov Botanical Institute RAS, Saint-Peterbourg, Russia

[2] Institute of Biology & Soil Science FEB RAS, Vladivostok, Russia

3 Instituto Multidisciplinario de Biologia Vegetal – IMBIV-CONICET – Universidad Nacional de Córdoba, Argentina

* corresponding author

Manuscript received: 20.03.2015
Review completed: 29.03.2015
Accepted for publication: 01.04.2015
Published online: 18.05.2015

ABSTRACT

In this paper we describe three new species of the genus *Deschampsia* from the Russian Far East (Kamchatka, Khabarovskii Krai, Magadanskaya Oblast' and Commander Islands) and from Yakutia. For two species the chromosome numbers are revealed.

Keywords: new taxa, *Deschampsia,* Poaceae, chromosome numbers, vascular plants, East Siberia, Far East, Russia

РЕЗЮМЕ

Цвелев Н.Н., Пробатова Н.С., Чьяпелья Х. Новые таксоны *Deschampsia* P. Beauv. (Poaceae) из России. Приводятся описания трех новых видов рода *Deschampsia* P. Beauv. с Дальнего Востока России (Камчатка, Хабаровский край, Магаданская область и Командорские острова) и из Восточной Сибири (Якутия). Для двух видов установлены числа хромосом.

Ключевые слова: **новые таксоны,** *Deschampsia,* Poaceae, **числа хромосом**, сосудистые растения, Восточная Сибирь, Дальний Восток, Россия

The genus *Deschampsia* P. Beauv. (Poaceae – *Poeae* R. Br. – *Airinae* Fr.) includes taxa of cold and temperate regions of both hemispheres. Chiapella & Zuloaga (2010) accounted for ca. 30 species but made explicit that this figure might change if subspecies of *Deschampsia cespitosa* (L.) P. Beauv. present in Russia (specially in the Russian Far East and Siberia) are raised to the specific level. The number of recognized taxa is variable depending on species being considered in narrow or wide sense (i.e., s.l. or s.s), because the existence of intermediate forms (probably hybrids) among putative species makes differentiation very difficult. In previous publications (Tzvelev 1976, Chiapella & Probatova 2003) we treated many taxa present in Russia as subspecies of one, but very polymorphous *D. cespitosa*. However this approach of using subspecies proved to be inconvenient when confronted with the extreme variability found during the revision of the abundant herbarium material of the genus from the Russian Far East (RFE) and Siberia preserved in the Herbarium of the Institute of Biology & Soil Science in Vladivostok (VLA). This revision disclosed the existence of some taxa not fitting in any of the previously described.

In order to facilitate floristic work in progress, and to match the more restricted concept of species used by other authors of the "Flora SSSR", in the following taxonomic revision of the genus *Deschampsia* that will be included in the upcoming book "Poaceae of Russia" we applied a restricted concept of species without subspecies, applying in some cases the species aggregates concept used by Tzvelev & Probatova (2012).

All of the RFE taxa, including those described here, belongs to the type section *Deschampsia*; Russian taxa could be placed into the following sections: *Aristavena* and *Corynephoroides* in the European part of the country (Tzvelev & Probatova 2010), and *Deschampsia*. A key to differentiate the sections is given:

1. Plants with leaves setiferous 2
1'. Plants with leaves flat to folded, rarely setiferous ..... sect. *Deschampsia*

2. Leaves smooth on the abaxial side, chromosome number 2n=14 ..... sect. *Aristavena*
2'. Leaves rough on the abaxial side, with abundant papillae, chromosome number 2n=26 ..... sect. *Corynephoroides*

The chromosome numbers (CN) of species were counted by A.P. Sokolovskaya (AS). "Loci classici" and paratypes localities of new species are shown on the map (Fig. 1).

Section Deschampsia

1. Deschampsia hultenii Prob., Tzvelev et Chiapella sp. nova

Plants 20–35 cm, forming loose tufts. Stems faintly ascending at the base. Leaf blades (1.5) 2–3 mm width, flat or folded, above smooth or nearly so. Panicles 9–14 cm, equal to 1/3 (1/2) of the total stem length, very loose and spreading, faintly pinkish-purple, panicle branches smooth, up to 6 cm, the longest branches equaling up to 1/2 of the panicle length, horizontal or obliquely ascending, without spikelets in their lower half, with less than 12 spikelets per branche. Spikelets 4.5–6.5 (7.5) mm, with 2–3 well developed florets. Glumes lanceolate, acute, lower glume 3.2–4.5 mm, upper

Figure 1 Locations of *Deschampsia* specimens sampled

glume 4.5–5.5 (7) mm. Lemmas (of lowest floret) 3.2–4.5 mm, awn exserted from the lower 1/3 of the lemma and usually does not exceed the lemma apex. Callus hairs equal to 1/4–1/5 of lemma length. Anthers 1.5–2.2 mm. Chromosome number: 2n = 42.

Holotype: [Russia, Far East] "Kamchatka, Kronotskii nature reserve, the basin of Staryi Semyachik and Novyi Semyachik Rivers, in the Barmotinskii stream river-bed, on pebbles, 29 Jun 1974, coll. G. Kurdiukova s. n." (VLA (Fig. 2), isotype – LE)**.** Map (Fig. 1): **1.**

Paratype: [Russia, Far East] "Commander Islands, Bering Isl., 12 km of Nikol'skoe settlement, along the Fedoskina River, on pebbles, 31 Jul 1971, **2n = 42** (AS), n 3302, coll. N.S. Probatova & V.P. Seledets" (VLA, LE). Map (Fig. 1): **2.**

Affinity. The species differs from *D. beringensis* Hultén by very loose, variegated panicles with smooth branches. The chromosome number 2n = 42 is also different of the common 2n = 26. Other closely related taxa are *D. kurilensis* (Kawano) Tzvelev et Prob., from which it differs by the leaf blades smooth on the adaxial side and by the very loose panicles; and *D. paramushirensis* Honda, from which it differs by the larger spikelets and by short awns.

The species is named after the Swedish botanist Eric Hultén (1894-1981), explorer of the Arctic, who carried out extensively fieldwork in Kamchatka. He was the author of the monograph "Flora of Kamchatka and the adjacent islands" (Hultén 1927).

Distribution. Russia, Far East: Kamchatka Peninsula, Commander Islands.

Earlier the paratype was erroneously referred to *D. cespitosa* subsp. *beringensis* (Hultén) W.E. Lawr. = *D. beringensis* Hultén (Sokolovskaya & Probatova 1975).

2. Deschampsia susumanica Prob. et Chiapella sp. nova.

Plants 30–45 cm, forming tussocks which can disintegrate into tufts joined by elongated lower internodes. Leaf blades 1–2 mm wide, loosely folded, above nearly smooth or more or less scabrous. Panicles 10–15 cm, broadly spreading, with horizontal or deflected branches, the panicle branches are almost smooth in proximal part but scabrous in distal part, without spikelets on proximal part. Spikelets (3) 4.5–5.2 mm, with 1–2 florets, green or sometimes brounish-purple. Lower glume 3–3.5 mm, upper glume 3.5–4 mm. Rachilla and callus weakly pubescent. Lemmas (of lowest floret) 3.4–3.5 mm, awn arising near the base or from the lower 1/4–1/3 of the lemma, short, sometimes almost non developed, sometimes slightly exceeds the lemma apex. Callus hairs equal to 1/4–1/6 of the lemma length. Anthers (1.1) 1.3–1.6 mm. Chromosome number: 2n = 26.

Holotype: [Russia, Far East] "Magadanskaya Oblast', Susumanskii Raion, the bank of the Ayan-Yuriakh River, on pebbles, frequent, 13 Jul 1989, coll. S.S. Kharkevich" (VLA (Fig. 3), isotype – LE). Map (Fig. 1): **4.**

Paratypes: [Russia, East Siberia] "Yakutskaya ASSR [Republic Sakha-Yakutia], Bulunskii Raion, near the former village Bulun, left riverside of the Lena River, sandy riverbank of the small river Bulunka, 4 Aug 1973, **2n = 26** (AS), coll. N.S. Probatova, V.P. Seledets & R.S. Ivlieva n 3770" (VLA, LE). Map (Fig. 1): **3;** [Russia, Far East] "Kamchatskii Krai, Kamchatka Peninsula, Verkhne-Opal'skie hot springs, temperature 42°C, on the slope, in *Filipendula kamtschatica* community, 3 Aug 2013, coll. O.A. Chernyagina & L. Shtreker" (VLA). Map (Fig. 1): **5;** [Russia, Far East] "SE of Kamchatka Peninsula, SW foothills of the Dzendzur Volcano (ca.420 m alt.), right riverside of the Talovaya River, slightly warm plots at the Krayevedcheskie hot springs, abundant, 30 Aug 1995, coll. V.V. Yakubov" (VLA). Map (Fig. 1): **7.**

Affinity. Differs from *D. obensis* Roshev. by tussocks disintegrating into tufts joined by elongated lower internodes, by large pyramidal panicles (in *D. obensis* the panicle branches ascending, adpressed or poorly deflecting), by almost naked rachilla and by chromosome number 2n = 26.

Distribution. Russia, East Siberia, in lower course of the Lena River (North Yakutia); Russia, Far East: right confluents of the Kolyma River and Kamchatka Peninsula. On sands and pebbles of the river valleys.

Earlier the paratype specimen n 3770 was misidentified as *D. cespitosa* subsp. *orientalis* Hultén = *D. paramushirensis* Honda (Sokolovskaya & Probatova 1975*)*.

The specimen n 3770 was collected on the same plot and the same habitat near Bulun (the Lena River), where we found the population of the relict grass *Arctopoa trautvetteri* (Tzvelev) Prob. (Probatova 1975; Tzvelev & Probatova 2013).

3. Deschampsia sichotensis Prob., Tzvelev et Chiapella sp. nova.

Plants 20–45 cm, forming loose spreading tussocks. Stems ascending. Leaf blades 1–3 mm width, flat or folded, above with scattered spinules on ribs to almost smooth. Pa-

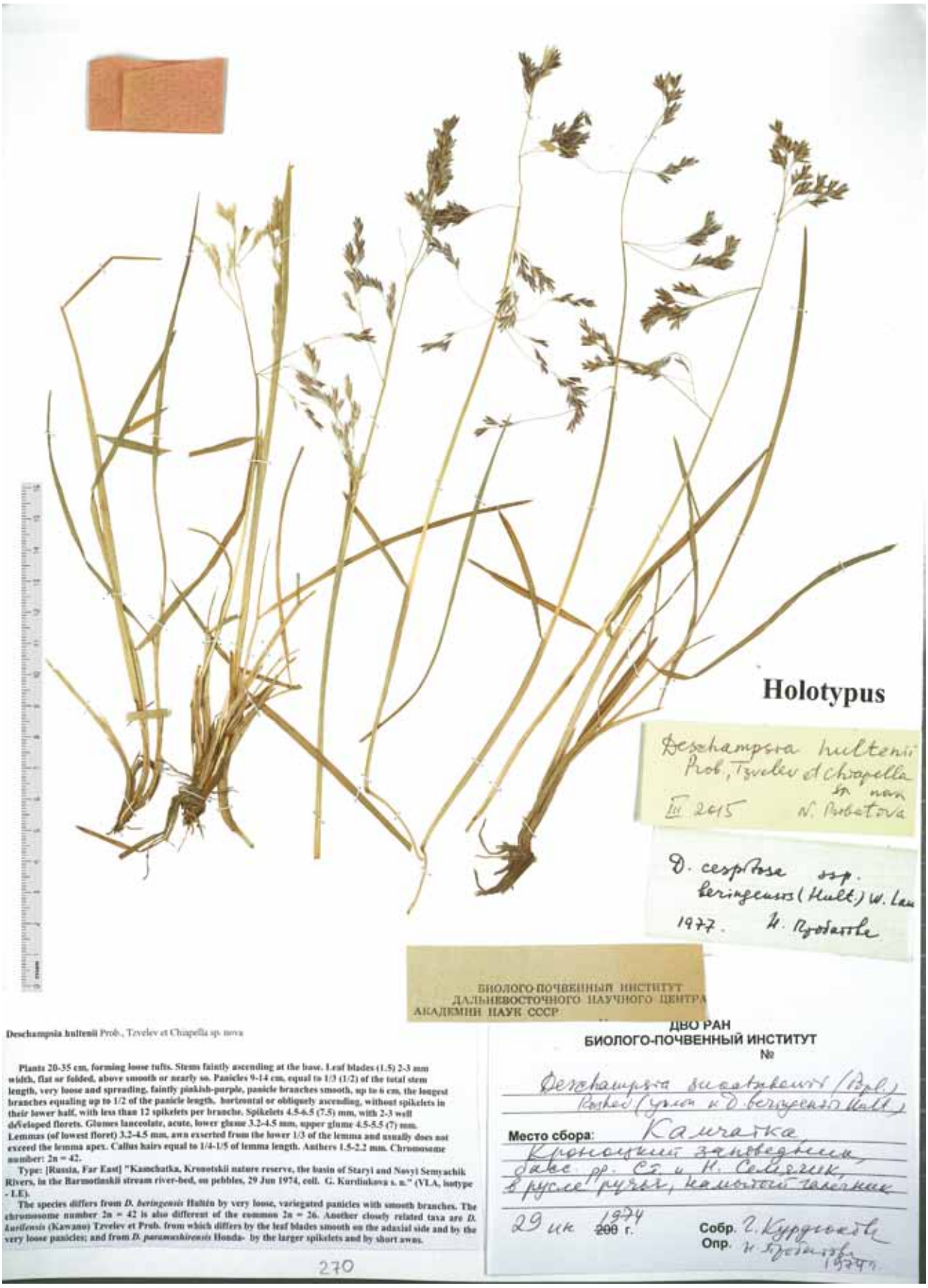

Figure 2 Holotype specimen of *Deschampsia hultenii* sampled in Kamchatka, Kronotskii nature reserve, the basin of Staryi Semyachik and Novyi Semyachik Rivers, in the Barmotinskii stream river-bed, on pebbles, 29 Jun 1974, coll. G. Kurdiukova s. n.

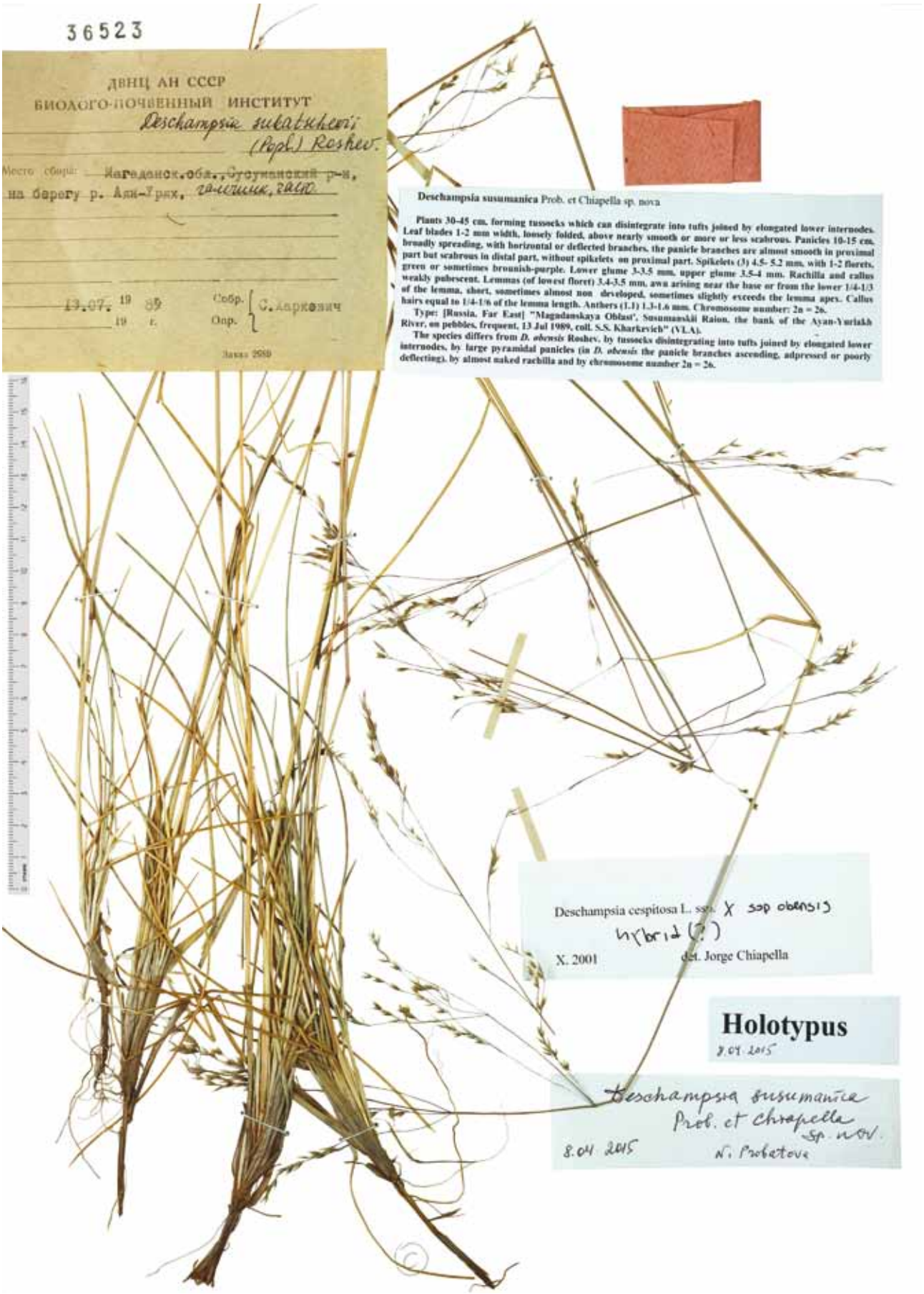

Figure 3 Holotype specimen of *Deschampsia susumanica* sampled in Magadanskaya Oblast', Susumanskii Raion, the bank of the Ayan-Yuriakh River, on pebbles, frequent, 13 Jul 1989, coll. S.S. Kharkevich.

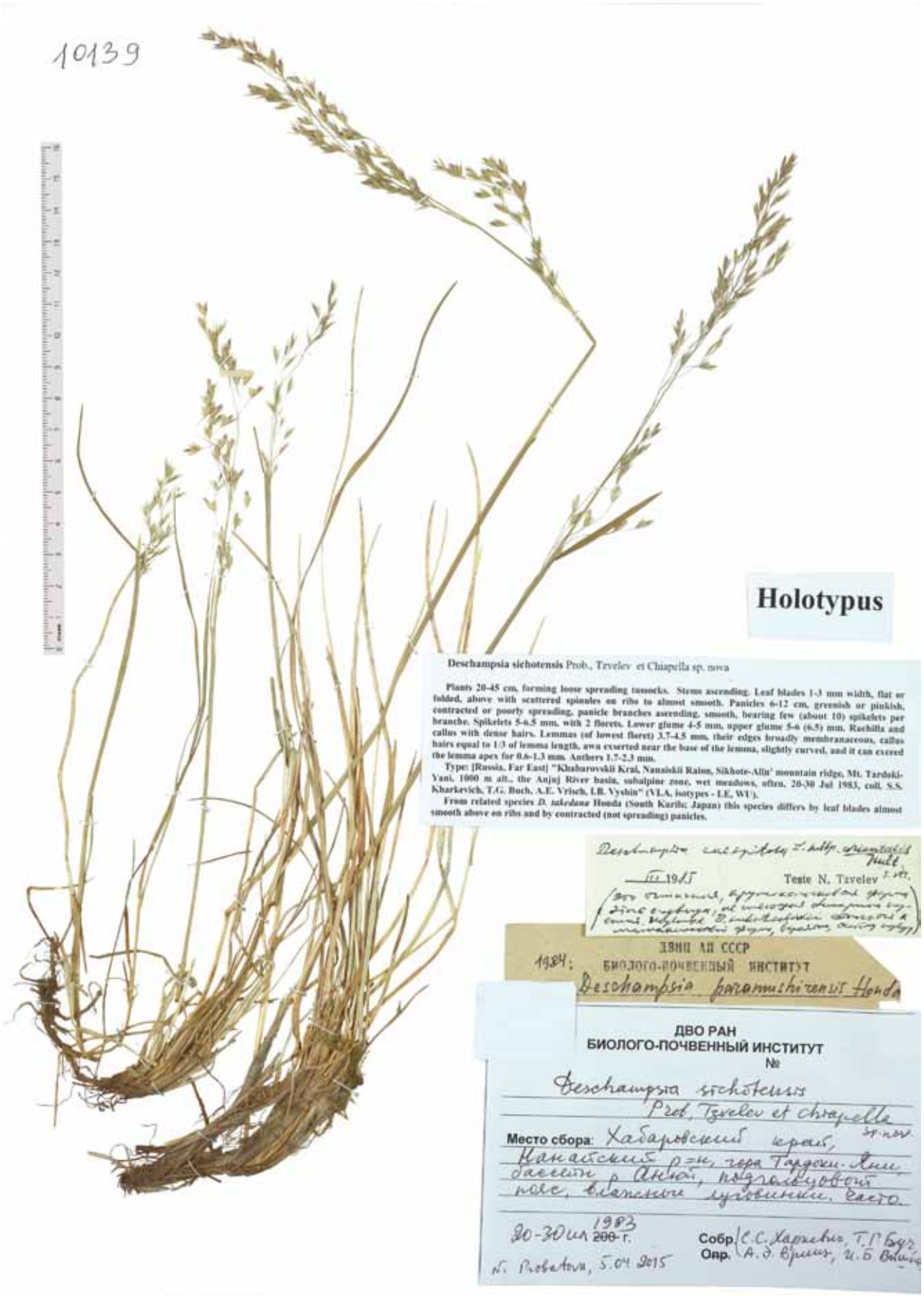

Figure 4 Holotype specimen of *Deschampsia sichotensis* sampled in Khabarovskii Krai, Nanaiskii Raion, Sikhote-Alin' mountain ridge, Mt. Tardoki-Yani, 1000 m alt., the Anjuj River basin, subalpine zone, wet meadows, often, 20-30 Jul 1983, coll. S.S. Kharkevich, T.G. Buch, A.E. Vrisch and I.B. Vyshin.

nicles 6–12 cm, greenish or pinkish, contracted or poorly spreading, panicle branches ascending, smooth, bearing few (about 10) spikelets per branche. Spikelets 5–6.5 mm, with two florets. Lower glume 4–5 mm, upper glume 5–6 (6.5) mm. Rachilla and callus with dense hairs. Lemmas (of lowest floret) 3.7–4.5 mm, their edges broadly membranaceous, callus hairs equal to 1/3 of lemma length, awn exserted near the base of the lemma, slightly curved, and it can exceed the lemma apex for 0.6–1.3 mm. Anthers 1.7–2.3 mm.

Holotype: [Russia, Far East] "Khabarovskii Krai, Nanaiskii Raion, Sikhote-Alin' mountain ridge, Mt. Tardoki-Yani, 1000 m alt., the Anjuj River basin, subalpine zone, wet meadows, often, 20-30 Jul 1983, coll. S.S. Kharkevich, T.G. Buch, A.E. Vrisch, I.B. Vyshin" (VLA (Fig. 4), isotypes – LE, WU). Map (Fig. 1): **6.**

Affinity. From related species *D. takedana* Honda (South Kurils; Japan) this species differs by leaf blades almost smooth above on ribs and by contracted (not spreading) panicles.

Distribution. Russia, Far East, the Sikhote-Alin' mountain ridge. Alpine meadows. The species is known only from type locality, for more than 30 years.

ACKNOWLEDGEMENTS

This study was supported by the Russian Foundation for Basic Research (RFBR): grants 07-04-00610, 11-04-00240 (to N.S. Probatova). J. Chiapella thanks the National Research Council of Argentina (CONICET) for financial support. The authors are grateful to O.A. Chernyagina for providing additional plant material for this study.

LITERATURE CITED

Chiapella, J. & N.S. Probatova 2003. The *Deschampsia cespitosa* complex (Poaceae: *Aveneae*) with special reference to Russia. *Botanical Journal of the Linnean Society* 142:213–228.

Chiapella, J. & F.O. Zuloaga 2010. A revision of *Deschampsia, Avenella* and *Vahlodea* (Poaceae, *Airinae*) in South America. *Annals of the Missouri Botanical Garden* 97:141–162.

Hultén, E. 1927. *Flora of Kamchatka and the adjacent islands.* Vol. 1. Stockholm. 346 p. + 6 ill.

Probatova, N.S. 1975. New data on *Arctopoa trautvetteri* (Tzvel.) Probat. (Poaceae). *Novosti systematiki vysshikh rastenii* 12:9–11 (in Russian). [Пробатова Н.С. 1975. Новые сведения об *Arctopoa trautvetteri* (Tzvel.) Probat. (Poaceae) // Новости систематики высших растений. Т. 12. Л.: Наука. С. 9–11].

Sokolovskaya, A.P. & N.S. Probatova 1975. Chromosome numbers of some grasses (Poaceae) of the flora of USSR. *Botanicheskii Zhurnal* 60(5):667–678 (in Russian). [Соколовская А.П., Пробатова Н.С. 1975. Хромосомные числа некоторых злаков (Poaceae) флоры СССР // Ботанический журнал. Т. 60, № 5. С. 667–678].

Tzvelev, N.N. 1976. *Poaceae of the USSR.* Leningrad: Nauka, 788 p. (In Russian). [Цвелев Н.Н. 1976. Злаки СССР. Л., Наука, 788 с.]

Tzvelev, N.N.& N.S. Probatova 2010. New taxa of Poaceae from Russia. *Botanicheskii Zhurnal* 95 (6):857–869 (in Russian). [Цвелев Н.Н., Пробатова Н.С. 2010. Новые таксоны злаков (Poaceae) России // Ботанический журнал. Т. 95, № 6. С. 857–869].

Tzvelev, N.N. & N.S. Probatova 2012. Survey of the genera *Deschampsia, Agrostis, Calamagrostis* (Poaceae – *Poeae*) and the system of grasses in the flora of Russia. *Komarovskie Chtenya* 59: 7–75 (in Russian). [Цвелёв Н.Н., Пробатова Н.С. 2012. Обзор родов *Deschampsia, Agrostis, Calamagrostis* (Poaceae – *Poeae*) и система злаков флоры России // Комаровские чтения. Владивосток: Дальнаука. Вып. 59. С. 7–75].

Tzvelev, N.N. & N.S. Probatova 2013. The genera *Puccinellia, Phippsia, Arctopoa* (Poaceae: *Poeae*) in Russia and the additions to the Grass flora of the Russian Far East. *Komarovskie Chtenya* 60:182–247 (in Russian). [Цвелёв Н.Н., Пробатова Н.С. 2013. Роды *Puccinellia, Phippsia, Arctopoa* (Poaceae: *Poeae*) в России и дополнения к агростофлоре российского Дальнего Востока // Комаровские чтения. Владивосток: Дальнаука. Вып. 60. С. 182–247].