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Lectotypification of the name *Carex ledebouriana* (Cyperaceae)

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Abstract: In this article I reconsider the lectotypification of the name *Carex ledebouriana* C. A. Mey. ex Trevir. (Cyperaceae). In 1833, Meyer described an unnamed variety of *C. capillaris* L. based on the gatherings of Ledebour from two localities (river Koksun and near Riddersk) in what is today the Kazakhstan Altai. In 1863, Treviranus validly published the name *C. ledebouriana*, referring to Meyer's unnamed variety and erroneously citing a gathering by Bunge "in summis alpebus Kuraicis". A herbarium sheet at LE with barcode LE 01006839 was proposed as the (lecto)type of *C. ledebouriana* by Egorova in 1999 and this was confirmed by Grabovskaya-Borodina in 2012. In studying the original material, I found that sheet LE 01006839 in fact consists of three fragments belonging to two different gatherings and has an incorrect label. These two gatherings are further represented at LE by sheets LE 01006840 and LE 01006841, respectively. I argue that sheet LE 01006839 is not eligible as a type specimen because it consists of two gatherings. Instead, I designate here as the lectotype sheet LE 01006841, which contains well-preserved plants collected by Ledebour with mature utricles.

Key words: Altai, *Carex*, *Carex ledebouriana*, Cyperaceae, Kazakhstan, Komarov Botanical Institute of RAS, lectotype, C. F. Ledebour, C. A. Meyer, nomenclature, L. C. Treviranus, typification

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Introduction

Typification is one of the pillars of plant systematics. In this study I revise the lectotypification of the name *Carex ledebouriana* C. A. Mey. ex Trevir. (Cyperaceae), an arctic-alpine species widespread in the north of European Russia, as well as in Siberia, the Russian Far East, E Kazakhstan, and N Mongolia. *Carex ledebouriana* was described from collections of C. F. Ledebour from what is today the Kazakhstan Altai.

Material and methods

The holdings of the Herbarium of the Komarov Botanical Institute of RAS (LE), which maintains the collections of

C. F. Ledebour, were studied. Relevant literature was examined, including the published diaries of the members of the 1826 Altai expedition (Ledebour 1829, 1830) for information on the collections mentioned by Meyer.

Results and Discussion

Lectotypification of *Carex ledebouriana*

From material collected during the 1826 Altai and East Kazakhstan expeditions of C. F. Ledebour, C. A. Meyer described an unnamed variety of *Carex capillaris* L. in the *Flora altaica* (Fig. 1). The variety was collected by Ledebour from the highlands near the source of the Koksun river (currently the Koksa river, Koksui ridge), and from the Krestovaya mountain near Riddersk (currently

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Ridder), both in the East Kazakhstan oblast of Kazakhstan: “Varietas in summis alpi- bus circa fontes fl. Koksun et versus cacu- men montis crucis prope Riddersk occurrit ...” (Meyer 1833: 228). Later, after *Flora altaica* was published, Meyer intended to describe a new species, to be called “*Carex ledebouriana*”, which appears to have been based on this variety. A herbarium sheet at LE with barcode LE 01006839 (Fig. 2) contains Meyer’s handwriting with this species name and the following annotation: “*Carex ledebouriana* m. (*C. capillaris* var. spica mascula clavata Fl. Alt. IV p. 228 In summis alpi- bus Kuraicis C. A. Meyer)”.

In *Flora rossica*, L. C. Treviranus men- tioned this variety as *Carex capillaris* “β. spicula mascula subovata, feminarum squa- mis utriculorum aequantibus. Fl. Alt. l.c. p. 228.” He provided no specific information on its distribution in Siberia, citing only “Hab. in ... Sibiria altaica! (Fl. Alt.)” within the range statement for the species (Trevira- nus 1852: 295).

Later, Treviranus (1863) validly pub- lished the name *Carex ledebouriana* (Fig. 3). In noting that *C. ledebourii* Boiss. & Buhse (close to *C. frigida* All.) should not be confused with *C. ledebouriana*, he cited from Meyer’s label (on sheet LE 01006839, see Fig. 2): “*C. ledebouriana* Mey. quae est *C. capillaris* varietas spica mascula clavata (Fl. Alt. IV. 228)”, provided some further description of the female spikes, and re- marked that this species was collected by Bunge in the uppermost belt of the Kuray ridge. In citing Meyer’s herbarium label (Fig. 2), Treviranus added Bunge’s name as the collector, presumably because Bunge was the only one of the three members of the expedition who visited the Kuray mountains.

Since that time, all botanical studies have repeated the statement that *Carex ledebouriana* was published based on the collections of Bunge from the Kuray ridge of the Altai Mountains.

In 1924, the herbarium sheet bearing Meyer’s anno- tation “*Carex ledebouriana* m.” (LE 01006839) was annotat- ed by V. I. Kreczetowicz, who pointed out that it consisted of two different gatherings: “plantae 2 dextrae – Holotypus sunt et ex locis versus cacuminis m. Crucis prope Riddersk provenientes; planta sinistra (deflorata) – epiplerotypus [sic!] est et ex al[li]pibus circa fontes fl. Koksun progredit.”

T. V. Egorova (1999: 347) cited the sheet LE 01006839 (Fig. 2) as “typus: «In summis alpi- bus Kuraicis [Bunge], Herb. Fischer» (LE!)”; later, A. E. Grabovskaya-Borodina (2012: 333) cited the same sheet as the “lectotypus” fol- lowing Egorova. Neither Egorova nor Grabovskaya-Boro-

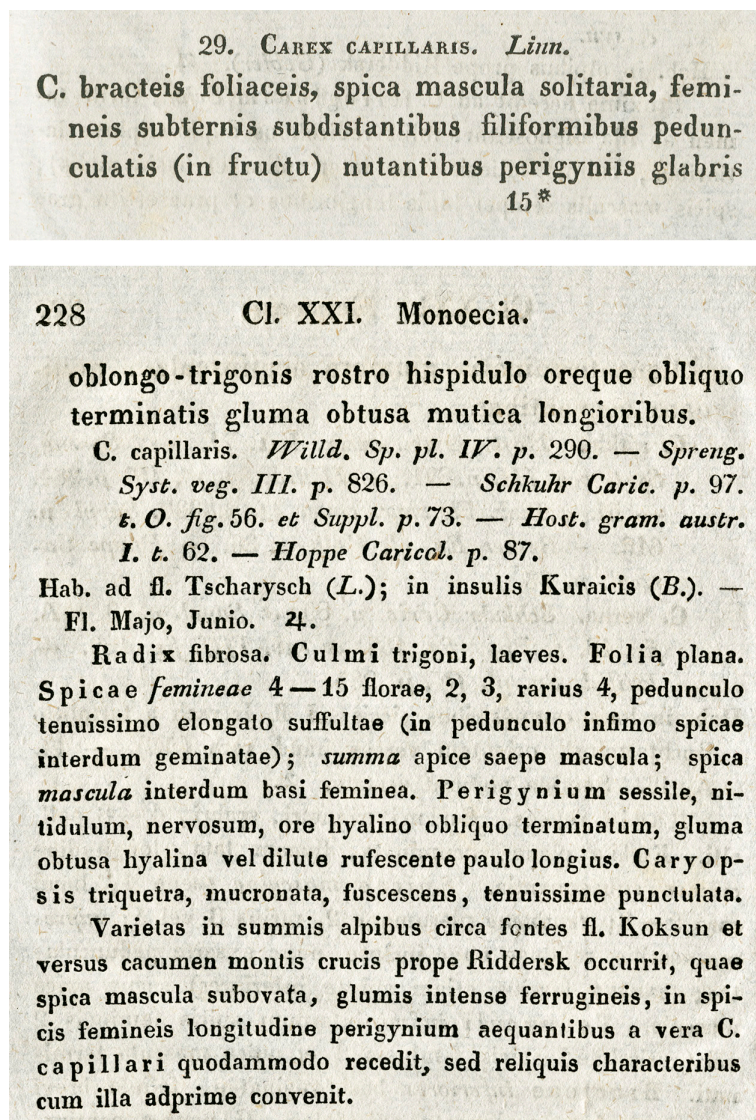


Fig. 1. Diagnosis of *Carex capillaris* with an unnamed variety (Meyer 1833: 227, 228).

dina referred to any particular part of the material mounted on that sheet or mentioned Kreczetowicz’s annotation.

I thoroughly studied the original material of *Carex ledebouriana* on three herbarium sheets (LE 01006839, LE 01006840 and LE 01006841) in the Herbarium of the Komarov Botanical Institute of RAS (LE). I found that the material on sheet LE 01006839 appears to be of mixed origin. Based on the habit of the plants and their life stage (flower- or fruit-bearing) it is obvious that sheet LE 01006839 (Fig. 2) contains two specimens from two different gatherings. If one compares these specimens with two other Ledebour specimens at LE, it is evident that the small plant on the left in the flowering stage is a duplicate of the specimen on sheet LE 01006840 (Fig. 4) and was collected on 10 June on the Koksui ridge, whereas the two plant fragments on the right with mature utricles are a duplicate of the specimen on sheet LE 01006841 (Fig. 5) and were collected on 8 July on the Krestovaya mountain.

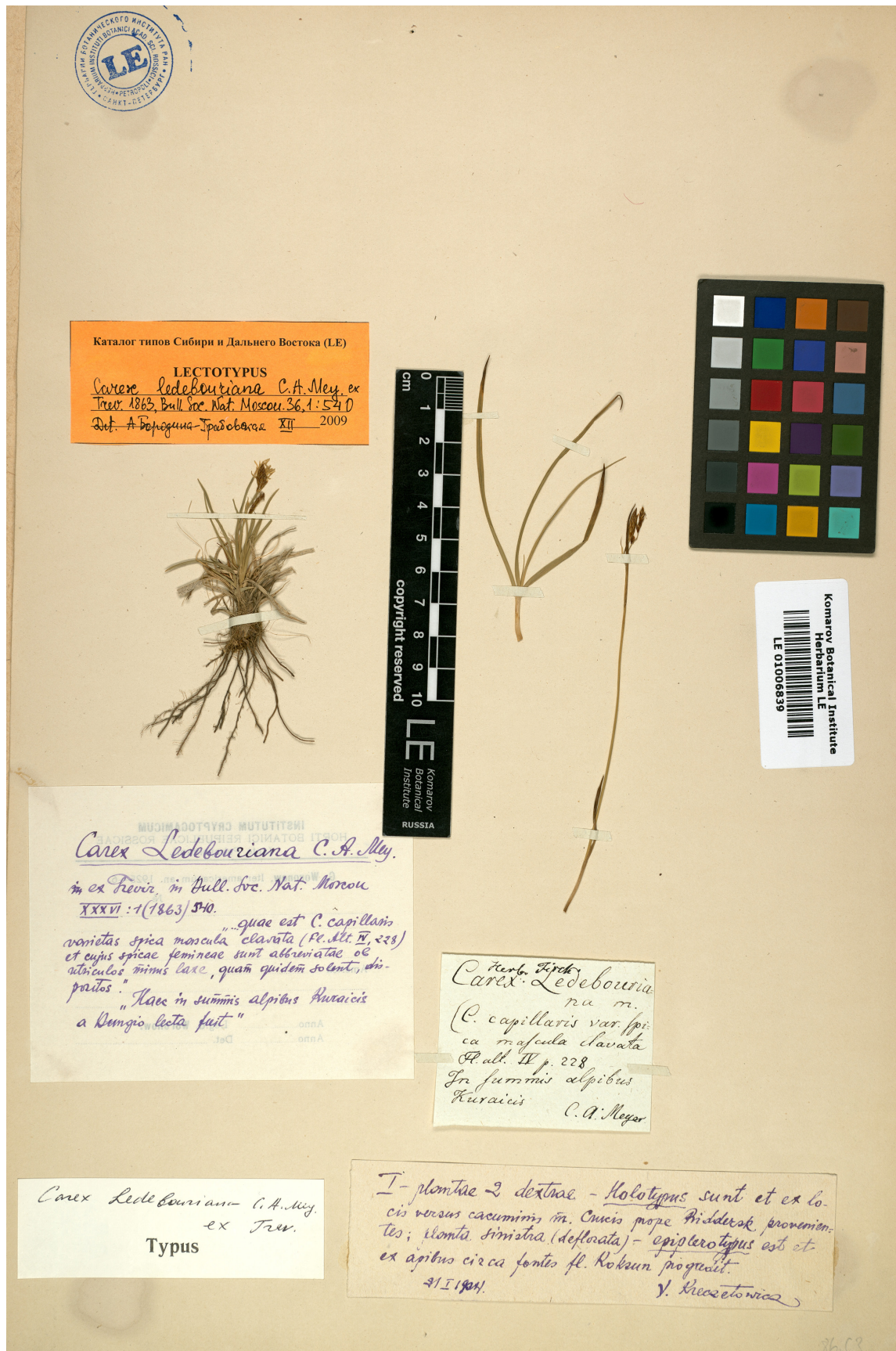


Fig. 2. Original material of *Carex ledebouriana*: sheet LE 01006839. – A: plant on the left, duplicate specimen of LE 01006840 (Fig. 4); B: two plant fragments of the right, duplicate specimen (isolectotype) of LE 01006841 (Fig. 5).

The sheet LE 01006839 (Fig. 2) cited as the type of *Carex ledebouriana* by Egorova and Grabovskaya-Borodina has neither an original collector's label nor location data. The label written by Meyer (Fig. 6A) cites his original publication of the unnamed variety of *C. capillaris*, as noted above. The remark on the label "in summis alpinis Kuraicis" is erroneous and does not apply to this material. Meyer did not mention Bunge in his treatment of the unnamed variety of *C. capillaris* in *Flora altaica* (Fig. 1). Bunge's gatherings were, however, listed under the distribution of *C. capillaris*, as "in insulis Kuraicis (B[unge].)". From Bunge's diary (Ledebour 1830: 77) it is clear that this referred to islands on the Chuya river, where he collected specimens on 26 May 1826: "Die Tschuja, die in diesem weitem Thal einen freiem Spielraum gewinnt, theilt sich hier in mehrere Arme, wodurch Inseln gebildet werden, die ich zum Unterschiede von den höher liegenden, die Kuraischen nennen will." (The Chuya, which gains a freer scope in this wide valley, divides here into several arms, whereby islands are formed, which, to distinguish them from those upstream, I want to call the Kuraic [islands].)

It is clear that Meyer indicated two particular collection points for his unnamed variety: (1) high mountains near the source of the Koksun river and (2) the Krestovaya mountain near Riddersk, and gatherings from these two localities are what appears on the sheet that bears Meyer's original label. *Carex ledebouriana* was described by Treviranus based on Ledebour's collections from what is currently the Kazakhstan Altai, not those of Bunge from the Russian Altai. The citation of Bunge's gatherings for *C. ledebouriana* is thus erroneous.

We can conclude that the three abovementioned sheets (LE 01006839, LE 01006840 and LE 01006841) contain four specimens, i.e. two duplicate specimens each of two gatherings, which can be treated as original material for the name *Carex ledebouriana*. We should note that both gatherings belong to the species as it is currently understood. However, the type designation of sheet LE 01006839 proposed by Egorova and cited by Grabovskaya-Borodina is unacceptable: because this sheet contains more than one gathering, it is not a specimen (Turland & al. 2018: Art. 8.2) and cannot be a lectotype (Turland & al. 2018: Art. 9.3, 9.17) and, as mentioned above, neither Egorova nor Grabovskaya-Borodina specified a particular part of the material on the sheet as the lectotype or mentioned Kreczewicz's annotation. Because of their fragmentary nature and the incorrect label, neither of the specimens on the sheet LE 01006839 would be a desirable choice anyway. I therefore designate as the lectotype the Ledebour specimen from Krestovaya mountain (sheet LE 01006841), which contains well-preserved plants with mature utricles. The current application of the name *C. ledebouriana* is not changed by this nomenclatural act.

73. *C. frigida* All. Huic proxime accedit *C. Ledebourii* Boiss. (*Buhse Pfl. von Transcaucasien und Persien*. 222), distinguenda a *C. Ledebouriana* Mey. quae est *C. capillaris* varietas spica mascula clavata (*Fl. Alt. IV*. 228) et cujus spicae femineae sunt abbreviatae ob utriculos minus laxae, quam quidem solent, dispositos. Haec in summis alpinis Kuraicis a Bungio lecta fuit. *C. frigida* β *fuliginosa* nostra est *C. misandra* R. Br. docente ita Brownio ipso in *Append. Parr. Voy.* 283. 309. et confirmantibus specimenibus.

Fig. 3. Protologue of *Carex ledebouriana* (Treviranus 1863: 540).

Carex ledebouriana C. A. Mey. ex Trevir. in Bull. Soc. Imp. Naturalistes Moscou 36(1–2): 540. 1863. – **Lectotype (designated here):** [Kazakhstan, East Kazakhstan oblast] "Herb. Ledebour. / [No.] 768. 8. Jul [1826] / *Carex* / m[ontis] + [Crucis]." (LE 01006841! [Fig. 5]; isolectotype: LE 01006839! only the two plant fragments on the right [Fig. 2]). – Other original material: [Kazakhstan, East Kazakhstan oblast] "Herb. Ledebour. / [No.] 343. 10. Jun [1826] / *Carex* 1446 / Summis in Koksun." (LE 01006840! [Fig. 4], LE 01006839! only the plant on the left [Fig. 2]).

Remarks — The label of the lectotype specimen, sheet LE 01006841 (Fig. 6C), was written by Ledebour; "m + " is an abbreviation of "montis Crucis" (of Krestovaya mountain), which is corroborated by a note in Ledebour's diary (Ledebour 1829: 225): "Erst am 8. Julius war es mir möglich, den Kreuzberg wieder zu besuchen, auf dessen Nordseite noch immer viel Schnee lag." (Not until 8 July was it possible for me to visit the Krestovaya mountain again, on the northern side of which much snow still lay.) The lectotype sheet also bears annotations by Kreczewicz: "II – Tautotypus! 21 I 1924." and by Grabovskaya-Borodina: "SYNTYPUS ... XII 2009" (Fig. 5).

The label of sheet LE 01006840 (Fig. 6B) was also written by Ledebour, and it additionally bears a pencil note in Meyer's handwriting: "*capillaris* varietas". In his diary, Ledebour (1829) wrote: "[p. 142] Am 10. Junius. ... [p. 146] Die Vegetation auf diesem Plateau hat Anfangs das Ansehen der Aermlichkeit, allein es finden sich hier mehrere interessante Pflanzen. So blühte eben jetzt *Pedicularis versicolor*, eine *Carex* ..." (On 10 June. ... The vegetation on this plateau [the Koksui ridge] looks poor at first, but there are several interesting plants here. Flowering right now were for example *Pedicularis versicolor*, a *Carex* ...).

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Fig. 4. Original material of *Carex ledebouriana*: specimen LE 01006840, annotated “Herb. Ledebour / [No.] 343. 10. Jun [1826] / *Carex* 1446 / Summit in Koksun.”



Fig. 5. Lectotype of *Carex ledebouriana*: specimen LE 01006841, annotated "Herb. Ledebour. / [No.] 768. 8. Jul [1826] / *Carex* / m[ontis] + [Crucis]."

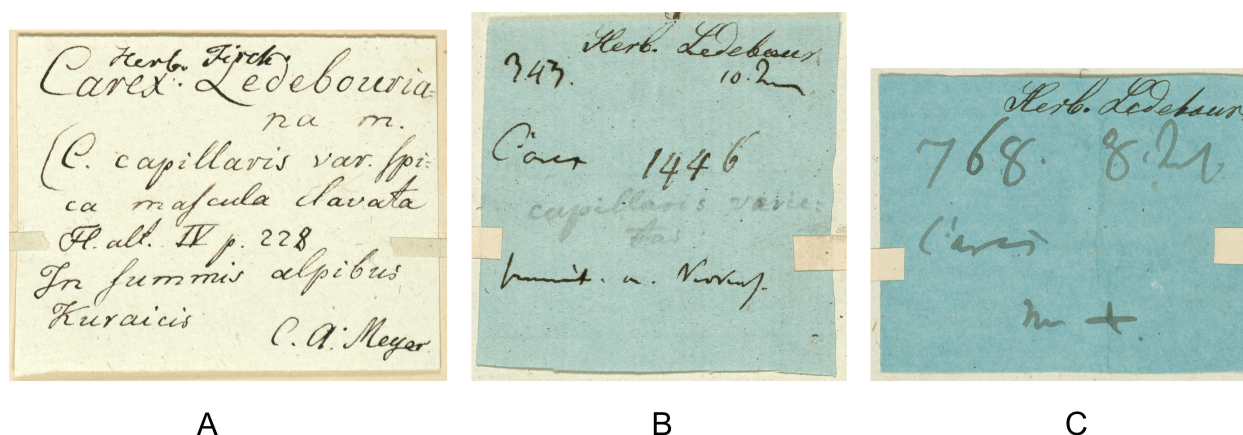


Fig. 6. Labels of original material of *Carex ledebouriana*. – A: label written by C. A. Meyer from sheet LE 01006839 (Fig. 2); B: label written by C. F. Ledebour, with “*capillaris* varietas” added in pencil by C. A. Meyer, from sheet LE 01006840 (Fig. 4); C: label written by C. F. Ledebour from sheet LE 01006841 (lectotype; Fig. 5).

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